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Unpacking school culture as a multidimensional construct: Validation of the School Culture Scale (SCS) in educational leadership contexts

Desvendando a cultura escolar como um construto multidimensional: Validação da Escala de Cultura Escolar (SCS) em contextos de liderança educacional

Desentrañando la cultura escolar como un constructo multidimensional: Validación de la Escala de Cultura Escolar (SCS) en contextos de liderazgo educativo

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Abstract
Understanding and measuring school culture remains a critical yet methodologically challenging task in educational research, given its multidimensional and context-dependent nature. This study contributes to this field by providing a comprehensive psychometric validation of the School Culture Scale (SCS) within the Greek educational context, while also addressing broader issues related to the cross-cultural applicability of measurement instruments. Drawing on data from school principals, the study employs both Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) to examine the scale's internal structure, alongside reliability and correlational analyses. The findings demonstrate strong internal consistency across all dimensions and provide empirical support for the original four-factor model, confirming the theoretical robustness of the instrument. At the same time, minor διαφοροποιήσεις in item loadings highlight the sensitivity of school culture constructs to contextual and institutional conditions. The positive intercorrelations among factors further reinforce the conceptualization of school culture as a dynamic and interconnected system shaping relationships, expectations, and learning processes within schools. Beyond its national scope, the study offers important contributions to the international literature by supporting the cross-cultural validity of the SCS while emphasizing the necessity of context-sensitive validation. The results position the SCS as a robust and adaptable tool for comparative research, as well as for informing leadership practices and school improvement efforts. Overall, the study advances both the methodological rigor and the theoretical understanding of school culture as a key driver of educational quality and organizational change.
Keywords: School culture; School Culture Scale (SCS); Psychometric validation; Cross-cultural validity; Educational leadership; Factor analysis; Organizational culture; School improvement; Comparative education; Measurement tools; Teaching.

Resumo
A compreensão e a mensuração da cultura escolar permanecem tarefas críticas, porém metodologicamente desafiadoras, na pesquisa educacional, dada sua natureza multidimensional e dependente do contexto. Este estudo contribui para esse campo ao fornecer uma validação psicométrica abrangente da Escala de Cultura Escolar (SCS) no contexto educacional grego, ao mesmo tempo em que aborda questões mais amplas relacionadas à aplicabilidade transcultural de instrumentos de medida. Com base em dados de diretores escolares, o estudo emprega tanto a Análise Fatorial Exploratória (AFE) quanto a Análise Fatorial Confirmatória (AFC) para examinar a estrutura interna da escala, juntamente com análises de confiabilidade e correlação. Os resultados demonstram forte consistência interna em todas as dimensões e oferecem suporte empírico ao modelo original de quatro fatores, confirmando a robustez teórica do instrumento. Ao mesmo tempo, pequenas variações nas cargas fatoriais evidenciam a sensibilidade dos construtos de cultura escolar às condições contextuais e institucionais. As intercorrelações positivas entre os fatores reforçam ainda mais a concepção da cultura escolar como um sistema dinâmico e interconectado, que molda relações, expectativas e processos de aprendizagem nas escolas. Para além de seu escopo nacional, o estudo oferece contribuições relevantes à literatura internacional ao sustentar a validade transcultural da SCS, ao mesmo tempo em que enfatiza a necessidade de validação sensível ao contexto. Os resultados posicionam a SCS como uma ferramenta robusta e adaptável tanto para pesquisas comparativas

quanto para subsidiar práticas de liderança e iniciativas de melhoria escolar. De modo geral, o estudo avança tanto o rigor metodológico quanto a compreensão teórica da cultura escolar como um fator-chave da qualidade educacional e da mudança organizacional.
Palavras-chave: Cultura escolar; Escala de Cultura Escolar (SCS); Validação psicométrica; Validade transcultural; Liderança educacional; Análise fatorial; Cultura organizacional; Melhoria escolar; Educação comparada; Instrumentos de medida; Ensino.

Resumen

La comprensión y medición de la cultura escolar sigue siendo una tarea crítica pero metodológicamente desafiante en la investigación educativa, dada su naturaleza multidimensional y dependiente del contexto. Este estudio contribuye a este campo al proporcionar una validación psicométrica integral de la Escala de Cultura Escolar (SCS) en el contexto educativo griego, al tiempo que aborda cuestiones más amplias relacionadas con la aplicabilidad transcultural de los instrumentos de medición. Basándose en datos de directores escolares, el estudio emplea tanto el Análisis Factorial Exploratorio (AFE) como el Análisis Factorial Confirmatorio (AFC) para examinar la estructura interna de la escala, junto con análisis de fiabilidad y correlación. Los hallazgos demuestran una alta consistencia interna en todas las dimensiones y proporcionan apoyo empírico al modelo original de cuatro factores, confirmando la solidez teórica del instrumento. Al mismo tiempo, pequeñas variaciones en las cargas factoriales ponen de manifiesto la sensibilidad de los constructos de cultura escolar a las condiciones contextuales e institucionales. Las intercorrelaciones positivas entre los factores refuerzan aún más la conceptualización de la cultura escolar como un sistema dinámico e interconectado que configura las relaciones, expectativas y procesos de aprendizaje dentro de las escuelas. Más allá de su alcance nacional, el estudio ofrece importantes contribuciones a la literatura internacional al respaldar la validez transcultural de la SCS, al tiempo que enfatiza la necesidad de una validación sensible al contexto. Los resultados posicionan la SCS como una herramienta sólida y adaptable tanto para la investigación comparativa como para la orientación de prácticas de liderazgo y esfuerzos de mejora escolar. En conjunto, el estudio avanza tanto el rigor metodológico como la comprensión teórica de la cultura escolar como un factor clave en la calidad educativa y el cambio organizacional.
Palabras clave: Cultura escolar; Escala de Cultura Escolar (SCS); Validación psicométrica; Validez transcultural; Liderazgo educativo; Análisis factorial; Cultura organizacional; Mejora escolar; Educación comparada; Instrumentos de medición; Enseñanza.

1. Introduction

School culture has long been recognized as one of the most influential yet complex elements shaping the functioning and effectiveness of educational organizations. Beyond formal structures and policies, schools operate through shared systems of values, beliefs, expectations, and everyday practices that guide the behavior of teachers, leaders, students, and the wider community. These collective norms form what scholars describe as school culture, a dynamic framework that influences how teaching and learning are organized, how relationships are constructed within the school community, and how schools respond to change and reform (Vlachou & Tsirantonaki, 2023; Carrington, 2022). As a result, school culture has increasingly been positioned at the center of discussions on school effectiveness, improvement, and organizational development.

A positive and supportive school culture has been associated with a wide range of educational outcomes. Research has shown that collaborative and trust-based school environments contribute to higher levels of teacher motivation, professional learning, and instructional innovation (Ainscow et al., 2006; Graham, 2020). In such environments, teachers are more likely to engage in reflective practice, share pedagogical knowledge, and develop collective responsibility for student learning. At the same time, students benefit from learning environments characterized by participation, belonging, and high academic expectations. Consequently, understanding the processes through which school cultures are formed, maintained, and transformed has become a key priority for educational research and policy.

Within this context, school leadership is widely considered a central factor influencing the development and sustainability of school culture. School principals play a critical role in shaping the organizational climate and guiding the collective vision of the school community. Through their leadership practices, principals influence how values such as collaboration, trust, professional responsibility, and equity are interpreted and enacted within everyday school life (DeMatthews et al., 2020; Oskarsdottir et al., 2020). Leadership is therefore not limited to administrative coordination but extends to the cultivation of shared beliefs and practices that shape the identity and direction of the school as an organization.

Empirical studies consistently highlight that leadership practices significantly affect the establishment of school cultures that support professional collaboration, innovation, and collective engagement. Principals who promote participatory decision-making, encourage professional dialogue among teachers, and articulate a shared vision for the school can contribute to the development of strong organizational cultures that sustain educational improvement (Carrington, 2022; Cohen, 2015). In this sense, leadership and school culture are deeply interconnected processes, with leadership practices shaping cultural norms while cultural conditions simultaneously influence leadership effectiveness.

The increasing recognition of the importance of school culture has also drawn attention to the need for reliable and valid measurement tools capable of capturing this complex construct. School culture is inherently multidimensional and often difficult to measure empirically because it encompasses both observable practices and deeply embedded value systems within educational organizations. Consequently, the development and validation of instruments that can accurately assess school culture has become essential for both research and practice. Valid measurement tools allow researchers to examine the relationships between leadership practices, organizational environments, and educational outcomes, while also enabling school leaders and policymakers to identify areas for improvement and development within schools.

One instrument developed for this purpose is the School Culture Scale (SCS) by Higgins-D'Alessandro and Sadh (1998), which aims to capture key dimensions of organizational culture within schools, such as collaboration among teachers, shared values, leadership support, and collective responsibility within the school community. The scale has been used in several international studies as a tool for examining the cultural characteristics of schools and their relationship with leadership practices and school improvement processes. Through its multidimensional structure, the instrument provides a framework for understanding how cultural dynamics shape everyday practices within educational organizations.

Despite its growing use in international research, the School Culture Scale (SCS) has not yet been systematically validated within the Greek educational context. This represents an important gap in the literature, as the transferability of measurement tools across different educational systems cannot be assumed without empirical examination. Educational systems differ in their institutional structures, leadership practices, and cultural expectations, which may influence how school culture is perceived and experienced within schools. The Greek educational system, in particular, presents unique organizational characteristics that may shape the dynamics of school culture in ways that differ from other contexts.

The validation of the School Culture Scale within the Greek context is therefore necessary to ensure that the instrument reliably captures the cultural dimensions of Greek schools and can be used confidently in future research. Establishing the psychometric properties of the scale will contribute to the development of more robust empirical research on school culture and leadership within the Greek educational system, while also providing a useful diagnostic tool for educational practitioners and policymakers.

Against this background, the present study aims to examine the psychometric properties of the School Culture Scale (SCS) in the Greek educational context. Specifically, the study seeks to evaluate the validity and reliability of the scale and to determine whether its factor structure is supported within a sample of Greek educators. By providing empirical evidence on the applicability of the instrument, the study aims to contribute to the growing body of research on school culture and to support future investigations into the relationship between leadership practices and organizational dynamics in schools.

Beyond its methodological contribution, this study also holds broader theoretical and practical significance for educational research. By validating the School Culture Scale within the Greek educational context, the study contributes to the growing international literature examining how organizational culture operates within schools and how it relates to leadership practices and educational improvement processes. Reliable measurement tools are essential for advancing research in this field, as they allow scholars to systematically investigate the complex relationships between leadership, organizational dynamics, and school effectiveness. Furthermore, the availability of a validated instrument for assessing school culture in Greek schools may

support future empirical studies exploring issues such as teacher collaboration, leadership practices, and the development of supportive learning environments. At a practical level, the scale may also serve as a diagnostic tool for school leaders and policymakers seeking to better understand the cultural dynamics of schools and to design interventions that foster more collaborative, reflective, and effective educational communities.

Aim of the study

The main aim of this study is to validate the School Culture Scale (SCS) within the Greek educational context by examining its psychometric properties among Greek educators. In particular, the study seeks to assess the reliability and construct validity of the scale and to explore whether its proposed factor structure is supported in a Greek sample.

Research questions

1. To address this aim, the study is guided by the following research questions:
2. What are the psychometric properties of the School Culture Scale (SCS) when applied to a sample of Greek educators?
3. Does the proposed factor structure of the School Culture Scale adequately fit the data in the Greek educational context?
4. Is the School Culture Scale a reliable and valid instrument for measuring school culture in Greek schools?

2. Theoretical background

Conceptualizing school culture

School culture has emerged as a central concept in educational research, as it provides a framework for understanding how shared beliefs, values, and norms shape everyday practices within educational organizations. Drawing from the broader field of organizational theory, culture is often described as the system of meanings that members of an organization collectively construct and reproduce through their interactions, routines, and institutional practices (Schein, 2010). Within schools, these shared understandings influence how teachers collaborate, how students are supported, and how learning processes are structured.

According to Schein's (2010) influential model of organizational culture, culture operates at multiple levels, ranging from observable practices and rituals to deeply embedded assumptions that guide behavior within an organization. At the most visible level, culture is expressed through artifacts such as school traditions, communication patterns, and institutional routines. At deeper levels, culture encompasses shared values and underlying assumptions about teaching, learning, authority, and student ability. These underlying beliefs often remain implicit but significantly shape how educational actors interpret challenges and make decisions within the school environment.

Building on this organizational perspective, scholars in educational leadership have conceptualized school culture as the set of shared norms, values, traditions, and relationships that characterize the social and professional life of a school (Deal & Peterson, 2016). School culture is reflected in the expectations that teachers hold for their students, the ways educators collaborate with one another, and the patterns of interaction that define relationships among members of the school community. As such, culture functions as an invisible but powerful force that influences how schools operate and how educational goals are pursued.

Research has consistently demonstrated that school culture plays a significant role in shaping the learning environment experienced by both students and teachers. Positive school cultures are often characterized by trust, collaboration, shared responsibility, and high expectations for student learning (Graham, 2020; Carrington, 2022). In such environments, teachers are

more likely to engage in professional dialogue, exchange pedagogical knowledge, and work collectively to address instructional challenges. These collaborative dynamics contribute to the development of professional learning communities that support continuous improvement within schools.

School culture also influences the relational dimensions of schooling, particularly the quality of interactions between teachers and students. Supportive and inclusive cultural environments promote stronger relationships, greater student engagement, and a sense of belonging within the school community (Ainscow et al., 2006). When students perceive that their school values respect, participation, and fairness, they are more likely to feel connected to the learning process and to develop positive attitudes toward education.

Another important dimension of school culture concerns the expectations that educators hold regarding student learning and achievement. Teacher expectations are not formed in isolation but are embedded within the broader cultural context of the school. Schools characterized by strong cultures of academic optimism tend to promote high expectations for all students while simultaneously providing the support necessary for students to succeed (Cohen, 2015). Conversely, cultures marked by low expectations or deficit perspectives can reproduce inequalities and limit students' educational opportunities.

Closely related to the concept of school culture is the notion of school climate, which refers more specifically to the perceptions and experiences of members of the school community regarding the social, emotional, and organizational environment of the school (Carrington, 2022). While the two concepts are often used interchangeably, school climate is generally understood as the more observable and measurable manifestation of the deeper cultural structures that shape everyday interactions within schools. In this sense, school climate can be viewed as an expression of the broader cultural patterns that characterize a school organization.

Overall, school culture represents a foundational element in understanding how schools function as social institutions. It shapes relationships among members of the school community, influences pedagogical practices, and contributes to the development of learning environments that either support or hinder educational success. Consequently, examining the cultural dynamics of schools has become a key priority for researchers seeking to understand the organizational conditions that promote effective and equitable educational practices.

School leadership and the development of school culture

School leadership is widely acknowledged as a central factor in shaping and transforming school culture. Rather than operating as a purely administrative function, leadership influences the values, norms, relationships, and practices that define everyday life within schools. The ways in which leaders organize work, distribute authority, articulate goals, and interact with staff contribute directly to the construction of school culture as a shared social reality (Hallinger, 2018; Robinson et al., 2008). Consequently, different models of leadership are associated with distinct cultural patterns, reflecting varying assumptions about power, collaboration, and the purpose of education.

Instructional leadership (IL) represents one of the most established approaches to school leadership, emphasizing the principal's role in guiding teaching and learning processes. Rooted in the effective schools movement, instructional leadership focuses on curriculum coordination, monitoring of teaching practices, and the alignment of school activities with academic goals (Hallinger & Murphy, 1985). Empirical evidence suggests that instructional leadership can contribute to the development of coherent and academically focused school cultures, particularly by promoting shared expectations regarding teaching quality and student achievement (Robinson et al., 2008). However, critics argue that its emphasis on supervision and accountability may reinforce hierarchical structures and limit teacher autonomy, potentially leading to cultures characterized by compliance rather than collaboration (Hallinger, 2018).

In contrast, distributed leadership (DL) conceptualizes leadership as a collective practice that emerges through the

interactions of multiple actors within the school (Spillane, 2005). From this perspective, leadership is not confined to formal roles but is distributed across teachers, teams, and organizational routines. Distributed leadership has been associated with the development of collaborative school cultures, as it encourages shared decision-making, professional dialogue, and collective responsibility for school improvement. Research indicates that such participatory structures can strengthen trust and mutual respect among staff, thereby fostering more inclusive and supportive organizational environments (Liu et al., 2020). Nevertheless, critical perspectives caution that the distribution of leadership does not automatically ensure equity, as existing power relations may persist or even be reinforced within ostensibly participatory structures (Harris et al., 2007).

Transformational leadership (TL) offers another influential framework, focusing on the ability of leaders to inspire and motivate members of the school community through a shared vision, intellectual stimulation, and individualized support (Leithwood & Jantzi, 2006). This approach is closely linked to the development of school cultures characterized by commitment, innovation, and collective purpose. By fostering a sense of shared mission and encouraging professional growth, transformational leaders can contribute to environments in which teachers feel empowered to engage in reflective practice and organizational change. However, the emphasis on vision and inspiration has also been critiqued for potentially masking structural inequalities or promoting overly idealized narratives of change that overlook the material constraints faced by schools (Fullan, 2014).

More recent approaches have sought to integrate ethical and social justice perspectives into the study of school leadership. Ethical leadership emphasizes the moral responsibilities of school leaders in fostering cultures of care, respect, and fairness (Starratt, 2004), while leadership for social justice highlights the need to challenge inequities and promote inclusive participation within school communities (Furman, 2012). These perspectives position school culture as a site of ongoing negotiation, where issues of power, voice, and representation are continuously contested. Leaders operating within this framework are expected not only to support organizational effectiveness but also to critically examine whose values are privileged within the school and whose voices may be marginalized.

Drawing on critical scholarship, particularly the work of Slee (2018), school leadership can also be understood as embedded within broader socio-political contexts that shape educational priorities and practices. Slee (2018) critiques the ways in which dominant policy discourses—often influenced by neoliberal logics of accountability and performance—can constrain the development of genuinely inclusive and democratic school cultures. From this perspective, leadership is not neutral but inherently political, as it involves decisions about inclusion, exclusion, and the distribution of opportunities within schools. Consequently, the development of school culture cannot be separated from broader questions of equity, power, and social justice.

Across these different models, a common theme emerges: school leadership plays a crucial role in shaping the cultural conditions under which teaching and learning take place. Whether through the establishment of shared goals, the distribution of responsibilities, or the promotion of ethical values, leadership practices influence how members of the school community relate to one another and how they engage with educational processes. At the same time, school culture is not simply imposed by leaders but co-constructed through interactions among all members of the school community, highlighting the reciprocal relationship between leadership and culture.

Overall, understanding the relationship between leadership and school culture requires moving beyond simplistic or one-dimensional models. Instead, it calls for a nuanced perspective that recognizes the coexistence of multiple leadership practices and their differential impact on organizational life. By examining how different leadership approaches shape cultural norms, relationships, and expectations within schools, researchers can gain deeper insight into the organizational dynamics that support or hinder educational improvement.

Measuring school culture

The growing emphasis on school culture as a key factor in educational effectiveness, inclusion, and organizational

development has intensified the need for robust and empirically grounded measurement tools. Despite its recognized importance, school culture remains a complex, dynamic, and multidimensional construct that is not easily captured through direct observation or simple indicators. As noted by Schein (2010), school culture encompasses deeply embedded values, beliefs, norms, and relational patterns that operate across both visible and implicit levels within educational organizations. This complexity creates significant methodological challenges for researchers attempting to systematically examine its structure, functions, and impact.

Contemporary research further highlights that school culture should not be understood as a static organizational attribute, but rather as a dynamic and interactive process shaped by leadership practices, institutional structures, and broader socio-political conditions (Ainscow et al., 2024; DeMatthews et al., 2020; Oskarsdottir et al., 2020; Tsirantonaki & Vlachou, 2024). In this sense, the measurement of school culture must account not only for internal organizational dynamics but also for the ways in which cultural norms are negotiated, reproduced, and transformed within evolving educational contexts. This is particularly important in relation to inclusive education, where school culture plays a central role in mediating participation, equity, and access to learning opportunities (Florian & Spratt, 2013; Nadeem, 2024).

In response to these challenges, a range of instruments has been developed to operationalize and measure school culture in empirical research. These tools aim to translate abstract cultural dimensions into measurable variables, thereby enabling the systematic investigation of relationships between school culture, leadership practices, and educational outcomes. However, the validity and reliability of such instruments remain critical concerns, as inadequately validated tools may fail to capture the underlying cultural dynamics of schools or may oversimplify complex social processes (Gruenert & Whitaker, 2021; Morris et al., 2020).

One widely used instrument is the School Culture Scale (SCS), originally proposed by Higgins-D'Alessandro and Sadh (1998). The SCS was designed to assess key dimensions of school culture through a structured and multidimensional framework, focusing on interpersonal relationships, shared norms, collective responsibility, and the overall social environment of the school. The scale reflects the understanding of school culture as a socially constructed phenomenon emerging through interactions among members of the school community (Dono-Koulouris & Martino, 2019; Hoy & Miskel, 2005).

The SCS is typically conceptualized as comprising four core factors that capture distinct but interrelated dimensions of school culture. These dimensions are associated with patterns of collaboration among teachers, shared expectations and values, the quality of interpersonal relationships, and the degree of organizational support and cohesion. Such dimensions align with broader theoretical perspectives emphasizing that school culture constitutes the core of educational functioning, influencing teaching practices, student engagement, and overall school effectiveness (Deal & Peterson, 2016; Gruenert & Whitaker, 2021).

At the same time, contemporary literature emphasizes that school culture is deeply intertwined with issues of equity, inclusion, and social justice. A growing body of research highlights the importance of adopting intersectional and critical perspectives when examining school culture, taking into account how multiple dimensions of inequality—such as gender, socioeconomic status, disability, and cultural background—interact within educational settings (Slee, 2011; Shakespeare, 2013; Allan, 2023). From this perspective, measuring school culture is not merely a technical process but also a critical endeavor that can reveal underlying power relations and mechanisms of inclusion or exclusion within schools (Booth, 2018; Slee, 2018).

Furthermore, recent approaches to inclusive and culturally sustaining pedagogy underscore the need for measurement tools that capture not only organizational cohesion but also the extent to which schools actively promote diversity, participation, and student voice (Paris & Alim, 2017; Goodley et al., 2019; Pantic & Florian, 2015). In this context, school culture is increasingly understood as a transformative space where inclusive values, collaborative practices, and socially just educational approaches are enacted and negotiated.

Previous empirical studies employing the SCS have reported satisfactory psychometric properties, supporting its use as a reliable and valid instrument across different educational contexts. Evidence suggests that the scale demonstrates acceptable

levels of internal consistency and construct validity, while its factor structure aligns with theoretical conceptualizations of school culture as a multidimensional construct. Nevertheless, the applicability of the SCS cannot be assumed across different cultural and institutional contexts without empirical validation, as educational systems differ in their organizational structures, leadership practices, and cultural expectations (Carrington, 2022; Graham, 2020).

The need for context-specific validation is particularly critical in light of research emphasizing that broader educational policies and societal norms are ultimately reflected in the everyday practices, relationships, and expectations within schools (Booth, 2018; Slee, 2011). In other words, school culture functions as the micro-level arena where macro-level educational reforms are interpreted, implemented, or even resisted. Consequently, instruments developed in one context may not fully capture the meanings and lived experiences of school culture in another.

In the Greek educational context, research on school culture has expanded in recent years; however, there remains a limited availability of validated instruments capable of capturing this construct in a systematic and psychometrically robust manner. This gap restricts the ability of researchers to conduct empirical studies examining the interplay between school culture, leadership practices, and educational outcomes, while also limiting the capacity of practitioners and policymakers to implement data-informed interventions (DeMatthews et al., 2020; Oskarsdottir et al., 2020).

Validating the School Culture Scale within the Greek context therefore represents a crucial step toward addressing this gap. Establishing the reliability and validity of the SCS will not only strengthen the methodological foundations of research on school culture but also provide a practical and diagnostically valuable tool for assessing organizational dynamics within schools. Such a tool can support future research exploring leadership, inclusion, and school improvement processes, while also contributing to the development of more equitable, collaborative, and responsive educational environments in line with contemporary international priorities.

3. Methodology

An experimental, field-based study was conducted using a quantitative approach (Pereira et al., 2018; Risemberg et al., 2026) using a Likert scale to convert qualitative values into quantitative ones, and employing descriptive statistics with data classes (by school level, length of time in school management, gender, age group, etc.), and using absolute frequency values in quantity and relative percentage frequency (Shitsuka et al., 2014) and statistical analysis (Costa Neto & Bekman, 2009).

Participants

The study sample consisted of school principals from the Greek educational system who participated in the validation of the School Culture Scale (SCS). Two independent samples were used for the purposes of the analysis, following established recommendations for factor analysis.

The sample used for the Exploratory Factor Analysis (EFA) included 250 participants, while the sample used for the Confirmatory Factor Analysis (CFA) consisted of 150 participants. These sample sizes are considered adequate, as they exceed the commonly recommended ratio of 5 to 10 participants per item for factor analytic procedures (Costello & Osborne, 2005).

All participants were school principals who voluntarily participated in the study after being informed about its purpose. Informed consent was obtained from all participants prior to data collection. All respondents were fluent in the Greek language and were therefore able to fully comprehend the content of the questionnaire.

With regard to the CFA sample (N = 150), the majority of participants were working in primary education (72.0%), while 28.0% were employed in secondary education. In terms of gender distribution, 51.3% of the participants were female and 47.3% were male.

The age distribution of the sample indicated that the majority of participants were experienced professionals, with 69.3% aged over 55 years, 26.7% aged between 46 and 55 years, and a smaller proportion (4.0%) aged between 25 and 45 years.

Regarding years of service in education, participants presented varied levels of professional experience: 42.7% had between 0–5 years of service, 16.7% had 5–9 years, 10.0% had 11–15 years, 6.7% had 16–20 years, and 24.0% had more than 20 years of experience.

In terms of educational qualifications, the majority of participants (62.0%) held a Master's degree, 18.7% held a Bachelor's degree, and 14.7% held a Doctoral degree, indicating a highly educated sample.

With respect to teaching experience in general education, the vast majority of participants (90.0%) had more than 20 years of experience, while smaller proportions had 10–19 years (4.0%) or less than 10 years (6.0%). In contrast, teaching experience in special education was more limited, with 74.7% of participants reporting little or no experience (less than one year), 12.7% reporting 1–4 years, and 11.3% reporting more than 10 years of experience.

Table 1 - Demographic and Professional Characteristics of the Participants (N = 150).

Variable	Category	f	%
School Level	Primary Education (Elementary School)	108	72.0
	Secondary Education (Lower Secondary School)	42	28.0
Years of Service as Principal	0–5 years	64	42.7
	6–10 years	25	16.7
	11–15 years	15	10.0
	16–20 years	10	6.7
	More than 20 years	36	24.0
Gender	Female	77	51.3
	Male	71	47.3
Age	25–35 years	2	1.3
	36–45 years	4	2.7
	46–55 years	40	26.7
	Over 55 years	104	69.3
Educational Level	Bachelor's Degree	28	18.7
	Master's Degree	93	62.0
	Doctoral Degree	22	14.7
	Other	7	4.7
Teaching Experience in General Education	0–4 years	1	0.7
	5–9 years	8	5.3
	10–19 years	6	4.0
	20+ years	135	90.0
Teaching Experience in Special Education	None or less than 1 year	112	74.7
	1–4 years	19	12.7
	5–9 years	2	1.3
	10–19 years	6	4.0
	20+ years	11	7.3

Note. Percentages may not sum to 100 due to rounding. Source: Research data (2026).

Instrument: School Culture Scale (SCS)

School culture was assessed using the School Culture Scale (SCS) developed by Higgins-D'Alessandro and Sadh (1998). The SCS is a multidimensional instrument designed to measure key aspects of school culture, with a particular focus on

normative expectations, interpersonal relationships, and the perceived quality of the educational environment.

The original version of the scale consists of 25 positively worded items, which are rated on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The instrument aims to capture the extent to which individuals perceive their school environment as supportive, structured, and conducive to positive social and educational outcomes.

Conceptually, the SCS assesses four core dimensions of school culture. The first dimension, Normative Expectations, refers to the extent to which clear behavioral norms and expectations are established and maintained within the school environment. This dimension captures aspects related to discipline, rule adherence, and the overall regulatory framework of the school. The second dimension, Student–Teacher/School Relationships, reflects the quality of interactions between students and teachers, as well as students' broader relationship with the school as an institution. The third dimension, Student Relationships, focuses on peer interactions and the degree to which students perceive their relationships with one another as respectful, supportive, and collaborative. Finally, the fourth dimension, Educational Opportunities, relates to the extent to which the school provides meaningful learning opportunities and supports students' academic development.

The original validation study of the SCS, based on student samples from secondary schools in New York, identified a four-factor structure through Exploratory Factor Analysis (EFA), accounting for 51.5% of the total variance. The factors demonstrated satisfactory internal consistency, with Cronbach's alpha coefficients of 0.80 for Normative Expectations, 0.82 for Student–Teacher/School Relationships, 0.77 for Student Relationships, and 0.78 for Educational Opportunities. The overall reliability of the scale was reported as $\alpha = 0.85$, indicating good internal consistency (Higgins-D'Alessandro & Sadh, 1998).

For the purposes of the present study, the SCS was adapted for use with school principals, rather than students. This adaptation involved rephrasing selected items to reflect the perspectives and professional experiences of school leaders, while preserving the original conceptual structure of the instrument. The adaptation process aimed to ensure content relevance and clarity for the target population, without altering the underlying dimensions of the scale.

All items were administered in Greek, following a translation and contextual adaptation process to ensure linguistic and conceptual equivalence. The adapted version of the instrument was then subjected to psychometric evaluation in order to examine its factor structure, reliability, and construct validity within the Greek educational context.

The use of the SCS in this study provides a structured and theoretically grounded approach to measuring school culture, enabling the systematic examination of its dimensions in relation to leadership practices and organizational dynamics within schools.

4. Results

The original SCS scale developed by the authors (Higgins-D'Alessandro & Sadh, 1998), was structured around four factors. This initial structure was examined using Confirmatory Factor Analysis (CFA). Model fit was assessed using the chi-square (χ^2) statistic. The results of the CFA indicated that the original model demonstrated an acceptable fit to the data.

Following this, an Exploratory Factor Analysis (EFA) was conducted in order to further investigate the construct validity of the School Culture Scale (SCS). The aim of this analysis was to identify potential differences in the factor structure and to determine whether the number of factors in the original scale should be increased or reduced.

The examination of the factor structure was performed using Principal Components Analysis (PCA) with Varimax rotation and Kaiser normalization. Bartlett's test of sphericity (χ^2) and the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy were used to assess the suitability of the dataset for factor analysis and to evaluate the strength of the relationships among the items (Kline, 1994). A threshold of 0.40 was adopted for factor loadings to determine item inclusion in each factor (Hair et al., 1998). A factor was considered significant when its eigenvalue exceeded 1.0.

Following the EFA, a second Confirmatory Factor Analysis (CFA) was conducted using the maximum likelihood

estimation method in order to evaluate the four-factor model that emerged from the exploratory analysis and to determine its fit to the data.

Model fit was assessed using multiple indices, including the Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). These indices were considered acceptable when CFI ≥ .90, TLI ≥ .90, RMSEA ≤ .08, and SRMR < .08.

With regard to reliability, Cronbach's alpha coefficient was used to assess the internal consistency of each of the four factors as well as the overall SCS scale. A threshold of 0.70 or higher was considered indicative of acceptable internal consistency.

Pearson's correlation coefficient (r) was used to examine the relationships among the four subscales of the SCS. In addition, parametric tests, including independent samples t-tests and one-way ANOVA (along with appropriate post hoc tests), were conducted to explore potential differences across demographic and professional subgroups of participants.

The level of statistical significance was set at $p < .05$. All statistical analyses were performed using IBM SPSS Statistics version 27, while CFA analyses were conducted using IBM AMOS version 23.

The data analysis was conducted in several stages in order to examine the psychometric properties of the adapted School Culture Scale (SCS). The analysis included descriptive statistics, exploratory factor analysis, reliability assessment, and correlational analyses, following established methodological guidelines for scale validation.

Initially, descriptive statistics were calculated in order to provide an overview of the distribution of responses across all items of the instrument. Frequencies and percentages were computed for each response category of the five-point Likert scale.

Internal Structure

Table 2 presents the absolute and relative frequencies of responses for each of the 25 items of the School Culture Scale (SCS). The examination of response distributions provides important insights into participants' perceptions of key aspects of school culture.

More specifically, items for which the cumulative percentage of responses in the categories "Agree" and "Strongly Agree" exceeded or was equal to 75% are presented below in descending order:

Item 10: Teachers genuinely care about students and want to help them (96.0%)

Item 9: Teachers generally treat students with respect and fairness (92.0%)

Item 2: Only a few students drop out of school (86.0%)

Item 13: Some school rules are jointly determined by students and teachers (86.0%)

Item 5: Drug or alcohol use among students is rare (84.0%)

Item 3: Theft among students is rare (82.0%)

Item 18: All students receive a good education and learn a lot (82.0%)

Item 20: Students learn how to express their opinions (78.7%)

Item 11: Students and teachers openly discuss problems that concern them (76.0%)

These findings indicate particularly strong positive perceptions in areas related to teacher–student relationships, school safety, and opportunities for student participation and expression.

In contrast, two items were identified for which the cumulative percentage of responses in the categories "Disagree" and "Strongly Disagree" was comparatively higher:

Item 6: Verbal abuse or insults among students are rare (38.0%)

Item 7: Cheating among students is rare (22.7%)

These results suggest that issues related to student behavior, particularly verbal aggression and academic dishonesty,

may represent comparatively weaker aspects of school culture.

For all remaining items, the cumulative percentage of "Disagree" and "Strongly Disagree" responses was below 13%, indicating generally favorable evaluations across most dimensions of the scale.

Table 2 - Absolute frequencies and percentages of principals' responses to the School Culture Scale (SCS) items.

Item	Strongly Disagree N (%)	Disagree N (%)	Neither Agree nor Disagree N (%)	Agree N (%)	Strongly Agree N (%)
1. Only a few conflicts among students escalate into physical violence.	4 (2.7)	15 (10.0)	28 (18.7)	49 (32.7)	54 (36.0)
2. Only a few students drop out of school.	6 (4.0)	6 (4.0)	9 (6.0)	28 (18.7)	101 (67.3)
3. Theft among students is rare.	2 (1.3)	9 (6.0)	16 (10.7)	37 (24.7)	86 (57.3)
4. Damage to school property caused by students is rare.	7 (4.7)	12 (8.0)	26 (17.3)	41 (27.3)	64 (42.7)
5. Drug or alcohol use among students is rare.	7 (4.7)	9 (6.0)	8 (5.3)	12 (8.0)	114 (76.0)
6. Verbal abuse or insults among students are rare.	18 (12.0)	39 (26.0)	41 (27.3)	36 (24.0)	16 (10.7)
7. Cheating among students is rare.	9 (6.0)	25 (16.7)	36 (24.0)	36 (24.0)	44 (29.3)
8. Students and teachers trust each other.	3 (2.0)	6 (4.0)	32 (21.3)	67 (44.7)	42 (28.0)
9. Teachers generally treat students with respect and fairness.	1 (0.7)	1 (0.7)	10 (6.7)	55 (36.7)	83 (55.3)
10. Teachers genuinely care about students and want to help them.	1 (0.7)	0 (0.0)	5 (3.3)	48 (32.0)	96 (64.0)
11. Students and teachers openly discuss problems that concern them.	1 (0.7)	4 (2.7)	31 (20.7)	62 (41.3)	52 (34.7)
12. Teachers involve students in decisions about school rules.	2 (1.3)	10 (6.7)	27 (18.0)	58 (38.7)	53 (35.3)
13. Some school rules are jointly determined by students and teachers.	1 (0.7)	5 (3.3)	15 (10.0)	59 (39.3)	70 (46.7)
14. Students generally treat each other with respect and fairness.	4 (2.7)	8 (5.3)	46 (30.7)	62 (41.3)	30 (20.0)
15. Students help each other even if they are not friends.	2 (1.3)	15 (10.0)	45 (30.0)	68 (45.3)	20 (13.3)
16. Students from different groups are friendly with each other.	3 (2.0)	8 (5.3)	49 (32.7)	62 (41.3)	28 (18.7)
17. Students trust each other.	1 (0.7)	11 (7.3)	48 (32.0)	73 (48.7)	17 (11.3)
18. All students receive a good education and learn a lot.	3 (2.0)	4 (2.7)	20 (13.3)	79 (52.7)	44 (29.3)
19. Students become more responsible and care about others.	1 (0.7)	6 (4.0)	35 (23.3)	73 (48.7)	35 (23.3)
20. Students learn how to express their opinions.	1 (0.7)	5 (3.3)	26 (17.3)	79 (52.7)	39 (26.0)
21. Students have opportunities to reflect on real-life and current issues.	1 (0.7)	9 (6.0)	30 (20.0)	68 (45.3)	42 (28.0)
22. Students learn to listen to others 'ideas.	1 (0.7)	7 (4.7)	36 (24.0)	69 (46.0)	37 (24.7)
23. Students learn to consider others 'perspectives.	1 (0.7)	8 (5.3)	39 (26.0)	70 (46.7)	32 (21.3)
24. Students learn to think before they act or speak.	2 (1.3)	17 (11.3)	49 (32.7)	54 (36.0)	28 (18.7)
25. Students gain hope and opportunities for a better future.	1 (0.7)	12 (8.0)	38 (25.3)	63 (42.0)	36 (24.0)

Source: Research data (2026).

The results are presented in Table 2, illustrating the distribution of responses for each item of the SCS. Overall, the findings indicate a tendency toward positive evaluations of school culture, particularly in relation to teacher–student relationships and educational opportunities.

Initially, we examined whether the model proposed by the original authors adequately fit our data. The results indicated that all Confirmatory Factor Analysis (CFA) fit indices—namely the Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR)—fell within acceptable thresholds (CFI = 0.95, TLI = 0.94, RMSEA = 0.06, and SRMR = 0.06), suggesting a satisfactory model fit.

Subsequently, an Exploratory Factor Analysis (EFA) was conducted, and the results of the Varimax rotation are presented in Table 3. The assumptions for factor analysis were met, as the variables were adequately intercorrelated. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was 0.964 (exceeding the recommended threshold of 0.50), and Bartlett's Test of Sphericity was statistically significant, $\chi^2(300) = 4270.91$, $p = .001$, confirming the suitability of the data for factor analysis.

A factor loading cutoff of 0.40 was applied. Four factors were extracted, explaining a total of 66.52% of the variance. Specifically:

(a) Factor 1 (items 1, 2, 3, 4, 5, and 7; Cronbach's α = 0.876), explaining 16.0% of the variance; (b) Factor 2 (items 9, 10, 11, 12, and 13; Cronbach's α = 0.817), explaining 13.6% of the variance; (c) Factor 3 (items 6, 8, 14, 15, 16, and 17; Cronbach's α = 0.890), explaining 17.0% of the variance; and (d) Factor 4 (items 18, 19, 20, 21, 22, 23, 24, and 25; Cronbach's α = 0.922), explaining 20.0% of the variance (see Tables 3 and 4).

Notably, two items (Items 6 and 8) loaded onto different factors compared to the original model. Specifically, Item 6 and Item 8 shifted to Factor 3 from Factors 1 and 2, respectively. However, the inclusion of these items in Factor 3 appears conceptually inconsistent, as this factor primarily reflects student interpersonal relationships (Table 3).

Table 3 - Factor loadings of the School Culture Scale (SCS) based on Principal Components Analysis (PCA) with Varimax rotation.

Item	Factor 1	Factor 2	Factor 3	Factor 4
23. Students learn to consider others 'perspectives.	.864			
22. Students learn to listen to others 'ideas.	.848			
24. Students learn to think before they act or speak.	.773			
25. Students gain hope and opportunities for a better future.	.755			
21. Students have opportunities to reflect on real-life/current issues.	.728			
19. Students become more responsible and care about others.	.666			
20. Students learn to express their opinions.	.637			
18. All students receive a good education and learn a lot.	.510			
14. Students treat each other with respect and fairness.		.769		
15. Students help each other even if they are not friends.		.743		
16. Students from different groups are friendly with each other.		.727		
17. Students trust each other.		.713		

6. Verbal abuse or insults among students are rare.		-.612		
8. Students and teachers trust each other.		.573		
2. Only a few students drop out of school.			.819	
3. Theft among students is rare.			.792	
5. Drug or alcohol use among students is rare.			.741	
1. Few conflicts escalate into physical violence.			.728	
4. Damage to school property is rare.			.717	
R7. Cheating among students is rare.			.638	
10. Teachers genuinely care about students and want to help.				.737
12. Teachers involve students in rule-making.				.702
9. Teachers treat students with respect and fairness.				.690
13. Rules are jointly determined by students and teachers.				.662
11. Students and teachers openly discuss problems.				.644

Source: Research data (2026).

The results of the factor analysis are presented in Table 3, where the factor loadings of the items are displayed. The analysis revealed a clear multi-factor structure, with items loading satisfactorily on their respective factors, supporting the construct validity of the scale.

Following the factor analysis, the internal consistency and reliability of the identified factors were examined. Reliability was assessed using Cronbach's alpha coefficients, while Intraclass Correlation Coefficients (ICC) were also calculated to further support the stability of the measurements.

A second Confirmatory Factor Analysis (CFA), using the Maximum Likelihood estimation method, was conducted on a sample of school principals to examine the extent to which the factor structure derived from the Exploratory Factor Analysis (EFA) fit the data. Model fit was assessed using the Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). These indices were considered acceptable when CFI ≥ .90, TLI ≥ .90, RMSEA ≤ .08, and SRMR < .08.

Reliability analysis using Cronbach's alpha (α) was also performed to assess the internal consistency of the four factors and the overall SCS scale, with a threshold of $\alpha > .70$ considered acceptable.

The CFA results indicated that the model demonstrated an acceptable, though comparatively weaker, fit to the data than the original model: $\chi^2(257) = 437.86$, $p < .001$, $\chi^2/df = 1.70$, CFI = 0.93, TLI = 0.92, RMSEA = 0.07, and SRMR = 0.06. Although all fit indices fell within acceptable limits, they were lower than those obtained for the original model.

Cronbach's alpha coefficients indicated satisfactory to excellent internal consistency across all factors: 0.855 for Factor 1, 0.824 for Factor 2, 0.911 for Factor 3, and 0.942 for Factor 4.

Based on the combined evidence from the CFA of the original model (N = 150 principals) and the EFA and subsequent CFA of the revised model (N = 250 principals), the original model was ultimately retained, as it demonstrated superior model fit and preserved the theoretical structure of the scale without altering item-factor allocations.

Descriptive statistics of SCS factors

Regarding the mean scores and standard deviations of the four SCS factors, as defined by the original model and confirmed through CFA, the following results were obtained:

(a) SCS 1 – Normative Expectations (M = 3.93, SD = 0.84),

(b) SCS 2 – Student–Teacher/School Relationships (M = 4.22, SD = 0.62),

(c) SCS 3 – Student Relationships (M = 3.66, SD = 0.79), and

(d) SCS 4 – Educational Opportunities (M = 3.88, SD = 0.73) (see Table 4).

Table 4 - Means, standard deviations, Cronbach's alpha, and intraclass correlation coefficients (ICC) for the SCS factors.

Factor	Mean (M)	SD	Cronbach's α	ICC
SCS 1 – Normative Expectations	3.93	0.84	866	866
SCS 2 – Student–Teacher/School Relationships	4.22	0.62	846	846
SCS 3 – Student Relationships	3.66	0.79	914	914
SCS 4 – Educational Opportunities	3.88	0.73	942	942

Source: Research data (2026).

As shown in Table 4, all factors demonstrated satisfactory to high levels of internal consistency, with Cronbach's alpha values exceeding the acceptable threshold. The Intraclass Correlation Coefficients further confirmed the reliability of the scale.

In addition, correlational analyses were conducted in order to examine the relationships among the factors of the SCS. Pearson's correlation coefficients were computed to examine the relationships among the four SCS factors (see Table 5). The analysis revealed that all intercorrelations between the four factors were positive and statistically significant ($p < .01$).

More specifically, SCS 1 – Normative Expectations was positively and significantly correlated with SCS 2 – Student–Teacher/School Relationships, SCS 3 – Student Relationships, and SCS 4 – Educational Opportunities. Similarly, SCS 2 – Student–Teacher/School Relationships showed significant positive correlations with both SCS 3 – Student Relationships and SCS 4 – Educational Opportunities. Finally, SCS 3 – Student Relationships was also positively and significantly correlated with SCS 4 – Educational Opportunities.

Table 5 - Pearson correlations among the four SCS factors.

Factor	1	2	3	4
1. SCS 1 – Normative Expectations	—			
2. SCS 2 – Student–Teacher/School Relationships	.467**	—		
3. SCS 3 – Student Relationships	.624**	.608**	—	
4. SCS 4 – Educational Opportunities	.612**	.640**	.733**	—

Source: Research data (2026).

The results, presented in Table 5, indicate statistically significant correlations among the factors, suggesting that while the dimensions are distinct, they are also meaningfully related within the broader construct of school culture.

Finally, further analyses were conducted to investigate potential differences in the SCS factors based on participants' demographic and professional characteristics.

Results – Group differences based on demographic variables

To examine whether the four SCS factors differed significantly across demographic categories, parametric tests were conducted. Independent samples t-tests were performed for educational level (Primary vs. Secondary education) and gender, while one-way Analysis of Variance (ANOVA) was conducted for age, years of service as a principal, years of teaching experience in general and special education, and level of education (see Table 6).

The t-test results indicated that principals serving in primary education reported significantly higher scores compared to those in secondary education on SCS 1 – Normative Expectations and SCS 3 – Student Relationships.

One-way ANOVA results

The one-way ANOVA revealed statistically significant differences across age groups for SCS 1 – Normative Expectations and SCS 2 – Student–Teacher/School Relationships. Specifically, principals aged 36–45 years reported significantly lower scores compared to those aged 46–55 years and 55+ years on both factors.

Table 6 - Differences in SCS factors and overall school culture by demographic variables.

Variable	Category	SCS 1 M (SD)	Test	p	SCS 2 M (SD)	Test	p	SCS 3 M (SD)	Test	p	SCS 4 M (SD)	Test	p	Total M (SD)	Test	p
Education level	Primary	4.07 (.71)	2.821	.007*	4.25 (.62)	.939	.349	3.74 (.69)	1.810	.075	3.99 (.68)	3.042	.003*	3.43 (.36)	.984	.327
	Secondary	3.58 (1.03)			4.14 (.61)			3.44 (.98)			3.59 (.79)			3.37 (.33)		
Gender	Female	4.05 (.77)	1.479	.141	4.26 (.58)	.199	.843	3.67 (.73)	-.141	.888	3.97 (.65)	1.185	.238	3.42 (.33)	-.182	.856
	Male	3.85 (.83)			4.24 (.53)			3.69 (.80)			3.83 (.73)			3.43 (.33)		
Age	25–35	3.36 (.51)	3.339	.021*	3.75 (1.06)	5.634	.001**	3.63 (.88)	1.015	.388	3.56 (.80)	1.486	.221	3.36 (.51)	.838	.475
	36–45	2.75 (1.54)			3.08 (1.64)			3.06 (1.64)			3.16 (1.63)			3.15 (.77)		
	46–55	3.91 (.82)			4.30 (.57)			3.58 (.84)			3.89 (.77)			3.44 (.34)		
	55	3.99 (.79)			4.24 (.53)			3.71 (.73)			3.91 (.67)			3.42 (.33)		

Source: Research data (2026).

As shown in Table 6, variations were observed across demographic groups, providing additional insights into how school culture perceptions may differ depending on professional experience, educational level, and other background characteristics.

Overall, the analyses provide strong evidence for the validity and reliability of the adapted School Culture Scale, supporting its use as a robust instrument for assessing school culture within the Greek educational context.

5. Discussion

The present study aimed to examine the psychometric properties of the School Culture Scale (SCS) within the Greek educational context, focusing on its reliability, construct validity, and factor structure. Overall, the findings provide strong support for the applicability of the instrument, while also offering important insights into the multidimensional, dynamic, and context-sensitive nature of school culture.

With regard to the first research question, the results indicate that the SCS demonstrates satisfactory psychometric

properties when applied to a sample of Greek educators. The high internal consistency observed across all factors, as reflected in Cronbach's alpha coefficients, confirms the reliability of the instrument and aligns with previous studies that have reported similar levels of consistency across different educational contexts. These findings support the view that school culture, despite its complexity, can be systematically and meaningfully measured (Gruenert & Whitaker, 2021; Schein, 2010). Moreover, the strong reliability indicators reinforce the argument that shared norms, values, and relational dynamics within schools can be operationalized through structured measurement tools, contributing to the empirical study of organizational processes in education (Hoy & Miskel, 2005; Morris et al., 2020).

In relation to the second research question, the findings from the confirmatory factor analysis suggest that the proposed factor structure of the SCS is largely supported within the Greek context, although some variations emerged. While the four-factor model demonstrated acceptable fit indices, the comparison between the original and the alternative model indicated that the original structure provided a better overall fit. This finding is particularly significant, as it reflects both the structural robustness and the contextual sensitivity of the instrument. On the one hand, the confirmation of the original model supports the conceptualization of school culture as a multidimensional construct consisting of interconnected domains (Deal & Peterson, 2016; Schein, 2010). On the other hand, the variations identified through exploratory analysis suggest that the meanings, interpretations, and practices associated with school culture are shaped by specific institutional, cultural, and policy-related conditions within the Greek educational system (Booth, 2018; Slee, 2018).

These findings contribute to broader discussions on the cross-cultural validity of educational measurement tools. As emphasized in the literature, instruments developed in one context require careful empirical validation before being applied in another, as differences in educational structures, leadership practices, and cultural expectations may influence how constructs are perceived and enacted (Carrington, 2022; Graham, 2020). The present study supports this perspective by demonstrating that, although the core dimensions of school culture appear to be transferable, their internal configuration may vary across contexts. This reinforces the importance of adopting context-sensitive and theoretically informed approaches to measurement, particularly when examining complex organizational phenomena such as school culture (Ainscow et al., 2024; DeMatthews et al., 2020).

Regarding the third research question, the results provide clear evidence that the School Culture Scale is a reliable and valid instrument for measuring school culture in Greek schools. The combined evidence from reliability analyses, factor structure validation, and model fit indices confirms that the scale captures key dimensions of school culture in a consistent and theoretically meaningful way. This finding is particularly important given the limited availability of validated instruments within the Greek educational context and contributes to strengthening the methodological foundations of research in this field (Tsirantonaki & Vlachou, 2024).

Beyond the psychometric validation of the instrument, the findings also provide insight into the nature of school culture as experienced by school leaders. The relatively high mean scores observed in dimensions related to teacher–student relationships and educational support suggest that Greek schools are perceived as environments characterized by respect, care, and a strong commitment to student learning. These findings are consistent with research highlighting the importance of relational trust, collaboration, and shared responsibility in shaping positive and inclusive school cultures (Ainscow et al., 2006; Graham, 2020; Oskarsdottir et al., 2020). At the same time, comparatively lower scores in dimensions related to student interactions point to potential challenges in peer relationships, indicating areas where school culture may require further development. Such findings resonate with literature emphasizing that inclusive and equitable school cultures must actively address interpersonal dynamics among students, not only institutional or instructional practices (Florian & Spratt, 2013; Goodley et al., 2019).

The positive and statistically significant correlations observed among the factors further support the conceptualization of school culture as an integrated and dynamic system. As suggested by organizational and educational theory, cultural elements within schools do not operate in isolation but are interconnected and mutually reinforcing (Deal & Peterson, 2016; Schein, 2010).

Improvements in one dimension—such as leadership support, shared expectations, or collaborative practices—are therefore likely to influence other aspects of school functioning, including student engagement and overall school climate. This interconnectedness aligns with contemporary perspectives that conceptualize school culture as a holistic and evolving system shaped by continuous interaction among its components (Booth, 2018).

In addition, the differences observed across demographic variables suggest that perceptions of school culture are not uniform but vary depending on individual and contextual characteristics. This finding aligns with the view that school culture is co-constructed through the interactions of multiple actors within the school community (Dono-Koulouris & Martino, 2019; Spillane, 2005). It also highlights the importance of incorporating diverse perspectives when examining organizational dynamics, particularly in relation to issues of inclusion, participation, and equity. Such variations underscore the need for inclusive and participatory approaches to school improvement that actively engage different stakeholders and address potential inequalities within the school environment (Allan, 2023; Slee, 2011).

Importantly, the findings also have implications for understanding the relationship between school leadership and school culture. As consistently emphasized in the literature, leadership practices play a central role in shaping the norms, values, and relationships that define school culture (DeMatthews et al., 2020; Hallinger, 2018; Leithwood & Jantzi, 2006). The strong performance of the SCS in capturing dimensions related to expectations, relationships, and educational practices suggests that the instrument can serve as a valuable tool for examining how leadership behaviors are reflected in the cultural dynamics of schools. In particular, leadership approaches that promote collaboration, shared vision, and professional engagement are more likely to foster inclusive, supportive, and adaptive school cultures (Ainscow & Sandill, 2010; Robinson et al., 2008).

From an international perspective, the study contributes to the growing body of research on the cross-cultural applicability of school culture instruments. Although conducted within the Greek educational context, the findings have broader relevance for comparative and international research, as they support the use of the SCS as a multidimensional framework for examining school culture across diverse educational systems. At the same time, the observed contextual variations highlight the importance of empirical validation across settings, rather than assuming universal applicability (Carrington, 2022; Slee, 2018).

Overall, the study reinforces the importance of reliable and valid measurement tools in advancing research on school culture, leadership, and inclusion. By providing empirical support for the use of the School Culture Scale in the Greek context, the study contributes both methodologically and theoretically to the field. Moreover, it opens new avenues for future research exploring the complex relationships between leadership practices, organizational culture, and educational outcomes, while also offering practical implications for the development of more collaborative, inclusive, and socially just school environments.

Limitations

Despite the strengths of the present study, certain limitations should be acknowledged. First, the study was conducted within the Greek educational context, which may limit the direct generalizability of the findings to other educational systems with different institutional structures and cultural characteristics. However, this limitation is mitigated by the study's contribution to the growing body of cross-cultural validation research. Second, the data were collected through self-reported measures, which may be subject to response bias, particularly in relation to socially desirable answers. Future studies could complement these findings with qualitative data or multi-informant approaches to provide a more comprehensive understanding of school culture. Finally, although the sample size was adequate for the statistical analyses conducted, further research with larger and more diverse samples would strengthen the robustness of the findings and allow for more detailed subgroup analyses.

6. Conclusion

This study set out to examine the psychometric properties of the School Culture Scale (SCS) within the Greek

educational context, providing empirical evidence regarding its reliability and construct validity. The findings confirm that the SCS constitutes a robust and internally consistent instrument capable of capturing the multidimensional nature of school culture, while also supporting the theoretical assumption that school culture can be systematically measured through empirically grounded tools.

Importantly, the contribution of this study extends beyond the boundaries of the Greek educational system. By validating the SCS within a new national context, the study strengthens the cross-cultural applicability of the instrument and contributes to the broader international literature on school culture and educational leadership. The results demonstrate that, while school culture is shaped by context-specific factors, its core dimensions—such as shared expectations, relational trust, and educational support—remain conceptually stable across different educational systems. This highlights the potential of the SCS as a valuable tool for comparative research, enabling scholars to examine cultural dynamics across diverse institutional and socio-cultural settings.

Furthermore, the study reinforces the critical role of reliable measurement instruments in advancing research on school effectiveness and organizational development. The availability of a validated tool allows for more systematic investigation of the relationships between leadership practices, school culture, and educational outcomes. In this sense, the present study provides a methodological foundation for future research exploring how different leadership approaches—such as instructional, distributed, and transformational leadership—shape the cultural conditions of schools.

At a practical level, the validated scale offers significant potential for use by school leaders and policymakers seeking to better understand and improve the cultural dynamics of schools. By enabling the identification of strengths and areas for development within school environments, the SCS can support evidence-based decision-making and the design of targeted interventions aimed at fostering more inclusive, collaborative, and effective school communities.

Overall, this study contributes to the growing recognition that school culture is a central dimension of educational quality and improvement. By bridging methodological rigor with theoretical relevance, the findings underscore the importance of examining school culture not only as a context-bound phenomenon but also as a key construct of global significance in educational research and practice.

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References

Ainscow, M., Booth, T., Dyson, A., Farrell, P., Frankham, J., Gallannaugh, F., Howes, A., & Smith, R. (2006). *Improving schools, developing inclusion*. Routledge.

Ainscow, M., Calderón-Almendros, I., Duk, C., & Viola, M. (2024). Using professional development to promote inclusive education in Latin America: possibilities and challenges. *Professional Development in Education*, 51(1), 149–166. https://doi.org/10.1080/19415257.2024.2427285

Allan, J. (2023). Inclusion: how far have we come and how far can we go? *Education Inquiry*, 1–14. https://doi.org/10.1080/20004508.2023.2264059

Booth, T. (2018). Mapping Inclusion and Exclusion: Concepts for All?, In Booth T., Towards *Inclusive Schools?* (pp.96-108). Routledge 10.4324/9780429469084-8

Carrington, S. (2022). Leadership of inclusive culture, AEL-*The Australian Educational Leader,* 44(2), 18-21. https://search.informit.org/doi/10.3316/informit.518307693925667

Cohen, E. (2015). Principal Leadership Styles and Teacher and Principal Attitudes, Concerns and Competencies regarding Inclusion. *Procedia - Social and Behavioral Sciences*. 186. 758-764. 10.1016/j.sbspro.2015.04.105.

Costa Neto, P. L. O. & Bekman, O. R. (2009). *Análise estatística da decisão.* (2ed). Editora Blucher.

Costello, A. B. & Osborne, J., (2005). Best practices in exploratory factor analysis: four recommendations for getting the most from your analysis. Practical Assessment, *Research, and Evaluation* 10(1), 7. https://doi.org/10.7275/jyj1-4868

Deal, T. E., & Peterson, K. D. (2016). Shaping School Culture. *Wiley*. https://doi.org/10.1002/9781119210214

DeMatthews, D. E., Kotok, S., & Serafini, A. (2020). Leadership Preparation for Special Education and Inclusive Schools: Beliefs and Recommendations From Successful Principals, *Journal of Research on Leadership Education*, 15(4), 303–329. https://doi.org/10.1177/1942775119838308

Dono-Koulouris, M. & Martino A. (2019). Leadership style as it relates to school climate and the impact on students achievement, *EDULEARN19 Proceedings,* pp. 4661-4667. 10.21125/edulearn.2019.1165

Florian, L., & Spratt, J. (2013). Enacting inclusion: a framework for interrogating inclusive practice. *European Journal of Special Needs Education*, 28(2), 119–135. https://doi.org/10.1080/08856257.2013.778111

Fullan, M. (2014). *Leadership: Maximizing Impact.* michaelfullan.ca. Retrieved from http://www.micahelfullan.ca

Furman, G. (2012). Social Justice Leadership as Praxis: Developing Capacities Through Preparation Programs. *Educational Administration Quarterly*, 48(2), 191-229. https://doi.org/10.1177/0013161X11427394

Goodley, D., Lawthom, R., Liddiard, K., & Runswick-Cole, K. (2019). Provocations for Critical Disability Studies. *Disability & Society,* 34(6), 972–997. https://doi.org/10.1080/09687599.2019.1566889

Graham, L.J. (2020). *Inclusive Education for the 21st Century. Theory, Policy and Practice.* Routledge.

Gruenert, S., & Whitaker, T. (2021). *School Culture Rewired: Toward a More Positive and Productive School for All,* 2nd Edition. ASCD

Hair, J., Anderson, R., Tatham, R. and Black, W. (1998). *Multivariate data analysis. 5th Edition.* Prentice Hall, New Jersey.

Hallinger, P. & Murphy, J. (1985). Assessing the Instructional Management Behaviour of Principals. *The Elementary School Journal*, 86, 217-247. http://dx.doi.org/10.1086/461445

Hallinger, P. (2018). Principal Instructional Leadership: From Prescription to Theory to Practice, In *TheWiley Handbook of Teaching and Learning*, Hall, G.E., Quinn, L.F. & Gollnick, D.M., (Eds.), Wiley Blackwell: Hoboken, NJ, USA, (pp. 505–528).

Harris, A., Leithwood, K., Day, C., Sammons, P., & Hopkins, D. (2007). Distributed Leadership and Organizational Change: Reviewing the Evidence. *Journal of Educational Change,* 8, 337-347. http://dx.doi.org/10.1007/s10833-007-9048-4

Higgins-D'Alessandro A. & Sadh D. (1998). The dimensions and measurement of school culture: Understanding school culture as the basis for school reform, *International Journal of Educational Research*, 27 (7), 553-569. https://doi.org/10.1016/S0883-0355(97)00054-2

Hoy, W. K., & Miskel, C. G. (2005). Educational Administration, Theory, Research and Practice (7th Edition). McGraw-Hill. *School Leadership & Management*, 32, 453-471.

Kline, P. (1994). *An Easy Guide to Factor Analysis*. Abingdon-on-Thames: Routledge.

Leithwood, K., & Jantzi, D. (2006). Transformational School Leadership for Large-Scale Reform: Effects on students, teachers, and their classroom practices. *School Effectiveness and School Improvement,* 17(2), 201–227. https://doi.org/10.1080/09243450600565829

Liu, Y., Bellibaş, M. Ş., & Gümüş, S. (2020). The Effect of Instructional Leadership and Distributed Leadership on Teacher Self-efficacy and Job Satisfaction: Mediating Roles of Supportive School Culture and Teacher Collaboration. *Educational Management Administration & Leadership*, 49(3), 430-453. https://doi.org/10.1177/1741143220910438

Morris, J. E., Lummis, G. W., Lock, G., Ferguson, C., Hill, S., & Nykiel, A. (2020). The role of leadership in establishing a positive staff culture in a secondary school. *Educational Management Administration & Leadership,* 48(5), 802-820. https://doi.org/10.1177/1741143219864937

Nadeem, M. (2024). Distributed leadership in educational contexts: A catalyst for school improvement. *Social Sciences & Humanities Open*, 9, 100835 https://doi.org/10.1016/j.ssaho.2024.100835

Oskarsdottir, E., Donnelly, V., Turner-Cmuchal, M., & Florian, L. (2020). Inclusive school leaders: Their role in raising the achievement of all learners, *Journal of Educational Administration*, 58(5), 521–537. https://doi.org/10.1108/JEA-10-2019-0190

Pantic, N., & Florian, L. (2015). Developing teachers as agents of inclusion and social justice. *Education Inquiry*, 6(3). https://doi.org/10.3402/edui.v6.27311

Paris, D., & Alim, H.S. (2017). *Culturally sustaining pedagogies: Teaching and learning for justice in a changing world*. New York, NY: Teacher's College Press.

Pereira, A. S. et al. (2018). *Metodologia da pesquisa científica*. [Free ebook]. Santa Maria. Editora da UFSM.

Robinson, V. M. J., Lloyd, C. & Rowe, K. (2008). The impact of leadership on student outcomes. An analysis of the differential effects of leadership types. *Educational Administration Quarterly*, 44(5), 635-674. https://doi.org/10.1177/0013161X08321509

Risemberg, R. I. C., Wakin, M., & Shitsuka, R. (2026). A importância da metodologia científica no desenvolvimento de artigos científicos. *E-Acadêmica*, 7(1), e0171675. https://eacademica.org/eacademica/article/view/675.

Shakespeare, T. (2013). *Disability Rights and Wrongs Revisited*. Routledge https://doi.org/10.4324/9781315887456

Schein, E. H. (2010). *Organizational Culture and Leadership* (4th ed.). San Francisco, CA: Jossey-Bass.

Shitsuka, R. et al. (2014). *Matemática fundamental para tecnologia*. (2ed). Editora Érica.

Spillane, J. P. (2005). Distributed Leadership. *The Educational Forum,* 69(2), 143–150. https://doi.org/10.1080/00131720508984678

Starratt, R. (2004). *Ethical Leadership.* San Francisco, CA: Jossey Bass

Slee, R. (2011). *The irregular school: Exclusion, schooling and inclusive education.* London/New York: Routledge.

Slee, R. (2018). Defining the scope of inclusive education. *International Journal of Inclusive Education,* 23(1), 1-6.

Tsirantonaki, S., & Vlachou, A. (2024). Leadership and Inclusive Education: School Principals' Role in Supporting the inclusion of Disabled Student in mainstream education. *European Journal of Inclusive Education* 3(1). https://doi.org/10.7146/ejie.v3i1.142505

Vlachou A. & Tsirantonaki S.S. (2023). The Importance of School Principals' Values towards the Inclusive Education of Disabled Students: Associations between Their Values and Knowledge, Beliefs, Attitudes and Practices. *Education Sciences*, 13(4), 360. https://doi.org/10.3390/educsci13040360