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Understanding the essential elements of school culture in global contexts: exploring the TALIS 2018 data on school principals

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ABSTRACT

This study examines essential elements of school culture in global contexts by applying Schein's model of organizational culture and interpreted through principals' voices. The elements were defined on account of the Teaching and Learning International Survey's (TALIS 2018) five themes: school leadership, school climate, innovation, teacher feedback and development, and job satisfaction. Factor analysis was utilized to find relevant factors of the five themes and content analysis to describe the essential elements based on the factors found. Basic underlying assumptions as well as espoused beliefs and values, the fundamentals of any culture in the Schein's model, are related to essential elements of inner dynamism and ensuring professionalism. Inner dynamism manifested as ambition and principals' job satisfaction, and ensuring professionalism as principals' responsibilities and activities as well as improvement and strengthening teachers' professionalism. Importantly, the essential elements are interconnected and place special demands on school development and evaluation in diverse global contexts.

Introduction

The aim of this study was to understand school culture's essential elements in current global contexts, interpreted through principals' voices. By using the term 'essential elements', we mean school culture issues that we suggest to support, par excellence, student learning and enhance academic growth (Darling-Hammond et al., 2017). However, we are not saying that we were able to define all essential elements, but with the help of the principals' voices we touched upon some of the most important ones.

Although in theory we partly exploited existing studies of school culture, it is not possible to define its essential elements in current global contexts without rigorous data. Consequently, we selected data from the OECD Teaching and Learning International Survey, TALIS 2018 (OECD, 2019, 2020), for five themes relevant to school principals. These themes were based on the TALIS' conceptual framework of school leadership, school

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climate, innovation, teacher feedback and development, and job satisfaction (Ainley & Carstens, 2018). We consider these themes to be important areas within school culture in global contexts. In the present study, when referring to the TALIS, in theory we mean the conceptual framework of the survey (Ainley & Carstens, 2018).

Principals represent an important part of school culture (Leithwood et al., 2020; Turan & Bektas, 2013), especially in current global contexts. Principals' work has become increasingly challenging over the last couple of decades. This means that the school culture also changes in relation to their work (Harris, 2005; Leo, 2015). Traditional duties and 'to-do' lists have transformed as a result of social changes and new tasks are necessary to enhance academic growth and student learning, which also applies to the staff members within the school community. On the one hand, the principals have to meet the demands of the teachers, students and parents; on the other hand, they have to meet the expectations of the surrounding society (Horng et al., 2009). In addition, sudden global crises, such as pandemics (i.e. COVID-19) and confrontations between countries (i.e. the Ukrainian war or the Taiwan question), have made the principals' work particularly challenging over the past three years.

TALIS mainly focuses on the working conditions of teachers and more broadly on school learning environments. Although the five themes chosen focus on reflections of principals' own work, they also address the ways in which teachers' work is recognized (OECD, 2019, 2020). This recognition relates to teachers, other staff members, structures, processes, and other organizational components (Carpenter, 2018; Reaves & Cozzens, 2018; Ross & Cozzens, 2016).

In current global contexts, it is evident that internationalization, rapidly evolving teaching technology and changing learning environments challenge not only principals' work but also the entire organization (e.g. Håkansson-Lindqvist & Pettersson, 2019; OECD, 2016; Tintoré et al., 2020). These demands affect the school culture both at the national and global levels (Egidiussen Egekvist et al., 2017). Our article aims to increase the understanding of such elements of school culture in global contexts that principals indicate to be essential, based on data provided by the TALIS (e.g. Agosto & Roland, 2018; Engels et al., 2008; Kalkan et al., 2020).

Consequently, we suggest that the TALIS 2018 data on principals are relevant for our study purposes in order to identify essential elements of school culture in global contexts. Principals have a strong impact on promoting school culture in terms of their beliefs, values and assumptions since they transfer these to the entire school community (Tubin, 2011; see also Donmoyer et al., 2012; Sebastian & Allensworth, 2012; Ross & Cozzens, 2016). This transfer happens mutually in collaboration between teachers and other staff members.

In examining essential elements of school culture in current global contexts, we applied both factor analysis (Williams, 1978) and content analysis (Creswell & Plano Clark, 2007; Elo & Kyngäs, 2008; Lindgren et al., 2020). We conducted a factor analysis of the results of the principals' responses regarding the five themes of school leadership, school climate, innovation, teacher feedback and development, and job satisfaction. Thereafter, we conducted a content analysis of these factors by applying Schein's framework of three cultural levels: artifacts, espoused beliefs and values, and basic underlying assumptions (Schein, 1990, 2010). Due to a lack of studies about school culture, particularly in the current and changing global contexts, we believe that utilizing the more general cultural framework by Schein better enables us to uncover elements of school culture that principals report as essential.

School culture according to the five TALIS themes

According to Banerjee et al. (2017), the members of the school community sense that they are part of their school's culture. In general, the concept of school culture includes deep patterns of values, beliefs and tradition evolved over time. Beneath the consciousness of everyday life, there is a flow of thought, sentiment and activity in any community (Deal & Peterson, 1991). Culture at large is perceived through mission agreement, open communication, trust, collegial relationships, orientation toward learning, and sense of belonging (Schein, 2010). All these issues relate to the TALIS themes of school leadership, school climate, innovation, teacher feedback and development, and job satisfaction in terms of enjoyment of the work (Gamoran et al., 2005; Kruse & Louis, 2009; Leithwood et al., 2004; Wynn, 2019). Importantly, they enhance the kind of school culture that promotes everyone's academic growth as well as student learning (Berkowitz et al., 2017).

The TALIS data adds to the understanding of how principals perceive their identity and what they do; that is, what their role is, what functions they have in the school environment and society, and how they perceive the work of teachers. Next, we describe the five TALIS themes addressed in this study: school leadership, school climate, innovation, teacher feedback and development, and job satisfaction, respectively.

School leadership

The purpose of school leadership is to increase the capacity for academic growth and student learning throughout the entire school (Mayrowetz, 2008; Shava & Tlou, 2018). This involves expertise and interaction among a group of people who act in official and unofficial leadership roles (Bennett et al., 2003; Liu & Bellibas, 2018; Spillane, 2005). The TALIS conceptual framework particularly highlights the importance of instructional and distributed leadership (Ainley & Carstens, 2018) that we understand to belong to school leadership practices that affect the fluent functioning of the entire school.

Instructional leadership has been discussed for decades within educational research as one desired model for principals. It has been studied over 30 years and the definition of the concept varies according to contexts and purposes. However, although a broad agreement exists on the importance of instructional leadership, there is less consensus on what instructional leadership actually means (e.g. Boyce & Bowers, 2018; Horng & Loeb, 2010; Neumerski, 2013).

Instructional leadership is considered to be encouraging of improving productive classroom practices. While instructional leadership conveys the importance of keeping on teaching and learning at the forefront of decision making, it admonishes the principals to keep their eyes on the organization to make their schools work increasingly in students' favor and to enhance their learning (Leithwood et al., 2004). Existing research on instructional leadership mainly focuses on creating a shared sense of purpose and fostering the continuous improvement of the school. What is essential and concerns our study is that instructional leadership develops a school culture that aims at the improvement of teaching and learning (Bush, 2008; Hallinger, 2005; Hallinger et al., 2010; Southworth, 2002).

Instructional leadership is of particular interest for TALIS. It refers to developing high-quality instructional practices and implementing policies that support, for example,

student achievement, providing feedback on instruction, and modeling effective instruction (Ainley & Carstens, 2018). All of this indicates that an effective school needs a goal-oriented principal who focuses on the curriculum and instruction (Hallinger, 2003, 2005).

The other mode, distributed leadership, is included in the TALIS theme of school leadership (Ainley & Carstens, 2018). However, the use of the term ‘distributed leadership’ does not directly deal with distributed leadership as defined by, for example, Bolden (2011), or Spillane et al. (2001), or Mayrowetz (2008). In the TALIS conceptual framework, distributed contexts are typically brought about by the principals who instigate the distribution of leadership and administrative management (Ainley & Carstens, 2018).

The TALIS conceptual framework focuses more on interactions with other leaders, teachers, parents and students, as well as addressing making collaborative decisions and encouraging shared accountability for student learning (Ainley & Carstens, 2018; Hallinger & Heck, 2010; Spillane, 2006). In brief, school leadership that is distributed also paves the way for student learning and the academic growth of everyone involved in learning and teaching by shaping school culture in changing global and social contexts (Marzano et al., 2005; Robinson et al., 2008).

School climate

The conceptual framework of TALIS (Ainley & Carstens, 2018) emphasizes both school culture and school climate to influence teaching and learning. The concepts of school climate and culture come from different research traditions. School climate is typically viewed from a psychological and school culture from an anthropological perspective (Hoy et al., 1991; MacNeil et al., 2009). However, they are also often understood quite similarly (Ainley & Carstens, 2018). At times, the concepts of school climate and culture have been treated interchangeably.

In addition, to be similar or interchangeable, some scholars think that school culture *includes* climate, some the other way around (Buono et al., 1985; Kershner & McQuillan, 2016; Schein, 1990; Schoen & Teddlie, 2008; Van Houtte, 2005). For example, Schoen and Teddlie (2008) see school culture and climate as different levels of the same construct, and school climate as being a subset of the broader construct of school culture.

In this article, we understand school climate as a part of school culture (Schein, 1990, 2010), not seeing these as similar concepts or using them interchangeably. The aim of our study was to investigate school culture’s essential elements. Thus, we will exploit school climate as one area of school culture – beside school leadership, innovation, teacher feedback and development, and job satisfaction – in order to better understand the essential elements of school culture in global contexts through principals’ voices.

In the TALIS conceptual framework (Ainley & Carstens, 2018), the concept of school culture is used somewhat ‘loosely’ and undefined. Although the composition of the TALIS data encapsulate climate into one questionnaire cluster, it also includes the concept of culture. However, the questionnaire does not identify any school culture elements, which is the aim of our study. Accordingly, we treated the TALIS principal data representing school climate as a part of school culture and its main elements.

School climate is a somewhat abstract and contradictory concept and can be considered as a metaphor. ‘Climate’ belongs to the everyday language of educational leaders,

school personnel, and policymakers (Pickeral et al., 2009). Importantly, Schein (2010) explains that climate is the manifestation of the culture. He also clarifies that culture and leadership are 'two sides of the same coin in that principals first start the process of culture creation when they create groups and organizations' (Schein, 2010, p. 22).

Although school climate is an intangible concept (Thapa et al., 2013; Van Houtte, 2005), Thapa et al. (2013, p. 358) propose using the definition that the National School Climate Council has developed. We will utilize their definition of school climate because the TALIS data include several of the following mentioned concepts: 'School climate refers to patterns of people's experiences of school life; it reflects the norms, goals, values, interpersonal relationships, teaching, learning and leadership practices, as well as the organizational structures that comprise school life' (National School Climate Center: National School Climate Standards, 2007, p. 20).

It has been proven that school climate influences student learning and motivation to study (MacNeil et al., 2009). It is also generally accepted that a principal affects students' achievement more or less directly (Jones & Shindler, 2016; Ross & Cozzens, 2016; Tubin, 2011). Moreover, school climate and student achievement are tightly intertwined (Jones & Shindler, 2016; Meece et al., 2006; Paletta et al., 2017; Pellicer, 2003; Wilson et al., 2007). A positive school climate includes a shared sense of purpose, particularly in how principals can enable an honest and open climate. In addition, trust among the staff members relates to diverse organizational processes such as communication, collaboration, climate, organizational citizenship, collective efficacy, achievement, and effectiveness (Tschannen-Moran & Gareis, 2015; Tschannen-Moran & Hoy, 2000).

In this way, when there is a climate for discussion and appreciation among colleagues, the school staff can share a common set of beliefs about learning. The relationships between principals and the staff directly affect teachers' attitudes, which strongly define the school climate (Price, 2012; Tschannen-Moran, 2004) that shapes how the community members perceive themselves as contributors to the whole school. Schools with a climate of collegiality help teachers to resolve diverse issues more easily and enhance professional competence (Leithwood et al., 1998; Ma & MacMillan, 1999).

Innovation

In the conceptual framework of TALIS, innovation is seen to create a profitable school climate and help schools adapt to new changes (Ainley & Carstens, 2018). In schools, innovation can be estimated, for instance, via learning outcomes, teacher assessments, and student self-assessments. To achieve these goals, principals and teachers are expected to innovate practices of teaching and learning, as well as all other aspects of school organization. The main goal is to ensure the quality preparation of students for life (Serdyukov, 2017).

The conceptual framework of TALIS combines psychological and sociological perspectives with teacher innovativeness. These perspectives include both the individual teacher's innovativeness and an organizational component that reflects shared perceptions of teachers and principals. Hence, innovativeness is embedded in school culture at the teacher and principal levels as well as within professional learning communities (i.e. teacher teams). Collaboration between the principal and the teachers plays an important

role in creating a culture of innovation in schools and in terms of breaking down innovation barriers (Ainley & Carstens, 2018).

Principals' decision making is not sufficient as such for the development of teachers' intrinsic motivation, which manifests, for example, as innovations. The responsibility of influencing teachers' motivation belongs to the principal with respect to the development of the self-belief of teachers, which broadly implies a sense of control (Solansky, 2014). In addition, the principal's support is important for teachers to perceive their own empowerment and develop self-belief in their work role. This self-belief is referred to as psychological empowerment (Conger & Kanungo, 1988), which fosters innovation.

Teacher feedback and professional development

TALIS deals with teacher feedback and development as parts of a principals' duties. The ways in which different types of feedback affect teaching and learning are of particular interest in TALIS. Feedback from principals plays an important role also in in-service teacher education and instruction (Ainley & Carstens, 2018). However, according to Koonce et al. (2019), teachers often feel that they receive too little feedback.

The feedback given by the principal to the teachers can be understood as a part of the principal's evaluation process. Almy (2011), as well as Curtis and Wiener (2012), view evaluation as a process that can support the professional growth of all teachers by promoting self-reflection, establishing a common framework for analyzing instruction, and providing individualized feedback (e.g. Klassen & Tze, 2014). All of this has an impact on school culture through principals' evaluation process and feedback to teachers (Özdemir, 2020; Tuytens & Devos, 2017).

Combining professional development with feedback acknowledges teachers' connectedness to each other and to their role in their ongoing professional learning (Darling-Hammond et al., 2017). Damanik and Aldridge (2017) found that individual support from principals directly associates with teacher self-efficacy. Therefore, if principals act as instructional leaders, providing relevant and important support to teachers, then the teachers will positively internalize this information and implement it within their classroom. This kind of professional development provides a unique opportunity for teachers and principals to interact in a way that enhances teacher effectiveness and improves the school culture (Mireles-Rios & Becchio, 2018).

Job satisfaction

The conceptual framework of TALIS includes principals' job satisfaction, which directly affects school culture (Ainley & Carstens, 2018; Ross & Cozzens, 2016). Paletta et al. (2017) found that schools that have the highest leadership scores also have a greater degree of job satisfaction and higher levels of self-efficacy. Job satisfaction is also connected to student learning (e.g. Dicke et al., 2019). Furthermore, flexibility in the workplace creates job satisfaction, which in turn has a positive direct impact on school culture (Olsen & Huang, 2019; Skaalvik & Skaalvik, 2015).

Job satisfaction and school culture form a kind of two-way loop. On the one hand, school culture is related both to the principal's and teachers' job satisfaction (Aldridge & Fraser, 2016), while, on the other hand, job satisfaction within the work environment

defines the school's culture, including aspects such as relations among colleagues (Dicke et al., 2019; Liu & Bellibas, 2018). Consequently, principals' and teachers' job satisfaction are interrelated and mutually reinforcing. When principals focus on teachers' job satisfaction, teachers will place their focus on the students' success. In this way, job satisfaction plays a significant role in determining the experiences of teachers and students as well as the overall school culture (Babtiste, 2019; Dicke et al., 2019).

Applying Schein's model of organizational culture to TALIS themes

To be able to understand essential elements of school culture in global contexts and in relation to the aforementioned TALIS themes (school leadership, school climate, innovation, teacher feedback and development, and job satisfaction), we needed a proven theoretical framework. The five TALIS themes refer to different features of school culture. However, they do not provide a coherent and sound framework to be able to distinguish a school culture's essential elements in global contexts. Consequently, we followed Schein's idea (Schein, 2010) that school culture also includes symbols of culture (see Schein, 2010; Schoen & Teddlie, 2008).

Culture can be explained, according to Schein (1990, p. 111), as three levels: artifacts, espoused beliefs and values, and basic underlying assumptions. By the term 'level' Schein (2010) refers to the degree to which the cultural phenomenon is visible to the observer (Table 1). The levels are in dialog with each other. Thus, the levels interact with each other and cannot be easily distinguished: 'The essence of a culture lies in the pattern of basic underlying assumptions, and, after you understand those, you can easily understand artifacts as well as espoused beliefs and values', and the other way around (Schein, 2010, p. 32).

Artifacts include all of the phenomena that one can see, hear and feel (Schein, 2010) (Table 1). Artifacts merely consist of the visible products of school culture, such as the physical environment, language, technology, manners, narratives, displays of emotions, and observable habits (e.g. Cheung et al., 2011). Principals see artifacts from their own position and provide the day-to-day operating and working principles by which the members of the school guide their behavior. Espoused beliefs and values include ideals, goals, values, aspirations, ideologies and rationalizations (Table 1). They are a powerful determinant of individual and group behavior (Buono et al., 1985; Schein, 2010). Thus, shared beliefs and values knit the school community together and influence school culture. The third level in Schein model's is that of basic underlying assumptions (Table 1). Basic

Table 1. The three levels of culture according to Schein (2010).

Artifacts:
<ul style="list-style-type: none"> ● Visible and feelable structures and processes ● Observed behavior ● Difficult to decipher
Espoused beliefs and values:
<ul style="list-style-type: none"> ● Ideals, goals, values, aspirations ● Ideologies ● Rationalizations ● May or may not be congruent with behavior and other artifacts
Basic underlying assumptions:
<ul style="list-style-type: none"> ● Unconscious, taken-for-granted beliefs and values ● Determine behavior, perception, thought, and feeling

underlying assumptions are difficult to capture because they are unconscious and assumed yet define what one pays attention to and what things really mean (Schein, 2010).

We were particularly interested in the second and third level that Schein argues to be the basic foundation of culture. However, it must be borne in mind that the three levels are tightly connected together (Schein, 2010). Due to the levels' connectedness, we also had to take artifacts into account in order to understand espoused beliefs and values as well as underlying assumptions.

Each particular school's culture is unique, consisting of an objective and subjective dimension, including shared beliefs and expectations about school life. That is why our study utilized the voices of 5,839 principals from the TALIS data and is expected to uncover essential elements of global school culture.

The power of school culture comes about through the fact that basic underlying assumptions as well as espoused beliefs and values are shared. This means that principals cannot change the school culture alone, solely according to their own perspective, but a common ground for basic underlying assumptions as well as espoused beliefs and values must be established with other school members and students. Nonetheless, the principal represents the focus of the organizational structure. Therefore, we suggest that common ground can be identified through principals' voices as a representation of shared school culture.

In order to understand school culture in global contexts, interpreted according to principals' voices as obtained from the TALIS 2018 data, we established the following research question: What are the essential elements of school culture in global contexts, examined through Schein's model and interpreted through principals' voices, that emerge from the TALIS 2018 themes of school leadership, school climate, innovation, teacher feedback and development, and job satisfaction?

Method

Study context

TALIS is the first international series of surveys to focus on the learning environment and working conditions of teachers and principals in schools. It offers teachers and school principals the opportunity to provide their perspectives on school contexts. The first cycle of the TALIS project, conducted in 2008, involved 24 countries, and the second cycle in 2013 included 34 countries and economies. Data used in this article come from the third cycle in 2018, bringing the number of participants to 48 countries and economies. TALIS 2018 covers the experience of principals, such as their role in school policy implementation, their concerns about school resources, and their own professional development and training.

TALIS uses questionnaires administered to teachers and their school principals in order to gather data. The main goal is to generate internationally comparable information relevant to developing policies focused on school leaders and teachers, with an emphasis on those aspects that affect student learning. TALIS requires all participating countries to conduct the core survey for the lower secondary level of education (ISCED level 2, as classified by the International Standard Classification of Education (ISCED, UNESCO Institute for Statistics, 2012), the international target population being teachers and principals of lower secondary mainstream schools. The target sample size was

approximately 200 schools per country (depending on the country), with approximately 20 teachers and one principal from each school. However, in TALIS 2018, a total of 15 countries and economies also surveyed teachers in their primary schools (ISCED level 1), 11 countries and economies did so in their upper secondary schools (ISCED level 3), and 9 countries conducted the survey in schools that participated in the 2018 Programme for International Student Assessment (PISA) through the TALIS – PISA link option. In the present study, we concentrated on the data of principals at the ISCED level 2 schools.

The main survey (ISCED level 2) was conducted in 31 OECD countries and economies: Canada (Alberta), Australia, Austria, Belgium (the Flemish Community of Belgium also participated as a subgroup of Belgium), Chile, Colombia, the Czech Republic, Denmark, England (United Kingdom), Estonia, Finland, France, Hungary, Iceland, Israel, Italy, Japan, South Korea, Latvia, Lithuania, Mexico, the Netherlands, New Zealand, Norway, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Turkey, and the United States of America; as well as in 17 ‘partner’ countries: Brazil, Bulgaria, Argentina (Buenos Aires), Croatia, Cyprus, Georgia, Kazakhstan, Malta, Romania, Russia, Saudi Arabia, China (Shanghai), Singapore, South Africa, Chinese Taipei, the United Arab Emirates, and Vietnam.

Data

As mentioned, we employed the TALIS 2018 data set on principals in lower secondary mainstream schools. Of the participating countries and economies, the data of Iceland were not available for public use due to data protection reasons. Therefore, our data consisted of principals in 47 countries or economies. The total number of observations was $n = 9,247$. However, due to missing data, the eventual sample size for the statistical analyses was smaller ($n = 5,839$). In particular, a large share of respondents had not answered question 36 about the importance of mentoring (see [Table 2](#)). This was a consequence of the questionnaire structure: if there was no mentoring program in the respondent’s school, the respondent was asked to skip this question.

The items that were accepted and selected from the TALIS 2018 principal data for our analysis are presented in [Table 2](#). In addition, the questionnaire constructs and themes describing TALIS (Ainley & Carstens, 2018) have also been added to [Table 2](#).

Data analysis

We analyzed the interrelations of the selected 30 items through factor analysis. The main approach was confirmatory factor analysis (which eventually led us to a second-order factor model), yet exploratory analyses were also exercised in the initial stages, in order to gain clues about relevant factors of the items’ correlation structure. The input material for the factor analyses was the Pearson correlation matrix of the items. The confirmatory factor models were estimated accordingly with maximum likelihood, while the adopted method for the exploratory analyses involved principal axis factoring with Promax rotation. The number of observations in our analyses was $n = 5,839$.

We performed the statistical calculations using the CALIS and FACTOR procedures of the SAS® 9.4 software. We assessed the goodness-of-fit of the confirmatory factor models with several well-known measures: goodness-of-fit index, GFI (Jöreskog &

Table 2. TALIS questions, constructs, themes and items as analysis basis.

Question 22: Please indicate how frequently you engaged in the following activities in this school during the last 12 months.

1 = Never or rarely, 2 = Sometimes, 3 = Often, 4 = Very often

Construct: Principals' responsibilities/activities Theme: School leadership

Theme: School leadership

Items:

- b) I observed instruction in the classroom.
- c) I provided feedback to teachers based on my observations.
- d) I took actions to support cooperation among teachers to develop new teaching practices.
- e) I took actions to ensure that teachers take responsibility for improving their teaching skills.
- f) I took actions to ensure that teachers feel responsible for their students' learning outcomes.

Question 26: How strongly do you agree or disagree with these statements when applied to this school?

1 = Strongly disagree, 2 = Disagree, 3 = Agree, 4 = Strongly agree

Construct: School climate dimensions

Theme: School climate/School leadership

Items:

- a) This school provides staff with opportunities to actively participate in school decisions.
- d) This school has a culture of shared responsibility for school issues.
- e) I make the important decisions on my own.
- f) There is a collaborative school culture, which is characterized by mutual support.
- g) The school staff share a common set of beliefs about teaching and learning.
- h) The school staff enforces rules for student behavior consistently throughout the school.
- i) This school encourages staff to lead new initiatives.
- j) This school encourages staff to lead new initiatives.
- k) Teachers and students usually get on well with each other.
- l) Teachers can rely on each other.

Question 27: To what extent do the following statements apply to this school?

1 = Not at all, 2 = To some extent, 3 = Quite a bit, 4 = A lot

Construct: Academic and community dimensions of school climate

Theme: School climate

Items:

- a) Teachers understand the school's curricular goals.
- b) Teachers succeed in implementing the school's curriculum.
- c) Teachers hold high expectations for student achievement.

Question 28: How strongly do you agree or disagree with the following statements?

1 = Strongly disagree, 2 = Disagree, 3 = Agree, 4 = Strongly agree

Construct: Organizational innovativeness

Theme: Innovation/School climate

Items:

- a) This school quickly identifies the need to do things differently.
- b) This school quickly responds to changes when needed.
- c) This school readily accepts new ideas.
- d) This school makes assistance readily available for the development of new ideas.

Question 36: How would you generally rate the importance of mentoring for teachers and schools?

1 = Not important at all, 2 = Of low importance, 3 = Of moderate importance, 4 = Of high importance

Construct: Mentoring importance

Theme: Teacher feedback and development

Items:

- a) To improve teachers' pedagogical competence.
- b) To strengthen teachers' professional identity.
- c) To improve teachers' collaboration with colleagues.
- d) To support less experienced teachers in their teaching.
- e) To expand teachers' main subject(s) knowledge.

Question 44: We would like to know how you generally feel about your job. How strongly do you agree or disagree with the following statements?

1 = Strongly disagree, 2 = Disagree, 3 = Agree, 4 = Strongly agree

Construct: Satisfaction with the profession and the school

Theme: Job satisfaction

Items:

- e) I regret that I decided to become a principal.
- g) I would recommend this school as a good place to work.
- i) I am satisfied with my performance in this school.

(Continued)

Table 2. (Continued).

Question 45: How strongly do you agree or disagree with the following statements?

1 = Strongly disagree, 2 = Disagree, 3 = Agree, 4 = Strongly agree

Construct: Satisfaction with school supports

Theme: Job satisfaction

Item:

c) I am satisfied with the support that I receive from the staff in this school.

Sörbom, 1989); adjusted goodness-of-fit index, AGFI (Mulaik et al., 1989); comparative fit index, CFI (Bentler, 1995); standardized root mean square residual, SRMR; and root mean square error approximation, RMSEA (Steiger & Lind, 1980). The usual rule of thumb states that the model fit is acceptable when the GFI, AGFI and CFI have values above 0.90, and excellent when these indices exceed 0.95. In addition, the excellent fit requires that the RMSEA be less than 0.05, while values less than 0.08 are deemed acceptable (Brown, 2006). Finally, the SRMR should be no larger than 0.08.

The factors found were based on the TALIS 2018 data and principals' voices. However, we needed a tool with which we could connect the factors to essential elements of school culture. Therefore, we applied Schein's cultural model (Schein, 2010) and conducted a content analysis with the factors found (Creswell & Plano Clark, 2007; Elo & Kyngäs, 2008; Lindgren et al., 2020). In line with Zhang and Wildemuth (2009), we consider the results of the content analysis as the subjective understanding of the themes and important for the social reality when the content analysis reveals both depth and meaning in the participants' utterances. In our study, the social reality consists of school culture and its essential elements. The defining concepts of the content analysis are Schein's three levels: artifacts, espoused beliefs and values, and basic underlying assumptions (Table 1) (Schein, 2010).

The content and factor analyses were conducted simultaneously, during which process the names of the first-order and second-order factors were invented. The statistical calculations, such as correlations, standard errors, and R-Squared values, were also considered in the interpretation phase. The process of content analysis proceeded according to a deductive approach (Elo & Kyngäs, 2008) in aiming to discover Schein's cultural levels. We treated all the first-order factors one by one and examined what kind of survey items (Table 4) they consisted of. Thereafter, each item of the first-order factor was interpreted according to the levels in the Schein's model (Table 1). Table 3 shows the founded levels in order of importance. Each author first made their own analyses, after which they were discussed, and final interpretations were made.

Results and findings

Factors found from TALIS themes

The preliminary factor analyses suggested that the items that belong to the same question in the TALIS principal questionnaire tended to load on the same factor, but there were also some exceptions. These findings led us to consider a model of seven factors, which we named as follows: *Principal's responsibilities and activities*, *Improvement and strengthening teachers' professionalism*, *Collaboration and sharing in relationships*, *Ambition*, *Innovation*, *Principal's job satisfaction*, and *Principal's decision making*. Questions 22 (*Principal's responsibilities and activities*), 27 (*Ambition*), 28 (*Innovation*), and 36 (*Improvement and strengthening teachers'*

Table 3. An example of the content analysis process.

Second-order factors	First-order factors	Examples of the content of the factor's items	Correspondent Schein's level(s)	What an essential element of school culture?
Inner dynamism	Ambition	27a, b, c High expectations for students	Basic underlying assumptions	Relevant and central foundation of school culture
Inner dynamism	Principal's job satisfaction	44e, g, i, e Principal's performance and satisfaction	Basic underlying assumptions	Relevant and central foundation of school culture
Ensuring professionalism	Improvement and strengthening teachers' professionalism	36a, b, c, d, e Developing teachers' competence	Basic underlying assumptions	Relevant and central foundation of school culture
Inner dynamism	Collaboration and sharing in relationships	26a, d, f, g, h, i, j, k Shared responsibility and mutual respect	Espoused beliefs and values	Relevant to establish and create school culture
Inner dynamism	Innovation	28a, b, c, d School's adaptability to new situations	Espoused beliefs and values	Relevant to establish and create school culture
Ensuring professionalism	Principal's responsibilities and activities	22b, c, d, e, f To-do lists	Mainly artifacts	Important but not very relevant element for school culture
Inner dynamism	Principal's decision making	26e Principal decides on matters alone	Artifacts	Important but not very relevant element for school culture

professionalism) each corresponded to one factor; questions 44 and 45 (*Principal's job satisfaction*) combined into one factor; and question 26 split into two factors (*Collaboration and sharing in relationships* and *Principal's decision making*) (see Table 4).

Further, as we observed remarkable correlations (ranging from -0.13 to 0.64) between the seven factors, we decided to introduce a second-order factor model, where a number of upper-level factors explain the correlations between these seven lower-level factors (which, in turn, explain the correlations between the 30 items or indicator variables). We ended up with a model of two upper-level factors, where six out of the seven lower factors loaded on them, but one factor was isolated. According to the standard goodness-of-fit criteria, the fit of this model was very good: GFI = 0.963, AGFI = 0.956, CFI = 0.954, SRMR = 0.036, and RMSEA = 0.035. The second-order factors were named *Ensuring professionalism* and *Inner dynamism*. The first-order ('lower') part of our model, that is, the estimated seven-factor measurement model for the questionnaire items, is presented in Table 4. The second-order ('upper') part of the model is then presented graphically in Figure 1.

Table 4. The measurement part of the confirmatory second-order factor model for the TALIS questionnaire items representing school culture ($n = 5,839$). (Standard errors of the estimated factor loadings are given in parentheses.)

		R-squared
<i>Factor 1: Principal's responsibilities and activities</i>		
(22b) I observed instruction in the classroom.	0.48 (0.01)	0.23
(22c) I provided feedback to teachers based on my observations.	0.56 (0.01)	0.32
(22d) I took actions to support cooperation among teachers to develop new teaching practices.	0.77 (0.01)	0.58
(22e) I took actions to ensure that teachers take responsibility for improving their teaching skills.	0.74 (0.01)	0.55
(22f) I took actions to ensure that teachers feel responsible for their students' learning outcomes.	0.65 (0.01)	0.42
<i>Factor 2: Improvement and strengthening teachers' professionalism</i>		
(36a) To improve teachers' pedagogical competence is important.	0.69 (0.01)	0.48
(36b) To strengthen teachers' professional identity is important.	0.72 (0.01)	0.52
(36c) To improve teachers' collaboration with colleagues is important.	0.67 (0.01)	0.44
(36d) To support less experienced teachers in their teaching is important.	0.59 (0.01)	0.35
(36e) To expand teachers' main subject(s) knowledge is important.	0.62 (0.01)	0.39
<i>Factor 3: Collaboration and sharing in relationships</i>		
(26a) This school provides staff with opportunities to actively participate in school decisions.	0.46 (0.01)	0.21
(26d) This school has a culture of shared responsibility for school issues.	0.58 (0.01)	0.33
(26f) There is a collaborative school culture that is characterized by mutual support.	0.70 (0.01)	0.48
(26 g) The school staff share a common set of beliefs about teaching and learning.	0.66 (0.01)	0.44
(26 h) The school staff enforces rules for student behavior consistently throughout the school.	0.58 (0.01)	0.33
(26i) This school encourages staff to lead new initiatives.	0.62 (0.01)	0.38
(26j) Teachers and students usually get on well with each other.	0.55 (0.01)	0.31
(26k) Teachers can rely on each other.	0.64 (0.01)	0.41
<i>Factor 4: Ambition</i>		
(27a) Teachers understand the school's curricular goals.	0.75 (0.01)	0.56
(27b) Teachers succeed in implementing the school's curriculum.	0.80 (0.01)	0.64
(27c) Teachers hold high expectations for student achievement.	0.59 (0.01)	0.35
<i>Factor 5: Innovation</i>		
(28a) This school quickly identifies the need to do things differently.	0.75 (0.01)	0.56
(28b) This school quickly responds to changes when needed.	0.84 (0.01)	0.71
(28c) This school readily accepts new ideas.	0.70 (0.01)	0.48
(28d) This school makes assistance readily available for the development of new ideas.	0.70 (0.01)	0.49
<i>Factor 6: Principal's job satisfaction</i>		
(44e) I regret that I decided to become a principal.	0.54 (0.01)	0.29
(44 g) I would recommend this school as a good place to work.	0.59 (0.01)	0.34
(44i) I am satisfied with my performance in this school.	0.59 (0.01)	0.34
(45c) I am satisfied with the support that I receive from the staff in this school.	0.61 (0.01)	0.37
<i>Factor 7: Principal's decision making</i>		
(26e) I make the important decisions on my own.	0.85*	0.72

*Factor loading was fixed at 0.85.

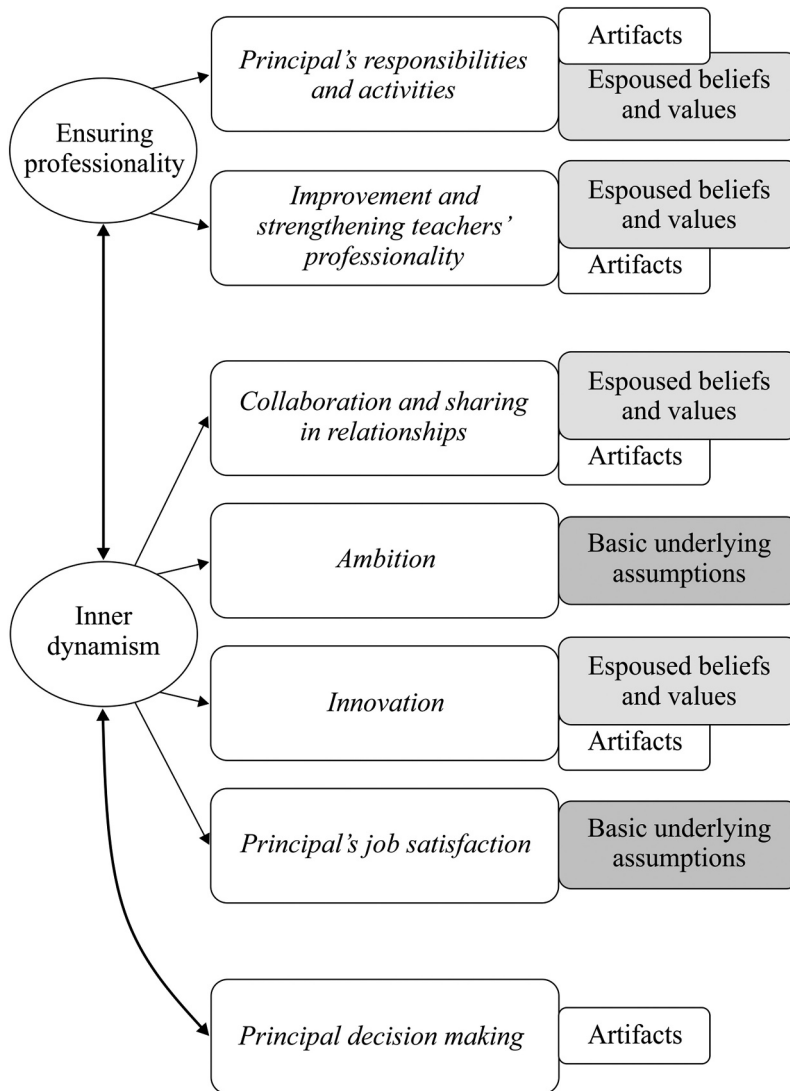


Figure 1. The second-order factor structure.

It is worth noting that for six pairs of items, the item errors were allowed to correlate. This clearly improved the model fit. These pairs were: 22b and 22c with error correlation 0.42; 22e and 22f with error correlation 0.20; 26 g and 26 h with error correlation 0.17; 26j and 26k with error correlation 0.24; 28c and 28d with error correlation 0.20; and 44e and 44 g with error correlation 0.25. The error correlations indicate that the common factors cannot fully explain all between-item correlations: certain items have more in common than the factor structure suggests. This, however, does not imply that the factor model is inappropriate.

As mentioned, most of the items group into factors that precisely match the questions in the TALIS questionnaire (Table 4). However, there are two exceptions. First, the selected items from questions 44 and 45 load on the same factor, which is understandable as both questions are related to job satisfaction, although from slightly differing

perspectives. Second, item 26e does not correlate with any other items considered but requires a specific factor (*Principal's decision making*) of its own. This suggests that school culture does not necessarily conflict with the principal's responsibility for decision making. Put in another way, a school may have a culture of shared responsibilities for several issues, but it is still the principal who has to make the important decisions.

Figure 1 shows the second-order factor structure of our model. It can be seen that two first-order factors, namely the *Principal's responsibilities and activities* and *Improvement and strengthening teachers' professionalism*, load together on one second-order factor, which we call *Ensuring professionalism*. The factors *Collaboration and sharing in relationships*, *Ambition*, *Innovation*, and the *Principal's job satisfaction* load on the other second-order factor named *Inner dynamism*. The two second-order factors are highly correlated, the estimated correlation being 0.66. We considered having a model of one general factor instead of two, but the two-factor model clearly showed a better fit to the data, and we also think that it enables a better interpretation of the results. Finally, it is noted that the first-order factor of the *Principal's decision making* does not load on either of the second-order factors. It has a small negative correlation (-0.13) with *Inner dynamism* but does not correlate with *Ensuring professionalism*. Again, this strengthens the conclusion that principals may have to make the important decisions on their own, regardless of the other aspects of school culture.

Factors connected to Schein's cultural model

When examining the first-order factors (*Principal's responsibilities and activities*, *Improvement and strengthening teachers' professionalism*, *Collaboration and sharing in relationships*, *Ambition*, *Innovation*, and *Principal's job satisfaction*) and Schein's three cultural levels, we found, through content analysis, that they were interconnected (Schein, 2010, pp. 23–32) (see Figure 2). The exception was the first-order factor *Principal's decision making*, which was outside this interconnectedness and is referred to later.

We interpreted the first-order factors according to Schein's cultural model. The most important and profound level is that of basic underlying assumptions as indicated in Figure 2 with a dark gray square. The second most significant level, espoused beliefs and values, is indicated with a light gray square. The least relevant level, artifacts, has no color in the figure. Some first-order factors seemed more relevant to school culture than others. In the Discussion section, we will treat them as essential elements of school culture in global contexts.

Factors explaining basic underlying assumptions

The strongest manifestation of basic underlying assumptions was found in the factors *Principal's job satisfaction* and *Ambition*, which are connected to the second-order factor of *Inner dynamism* (Figure 2). We realized that the other second-order factor, *Ensuring professionalism*, did not include basic underlying assumptions at all. These findings suggest that *Inner dynamism* could be crucial for school culture in global contexts.

Principal's job satisfaction is a kind of assumed belief and an emotional matter; that is to say, it represents how satisfied principals are with their own work and

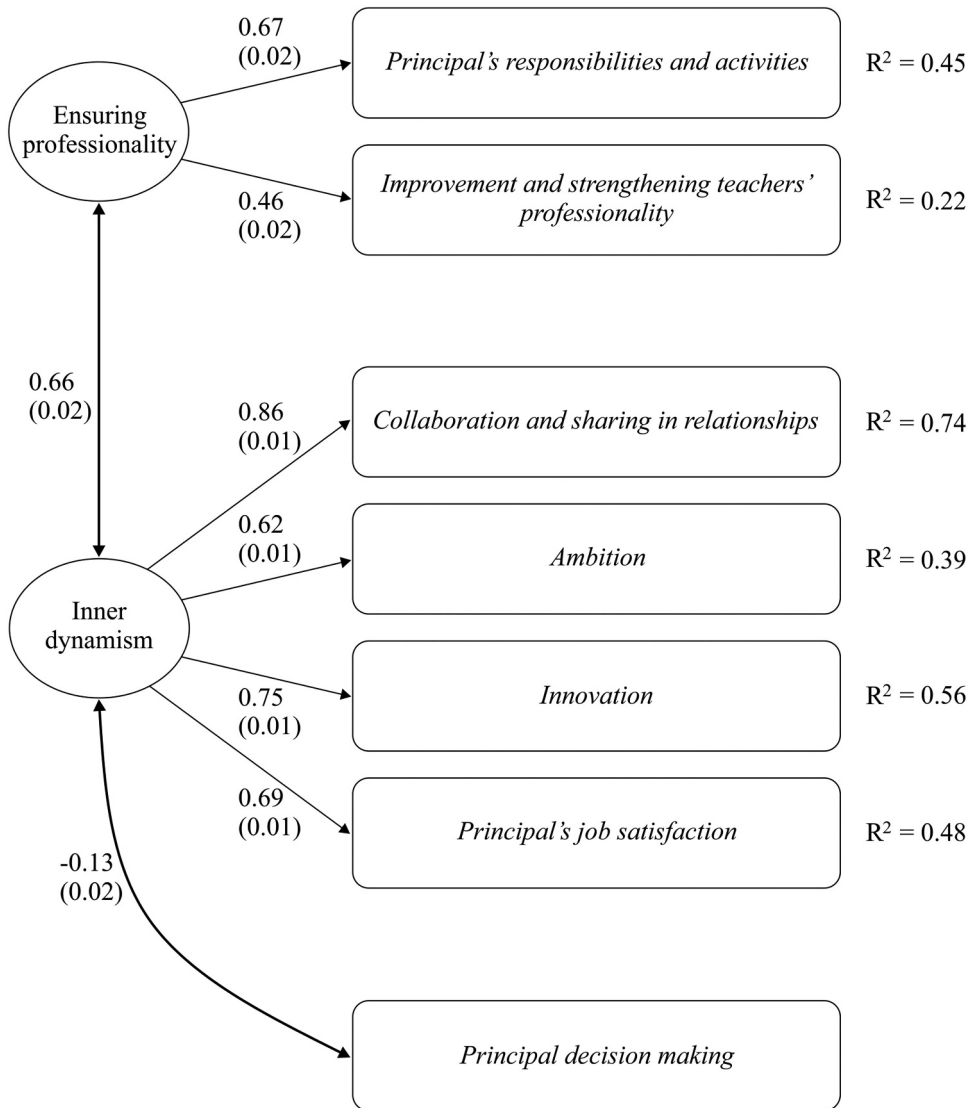


Figure 2. The first-order factors interpreted according to Schein's cultural model.

performance at school (e.g. Belias & Koustelios, 2014; Dicke et al., 2019; Kershner & McQuillan, 2016; Ross & Cozzens, 2016). When feeling job satisfaction, a principal can positively influence the school atmosphere and create an equitable education system. Job satisfaction is also connected to student learning. This, in turn, requires ambition.

Ambition is a strong desire associated to school culture and lies deep within it (Engels et al., 2008). *Ambition* has a connection, for example, to the school's curricular goals and, ultimately, to student achievement. However, *Ambition* can also be a challenging factor if there are tensions and contradictions between school staff members (Göksoy & Argon, 2016). One also has to remember that the power of school culture emerges from basic

underlying assumptions that are shared. Shared beliefs and values knit a school community together (Schein, 2010).

Factors explaining espoused beliefs and values

The second level of organizational culture, espoused beliefs and values, reflects rationalizations and aspirations (Schein, 2010). Espoused beliefs and values are found within both the second-order factors of *Ensuring professionalism* and *Inner dynamism* (Figure 2). This means *Improvement and strengthening teachers' professionalism*, *Collaboration and sharing in relationships*, and *Innovation* concern the *Principal's responsibilities and activities*.

Improving and strengthening teachers' professionalism is based on the school's common goals and values. It includes, for example, developing teachers' pedagogical competence (Guerriero, 2014). *Collaboration and sharing in relationships* refers to ideals like shared responsibility among school staff members and a common vision of teaching and learning (Leithwood et al., 2020). In addition, when the principal feels that there is interaction with the teachers and support is being received from the staff, this has an effect on the experience of job satisfaction. Evidently, it also depends on what kind of *Innovations* a school desires and accepts, which involves determining when to accept new ideas and how to quickly identify the need to do things differently or respond to changes (Shaari, 2021). All of these factors are emphasized in the work of a principal, including his or her goals and values, with respect to supporting teachers and ensuring students' learning outcomes.

Factors explaining artifacts

Artifacts, as the most superficial level of organizational culture, were closely related to *Principal's responsibilities and activities*. Artifacts are those actions that principals implement every day and these include their traditional duties and 'to-do' lists. In the background, responsibilities and activities affect other artifacts. They include different processes and structures that are aimed at supporting the work of teachers and ways of expanding teachers' subject knowledge for *Improvement and strengthening teachers' professionalism* (Horng et al., 2009). The factor *Collaboration and sharing in relationships* concerns rules for student behavior and ways for staff to participate in school decision making. This involves concrete aspects like new teaching methods, the use of fresh material, new ways of assessment, digitization, and issues related to technology, that is, *Innovation*.

The factor *Principal's decision making* related only to artifacts; it did not correlate to any other factors. However, a *Principal's decision making* might still affect issues in the background despite having no direct connection to the other factors (Figure 1).

Discussion

Our aim was to discover essential elements of school culture in global contexts interpreted through principals' voices. First, we conducted a factor analysis with five TALIS 2018 themes: school leadership, school climate, innovation, teacher feedback and development,

and job satisfaction. We identified such first-order factors as *Principal's responsibilities and activities*, *Improvement and strengthening teachers' professionalism*, *Collaboration and sharing in relationships*, *Ambition*, *Innovation*, *Principal's job satisfaction*, and *Principal's decision making*. We named the second-order factors *Ensuring professionalism* and *Inner dynamism*. Secondly, we conducted a content analysis where we connected the three levels of Schein's cultural model with the first-order factors identified. Thirdly, we examined the connections between the first-order and second-order factors.

We realized that the first-order factors had multiple connections with Schein's cultural levels. The most relevant first-order factors were those that were related to underlying basic assumptions and to espoused beliefs and values, proposed by Schein (2010) as the foundation of culture. We consider these first-order factors to be essential elements of school culture. Artifacts manifested in almost all first-order factors. However, we do not consider artifacts to be essential elements or the central foundation of school culture (Schein, 2010).

The second-order factor of *Inner dynamism* proved to be at the center of school culture, particularly in connection to the *Principal's job satisfaction* and to *Ambition*. We propose that if one wishes to influence school culture, then special attention should be paid to principals' job satisfaction and ambition issues. We further suggest that these essential elements are interconnected (see Figure 1). If principals enjoy their work, they are more likely to increase their school's inner dynamism by emphasizing their own and the whole staff's ambitions. According to our findings, *Collaboration and sharing in relationships* as well as *Innovation* enabled establishing school culture and added inner dynamism. In other words, if collaboration and relationships between staff members are improved, then they may take more innovative actions that can subsequently positively influence student learning and academic growth.

The second-order factor of *Ensuring professionalism* seemed to support schools' inner dynamism through interconnectedness, particularly with respect to *Improvement and strengthening teachers' professionalism* and regarding the *Principal's responsibilities and activities*. However, the first-order factor of the *Principal's responsibilities and activities* was based more on artifacts than were the others (Figure 2).

The different 'levels' of Schein's model (Table 1, Figure 2) do not mean that one level is 'better' than another. All essential elements that are connected to Schein's model can challenge the emergence of trust and balance in a school and influence culture. From the principal's point of view, giving feedback and expressing gratitude to the staff is crucial. This increases ambition, job satisfaction and innovation, and it makes a school a more meaningful place, which is important as both students and school staff spend a substantial portion of their time there (Smith et al., 2014).

As to the limitations of our study, we have to consider how well the TALIS themes and items could describe school culture in global contexts and whether our analyses captured essential elements of school culture. Particularly, the understanding and definition of distributed leadership did not capture all the perspectives of the current literature (Edwards & Bolden, 2022). Thus, we realize that the TALIS data do not provide a very comprehensive picture of school culture in global contexts. Another limitation is that the TALIS data collected from the principals we exploited did not consider the voices of teachers and students. Moreover, Schein's cultural model is not specifically intended for school contexts. However, its strength is that the model functions well on the general

organizational level that is important for global contexts and regarding the diversity of the principals and their differing work and duties.

A limitation relating to the implementation of the study is whether we were able to interpret TALIS items according to Schein's levels in a congruent way. In addition, our interpretations of the findings of the factor analysis were content based. This might result in not finding all essential elements of global school culture including limitations as regards restrictions of the TALIS themes. Furthermore, survey instruments can be less useful because they may prejudge the dimensions to be studied (Schein, 1990).

However, we argue that the TALIS data are one of the few sources that, in a way, touch upon essential elements of school culture. Although the TALIS data have their own weaknesses, they still provide a useful starting point for studying global school culture contexts in comparison to other, similar data. As to the limitations of Schein's model of organizational culture, we suggest that we were able to avoid some bias in taking account of more than one researcher's view in defining the level as triangulation. Consequently, we believe that by applying Schein's model to school organizations through principals' voices, we have at least gained a deeper knowledge of school culture in global contexts than would have been possible by focusing only on the results of the factor analysis. In sum, we believe that despite the weaknesses of the study mentioned above, Schein's model increases the credibility of the study, and that the TALIS data nevertheless provide sufficient information about school culture in global contexts.




Our main result suggests that there do not exist any separate essential elements of school culture, but rather that the elements heavily interact with each other. Our findings provide implications for future research regarding the importance of this interaction between the essential elements and their connections to the first- and second-order factors. Deeper understanding is also needed concerning principals' work and collaboration with other staff members as schools are increasingly challenged and changing in today's world. Another possible future study could be related to the elements' connection to student learning and academic growth.

In sum, our results indicate that a school's inner dynamism and ensuring professionalism are essential elements in establishing its culture. We further propose that our results can provide diverse schools with the means to evaluate their own culture in a more 'neutral' way, through the eyes of an objective observer. For example, schools could better reflect upon what they have that is worth preserving in their existing culture and what should be developed. It is also important for principals to understand that disruption or turbulence (Beabout, 2012) does not have to be seen only as an uncontrollable or unpredictable event but can be a primary option for implementing change. Particularly, this can be an asset and a promising future research topic. Finally, we argue that if the essential elements we introduced here are interconnected and seriously considered, then establishing a desirable school culture could be achieved more easily.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

The data that support the findings of this study are available via the OECD webpage ‘TALIS 2018 Data’: <https://www.oecd.org/education/talis/talis-2018-data.htm>.

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