



University of Zagreb

Faculty of Teacher Education

Borna Nemet

**EXPLORING THE IMPACT OF
ORGANISATIONAL SCHOOL
CLIMATE ON THE OCCUPATIONAL
HEALTH OF PRIMARY SCHOOL
PRINCIPALS IN CROATIA**

DOCTORAL DISSERTATION

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Supervisors:

Dr. Nevenka Maras, Associate Professor

Dr. Damir Sekulić, Full Professor

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Učiteljski fakultet

Borna Nemet

**ISPITIVANJE UTJECAJA
ORGANIZACIJSKE ŠKOLSKE KLIME
NA PROFESIONALNO ZDRAVLJE
RAVNATELJA OSNOVNIH ŠKOLA U
HRVATSKOJ**

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Zagreb, 2026.

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Dr. Nevenka Maras, Associate Professor

Nevenka Maras (Ivkošić) was born on November 17, 1980, in Imotski, Croatia. She graduated in 2004 from the University of Split, earning a degree in Primary Education with an extended program in English Language Teaching. She obtained her Ph.D. in Social Sciences at the Faculty of Teacher Education, University of Zagreb, in 2016, and was elected to the academic rank of Assistant Professor in 2018. Since, she has served as Vice-Dean for Business Affairs and Development at the Faculty of Teacher Education in Zagreb.

In the 2007/2008 academic year, she began her career at Ostrog Primary School in Kaštel Lukšić, where she worked as an English language teacher. The same year, she enrolled in the postgraduate doctoral program Early Childhood and Compulsory Education at the Faculty of Teacher Education, University of Zagreb. In September 2012, she was appointed Principal of Ostrog Primary School, a position she held until 2016.

Her experience in higher education teaching dates back to 2009, initially at the University of Split, where she collaborated as an external associate at the Faculty of Kinesiology, contributing to courses in pedagogy and didactics across several study programs. Since 2016, she has been employed at the Faculty of Teacher Education, University of Zagreb, in the Department of Pedagogy and Didactics, first as a postdoctoral researcher and later, from 2018 onward, as an Assistant Professor. She teaches several courses in pedagogy, didactics, and neurodidactics.

Her research focuses on teacher collaboration quality, factors influencing teacher well-being, sports pedagogy, and leisure studies. She has participated as a researcher in a project funded by the Croatian Science Foundation (Teaching and School for the Net Generation: Internal Reform of Teaching in Primary and Secondary Schools), as well as in research-support projects funded by the University of Zagreb. She has published around twenty scholarly and professional papers and has presented at numerous academic conferences in Croatia and abroad (Azerbaijan, Latvia, Spain, Turkey, North Macedonia, Serbia, Bosnia and Herzegovina).

She has pursued further academic and professional training both domestically and internationally. During her leadership roles in educational institutions, she coordinated the implementation of the European Union-funded structural projects. Within the Comprehensive Curriculum Reform initiative, she served as a member of the working group for the English Language Curriculum.

Dr. Damir Sekulić, Full Professor

Damir Sekulić was born on November 1, 1970, in Croatia. He is a Full Professor at the Faculty of Kinesiology, University of Split, where he has held a tenured position since 2014. He earned his Ph.D. (2001) from the Faculty of Kinesiology, University of Zagreb, Master of Science degree (1999) and a Master of Education degree (1996) from the same institution. His academic career began at the University of Split's Faculty of Natural Sciences, Mathematics and Education, where he served as a teaching assistant (1998-2003) and later as an assistant professor (2003-2006). He subsequently joined the Faculty of Kinesiology at the University of Split, advancing through the ranks of associate professor (2006-2009), full professor (2009-2014), and ultimately tenured professor (2014-present). Professor Sekulić teaches at both undergraduate and graduate levels, offering courses in Training Methodology in Sport and Exercise, Analysis and Training in Sport and Exercise, and Research Methods in Sport and Exercise Science. His teaching philosophy integrates empirical rigor with applied kinesiology, emphasizing evidence-based approaches to athletic performance, health promotion, and public health education.

He has participated in multiple international academic exchanges and training programs, including several Erasmus-sponsored residencies at the University of Ljubljana, Slovenia. He is an active collaborator in teaching and supervision at international institutions such as Reykjavik University (Iceland), Mid Sweden University (Sweden), and the Universities of Mostar (Bosnia and Herzegovina), Novi Sad (Serbia), and Ljubljana (Slovenia). Professor Sekulić has extensive experience as a doctoral mentor, having supervised and co-supervised more than ten Ph.D. dissertations across Croatia, Italy, Serbia, and Bosnia and Herzegovina. His mentees now hold academic and professional positions across Europe, reflecting his long-standing commitment to mentoring and international academic cooperation. His research focuses on public health issues in sport and exercise, performance measurement, and substance use and misuse in sport and physical activity. He has led or participated in numerous national and international projects, including several funded by the Croatian Science Foundation, the World Anti-Doping Agency (WADA), and ministries in Croatia and Bosnia and Herzegovina. Notably, he served as principal investigator on the Croatian Science Foundation Project Change of Direction Speed and Reactive Agility: Development of Measurement Tools, Identification of Predictors, and Evaluation of Training Effects (2018-2022).

Professor Sekulić has received numerous distinctions for scientific excellence, including the National Award for Science of the Republic of Croatia (2017) and multiple University of Split Awards for Science and Arts (2017, 2019, 2021). Beyond academia, he has contributed significantly to elite sports as a strength and conditioning coach for national teams. He served with the Croatian National Water Polo Team (1996-1999), winning a silver medal at the 1996 Olympic Games in Atlanta, and with the Croatian National Olympic Sailing Team (2000-2008), where his athletes achieved 23 medals at European and World Championships.

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To my parents, who have been my constant source of love, strength, and reassurance- thank you for believing in me even when I doubted myself. Your sacrifices and unwavering faith made every step of this path possible. To my grandparents, who ask at every family gathering whether I am finally done, thank you for reminding me that perseverance and patience are virtues worth mastering!

This achievement belongs as much to those who supported and believed in me as it does to my own effort. Every conversation, every word of encouragement, and every gesture of understanding has been part of this process!

I dedicate this work to the educators and leaders whose quiet resilience sustains our schools. Their daily work embodies the values that inspired this research, the belief that knowledge, empathy, and well-being can transform not only classrooms but entire communities!

And finally, to myself. Thank you for showing up, even on the days when motivation was a myth and caffeine was a food group. For turning panic into paragraphs, setbacks into strategy, and late-night existential crises into (mostly) coherent academic prose. You may have aged five years in one, but you did it! Congratulations, Borna, you stubborn overachiever!

Sve je dobro, veselim se!

ABSTRACT

This dissertation examines the interrelations among organisational school climate, health literacy, and health status among primary school principals in the Republic of Croatia. Situated within occupational health and educational leadership frameworks, the study addresses three aims: (1) to determine the levels of organisational school climate, health literacy, and health status within the principal population; (2) to test associations between these domains; and (3) to develop a targeted empirical prevention model for the occupational well-being of school principals. A quantitative, cross-sectional correlational design was used. The sample included $n = 148$ principals (57 male, 89 female) from public primary schools across Croatia. Data were collected through validated instruments: the *Organisational School Climate Questionnaire* (Slišković & Proroković, 2021), the *European Health Literacy Short Survey Questionnaire* (Sørensen et al., 2012), and a set of biometric measures collected under clinical supervision. Statistical analyses included descriptive and inferential tests, correlation matrices, t-tests, and multivariable models. Results indicated that principals perceived their organisational school climate as moderately supportive, characterized by collegial relations, fairness in decision-making, and professional dedication. Health literacy levels clustered in the “sufficient” range, with small gender-linked advantages favoring female principals. Physiological indicators reflected a mature leadership cohort, showing standard midlife cardiovascular risk dispersion. Correlational analyses revealed that a positive organisational school climate was significantly associated with higher health literacy ($2H_1$ supported), while health literacy was positively related to more favorable health profiles ($3H_1$ supported). No reliable direct association emerged between organisational school climate and health status ($1H_1$ not supported), suggesting that psychosocial and physiological processes operate on different temporal and perceptual levels. Building on these findings, the dissertation proposes a layered educational prevention model integrating individual (health literacy, resilience, self-regulation) and organisational (climate, collegial support, health-promoting leadership) dimensions. The model emphasizes systemic coordination between educational governance, occupational health services, and professional development frameworks.

Keywords: organisational school climate, health literacy, occupational health, school principals, educational leadership

PROŠIRENI SAŽETAK NA HRVATSKOME JEZIKU

Disertacija istražuje odnose između organizacijske školske klime, zdravstvene pismenosti i zdravstvenog statusa ravnatelja osnovnih škola u Republici Hrvatskoj. Polazi se od interdisciplinarne pretpostavke da su profesionalno zdravlje i učinkovitost školskih organizacija nerazdvojivo povezani, ne samo kroz administrativne ili pedagoške prakse, nego i kroz načine na koje ravnatelji razumiju, interpretiraju i primjenjuju informacije o zdravlju, dobrobiti i međuljudskim odnosima u svakodnevnome radu. U središtu istraživanja nalazi se pitanje kako psihosocijalni i biološki pokazatelji funkcioniraju unutar obrazovnog sustava i što oni otkrivaju o održivosti školskog rukovođenja u suvremenim institucionalnim uvjetima. Temeljni ciljevi istraživanja bili su: (1) utvrditi razine percepcije organizacijske školske klime, zdravstvene pismenosti i zdravstvenog statusa ravnatelja osnovnih škola u Hrvatskoj; (2) analizirati povezanost između školskog okruženja, zdravstvene pismenosti i objektivnih pokazatelja zdravstvenog stanja; te (3) razviti ciljani empirijski edukacijski model prevencije koji se može primijeniti u praksi radi očuvanja profesionalnog zdravlja i otpornosti ravnatelja. Istraživanje je provedeno kvantitativnim korelacijskim nacrtom na uzorku od 148 ravnatelja osnovnih škola (57 muškaraca i 89 žena), što predstavlja približno 16% ukupne populacije ravnatelja osnovnih škola u Hrvatskoj. Korišteni su validirani instrumenti: (1) *Upitnik organizacijske školske klime* (Slišković i Proroković, 2021), koji obuhvaća pet dimenzija: vodstvo i odlučivanje, međuljudske odnose, odnos prema radu i učenicima, radno opterećenje te loše međuljudske odnose; (2) *Europski upitnik zdravstvene pismenosti* (Sørensen i sur., 2012), prilagođen kontekstu školskog rukovođenja, te (3) skup biometrijskih pokazatelja (ukupni kolesterol, lipoprotein visoke gustoće, lipoprotein niske gustoće, trigliceridi). Podaci su analizirani kombinacijom deskriptivne statistike, korelacijskih matrica, t-testova i višestruke regresijske analize u programu SPSS 29. Pouzdanost instrumenata potvrđena je visokom internom konzistencijom (Cronbahov α između .81 i .92). Rezultati istraživanja pokazuju da ravnatelji percipiraju organizacijsku školsku klimu kao umjereno poticajnu i stabilnu, s izraženom razinom povjerenja, pravednosti u odlučivanju i kolegijalne suradnje. Razina zdravstvene pismenosti procijenjena je kao dovoljna do visoka, s blagom, ali konzistentnom prednošću ravnateljica, što sugerira mogući utjecaj komunikacijskih i empatijskih kompetencija u prevođenju informacija o zdravlju u profesionalni kontekst. Fiziološki pokazatelji odražavali su očekivane vrijednosti za sredovječnu populaciju s dugogodišnjim radnim iskustvom, uz blage indikacije povišenih kardiometaboličkih rizika tipičnih za ovu dobnu skupinu. Korelacijske

analize potvrdile su dvije od tri postavljene hipoteze. Povezanost između organizacijske školske klime i zdravstvene pismenosti bila je pozitivna i statistički značajna ($2H_1$ potvrđena), što upućuje da poticajno radno okruženje i podržavajuće vodstvo olakšavaju pristup informacijama, njihovu procjenu i primjenu u donošenju odluka o zdravlju. Također, zdravstvena pismenost bila je pozitivno povezana s povoljnijim biokemijskim pokazateljima ($3H_1$ potvrđena), što potvrđuje tezu da se zdravstvena pismenost ponaša kao resurs sposobnosti za samoregulaciju i prevenciju. Međutim, izravna povezanost između organizacijske školske klime i zdravstvenog statusa nije pronađena ($1H_1$ nije potvrđena). Ovaj rezultat objašnjava se vremenskom i konceptualnom neusklađenošću između trajnih organizacijskih procesa i trenutanih fizioloških mjerenja, kao i činjenicom da se većina bioloških stanja u profesionalnom kontekstu ne očituje vidljivo u ponašanju ili komunikaciji. Na temelju empirijskih rezultata izrađen je model obrazovne prevencije, koji integrira individualne (zdravstvena pismenost, otpornost, samoregulacija) i organizacijske dimenzije (školska klima, komunikacija, kolegijalna podrška, zdravstveno orijentirano vodstvo). Model predlaže intervencije na tri razine: individualnoj razini (razvoj zdravstvene pismenosti, emocionalne otpornosti i strategija samoregulacije), organizacijskoj razini (jačanje klime povjerenja, timskog rada i participativnog vodstva) te sustavnoj razini (institucionalizacija javnozdravstvenih partnerstva, profesionalnih edukacija i kontinuiranog praćenja dobrobiti školskih ravnatelja). Rezultati disertacije imaju teorijski, metodološki i praktični doprinos. Teorijski, rad proširuje konceptualno razumijevanje povezanosti između organizacijskih resursa i individualne dobrobiti u obrazovnom kontekstu. Metodološki, inovativan je po integraciji biomedicinskih pokazatelja u istraživanje školskog rukovođenja, pristup koji u literaturi do sada nije bio primijenjen. Praktično, istraživanje pruža temelje za politike profesionalnog zdravlja u obrazovanju, uključujući uvođenje preventivnih programa i podrške ravnateljima kroz nacionalne i županijske centre.

Ključne riječi: organizacijska školska klima, zdravstvena pismenost, profesionalno zdravlje, ravnatelji osnovnih škola, obrazovno rukovođenje

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1. INTRODUCTION

Global research has widely established Education as a cornerstone of societal development. A strong correlation between education and economic, political, and cultural development is firmly recognized throughout much of the modern and modernizing world (Chabbot & Ramirez, 2000). The transformative potential of education is evident in its ability to reduce poverty, enhance equality, and support innovation (United Nations Educational, Scientific and Cultural Organization, 2021). Beyond its instrumental value, education transforms critical thinking, ethical reasoning, and cultural awareness, providing individuals with the ability to navigate and contribute to an increasingly complex and interconnected world.

In a modern society, the centrality of education is further emphasized by its role in addressing pressing global challenges, including sustainable development, technological advancements, and social justice. According to Freire (2000), education is a liberating force that enables individuals to critically engage with the world, challenging structures of oppression and fostering transformative change. Through its capacity to shape values, beliefs, and behaviors, education not only reflects societal aspirations, but actively constructs the core of future generations. Educational institutions, particularly schools, act as microsystems of society where diverse perspectives converge, providing a vital platform for nurturing civic responsibility and social engagement (Dewey, 1916). Schools serve as spaces where students not only acquire knowledge but also develop the social and emotional skills necessary for active participation in democratic processes. In this regard, education emerges as a public good with far-reaching implications for societal well-being and stability.

However, the realization of education's transformative potential is contingent upon the effectiveness of its leadership. School principals, as central figures within educational systems, play a critical role in shaping the conditions necessary for high-quality teaching and learning (Leithwood & Jantzi, 2005). They are tasked with creating an environment that supports academic excellence, inclusivity, and the holistic development of teachers and students. Consequently, the leadership provided by principals significantly influences the extent to which schools fulfill their societal mandate. "School principals' responsibilities have increased enormously over the past two decades" (Fullan, 2014, p 6). As a well investigated area within the research community, school principals are responsible for the management and supervision of the daily operations of a school,

as they are involved in a range of activities. These activities include, but are not explicitly limited to, instructional and institutional leadership, curriculum development, parent and community outreach, student assessment, discipline and budgeting (Alfirević, Pavičić & Relja, 2016; Hargreaves & Fink, 2008; Slavić, Rijavec, & Matić, 2019).

Field relevant researchers and works have emphasized the significance of both internal and external factors that shape and affect the role of school principals (Fullan, 2014; Hallinger & Heck, 1998; Leithwood & Sun, 2012; Robinson, 2011). Internally, principals are primarily responsible for providing effective leadership and instructional support within the school. They have to establish a mission, vision and goals for the institution, while at the same time working closely with teachers, administrators and other school staff to ensure curriculum implementation, good instructional strategies, and assessment practices that are aligned with educational standards. School principals play a critical role in fostering a constructive school culture and climate. According to Kutsyuruba, Klinger & Hussain (2015), they carry the responsibility to create an environment of respect, collaboration, and mutual support among teachers, staff, and students. By promoting a positive climate, principals contribute to a conducive learning environment that enhances student well-being and academic success.

On the other hand, it is equally important to recognize the impact of external factors on the work of school principals such as parent and community engagement, advocacy efforts, compliance with external regulations, and professional networking. For example, Elmore (2004) & Gunter (2018) point out the need to consider the broader educational context in which principals operate and the external factors that shape their decision-making, resource allocation, and collaborations with stakeholders. Principals have to actively collaborate with parents, involving them in their children's education and seeking their input. They establish partnerships with local businesses, community organisations, and stakeholders to leverage external resources, support student learning, and provide real-world experiences. They participate in local educational seminars, collaborate with other principals, and stay informed about educational policies and trends. Principals strive to influence decision-making processes to address the needs of their school and students effectively. External factors also include compliance with educational standards, regulations, and external evaluations. Principals navigate through compliance requirements, ensure adherence to educational policies, and facilitate inspections or evaluations conducted by regulatory bodies. They engage externally by networking and participating in professional

development opportunities, and collaborate with other educational leaders, attend conferences, and engage in professional associations.

A proper conceived interplay of mentioned factors indicates the overall success of school functioning from a professional perspective. One of the fundamental empirically confirmed concepts of that success is the organisational school climate, investigated from many different viewpoints (Hoy & Miskel, 2001; Busch, Fernandez & Fernandez, 2019; McIntyre, McIntyre & Francis, 2017). According to Proroković & Slišković (2008), organisational school climate is determined by different factors such as interaction between members, organisational structure (role, system of authority and power, status structures), individual characteristics of organisation members (abilities, attitudes, personality dimensions), and indirectly by the organisational context (size, technology, goals and resources of the organisation). Nevertheless, the combined weight of internal and external demands places immense stress on principals, requiring them to balance multiple responsibilities and make critical decisions under pressure. This stress has been well-documented and comprehended in the literature (Boyland, 2011; Cooley & Shen, 2003; Johnson & Riley, 2021; Upadyaya, Toyama & Salmela-Aro, 2021), and draws the need for support systems and resources to mitigate the challenges faced by principals in their demanding profession. The effects of the individual's health, resources and functioning within an organisation caused by high stress levels that materialize into physical or medical conditions such as anxiety, low productivity, high blood pressure, depression, and other related problems (Sorenson, 2007), is defined as occupational health (Braun, Mashbum & Skinner, 2019; McIntyre et al., 2017; Saaranen, Tossavainen, Turunen & Vertion, 2016). However, there is very little to no evidence on the effects on occupational health status that those combined factors may lead to, particularly based on nationally representative data of primary school principals.

According to the study by Bakker, Hakanen, Demerouti & Xantholoulou (2007), work-related stressors such as high job demands, role conflict, and lack of resources can lead to negative outcomes, including burnout and reduced job satisfaction. In the context of school principals, several studies have examined the specific stress factors and work-related situations they face within the domain of organisational school climate. For instance, a study by Smith and Riley (2012) highlighted the demanding nature of the principalship, with factors such as heavy workload, time constraints, balancing multiple responsibilities, and intense accountability pressures. Another study by Johnson & Riley (2021) emphasized the role of external factors like policy changes,

compliance requirements, and dealing with diverse stakeholders as significant sources of stress for school principals. These findings show the need to recognize the unique stressors and work-related situations experienced by school principals and develop targeted interventions and support systems. For the reasons mentioned above, the main goals of this dissertation look to investigate and understand the perceptions and experiences of primary school principals in relation to organisational school climate and occupational health, which is essential to additionally support and balance their needs. By addressing these aims, the effects of organisational climate on occupational health will be evaluated, all with the purpose of further developing targeted practices and education models and its potential inclusion in leadership practices.

2. SCHOOL CULTURE VS. SCHOOL CLIMATE

The literature on educational effectiveness and school improvement frequently uses the terms *school climate* and *school culture* interchangeably. Many scholars tend to do the same, leading to a conceptual ambiguity and complicating both scholarly inquiry and practical interventions. While both concepts include social and organisational environments of schools, they differ significantly in their origins, theoretical foundation, nature and application in the field. School climate generally refers to the quality and character of school life, including both “the spheres of social life (safety, relationships, teaching and learning, environment) as well as the larger organisational patterns (from fragmented to cohesive vision, healthy or unhealthy, conscious or unrecognized)” (Cohen, McCabe, Michelli & Pickeral, 2009, p. 181). On the opposite, school culture translates to “unwritten rules and traditions, customs and expectations. For example, the way people act, how they dress, what they talk about or consider taboo, whether they work together, and how teachers feel about their work and their students” (Deal & Peterson, 2016, p. 7). The conceptual origins of school climate can be traced back to the field of organisational psychology and the post-World War II era through the influence of Kurt Lewine and early climate studies that focused on how organisational environments shape the behavior and performance of its members. School climate, in contrast, emerged as a concept later in educational discourse evolving from sociology and anthropology. While the concept of organisational culture gained a lot of interest in management literature in the 1970s and 1980s, its application to the education field was introduced by scholars like Deal & Kennedy (1983). While the scholarly community has provided many other definitions throughout time, the abovementioned ideas carry the main components within each construct. Clarifying and understanding the relationship between culture and climate is essential for the focus of the dissertation on the organisational school climate.

One key difference in the nature and characteristics of school culture and climate lies in stability. Climate is relatively malleable and it can shift with leadership changes, policy reforms or external pressures (Tschannen-Moran & Woolfolk Hoy, 2002). Climate is also more visible and measurable, often captured via surveys such as the *Organisational Climate Description Questionnaire* or the *Comprehensive School Climate Inventory* (National School Climate Council, 2007). Culture is enduring and it evolves slowly through accumulated history, shared experiences and generational transmission (Schein, 2010). It is also less tangible and generally requires a more qualitative approach as a method of measurement such as ethnography, document analysis or

narrative inquiry. When developing an understanding of dimension and components of both constructs, there are some similarities. School climate dimensions often include leadership behaviour (supportive, directive, participative), teacher-teacher relationships (collegiality, trust), teacher-student relationships (respect, caring), safety and order, academic emphasis and others (Thapa, Cohen, Guffey & Higgins-D'Alessandro, 2013). School culture dimensions take into account core values and beliefs, norms and behavior, traditions and rituals, stories and legends, symbolic artifacts and others (Schein, 2010). While there is an overlap, where both constructs may involve trust and shared norms for example, culture emphasizes the meaning systems that underline observable behaviors, whereas climate focuses on current perceptions of those behaviors.

Scholars have debated whether climate and culture are separate constructs or part of the continuum. Some like Hoy, Smith & Sweetland (2002) argue culture and climate are distinct but related where culture shapes climate, and climate can reinforce or gradually shift culture. Other scholars see climate as a moment or a snapshot of culture at a given time (Van Houtte, 2005). For school leaders, making a difference between climate and culture is of crucial importance. Climate can be improved relatively quickly through policy changes, communication strategies and professional development. Culture change is long-term, requiring shifts in values, traditions and shared assumptions. In the context of the dissertation, organisational school climate serves as a bridge. It borrows climate's focus on perceptions and measurable dimensions while integrating culture's attention to meaning systems and historical legacies. Critically, the unexplored area is how organisational school climate impacts principal well-being and leadership sustainability. Both climate and culture shape the context in which school principals operate, affecting stress levels, decision-making autonomy, and the capacity to initiate change. School climate and culture are conceptually intertwined yet theoretically distinct, but both essential to understanding and improving schools and informing the broader construct of organisational school climate.

3. SCHOOL CLIMATE

Scholars and practitioners have examined and documented school climate for over a century. The concept of school climate encompasses the overall quality and character of life within a school. It is shaped by recurring patterns in individuals' experiences of the school environment and embodies the institution's norms, objectives, values, interpersonal dynamics, pedagogical approaches, and structural organisation. In contemporary education, the rationale for emphasizing school climate lies in its demonstrable impact on diverse outcomes, including academic performance, social-emotional development, and teacher retention (Thapa et al., 2013). The best definition of school climate aligning with the research aims of this dissertation is given by the National School Climate Council (2007) and explained:

“... as a pattern of people's experiences of school life and reflects norms, goals, values, interpersonal relationships, teaching and learning practices, and organisational structures. A sustainable, positive school climate fosters youth development and learning necessary for a productive, contributive, and satisfying life in a democratic society. This climate includes norms, values, and expectations that support people feeling socially, emotionally and physically safe. People are engaged and respected. Students, families and educators work together to develop, live, and contribute to a shared school vision. Educators model and nurture an attitude that emphasizes the benefits of, and satisfaction from, learning (p. 4).”

The foundational understanding of school climate was influenced by early educational theorists such as Perry (1919), Dewey (2024), Lewin (1936) and Durkheim (1961), who recognized that a school's distinctive culture significantly affects the life and learning of its members. These early insights emphasized the social and moral dimensions of education, laying the foundation for later empirical investigations. The systematic study of school climate gained momentum during the mid-twentieth century, spurred by research in organisational psychology. This field highlighted the role of workplace environment in shaping productivity and well-being, which informed analogous inquiries into how school-specific processes influence educational outcomes (Anderson, 1982; Miner, 1992; Purkey & Smith, 1983; Schein & Schein, 1970). Observations that variations in school environments could explain significant differences in student achievement reinforced the importance of studying school climate as a distinct factor in educational success nowadays.

The global interest in school climate research has expanded significantly in recent years, with countries documenting findings in multiple languages and contexts. Empirical evidence has been accumulated across diverse domains of school climate, including safety, interpersonal relationships, teaching and learning practices, and organisational structures. In the upcoming sections, prior and available literature builds on to explore how school climate contributes to safety, collaborative relationships, and school improvement initiatives. Also, it will look into the early beginnings of school climate research, tracing its theoretical roots and identifying the seminal works and key researchers that have shaped the field. These discussions will provide a historical and conceptual foundation for understanding how school climate has evolved as an essential construct in educational theory and practice. This exploration will also demonstrate how organisational school climate, specifically its structural and operational aspects, emerged as a complementary perspective that addresses the systemic factors shaping the overall educational environment.

3.1. Overview of Operational Structures and Educational Environments

3.1.1. Arthur C. Perry's Theory of School Management

Arthur C. Perry was one of the first educational scholars to recognize and articulate the significance of school management and its influence on the educational environment. In *The Management of a City School* (1919), he set a precedent for integrating principles of administrative efficiency and organisational management into the education sector. Emerging during the Progressive Era in the United States, Perry's ideas were deeply influenced by the broader societal emphasis on reform and efficiency in public institutions. This period, marked by rapid urbanization and industrialization, prompted a reevaluation of traditional practices in various domains, including education. Perry's work reflected this zeitgeist, advocating for schools to function as well-organized, purpose-driven institutions capable of meeting the complex needs of modern society.

Perry drew inspiration from principles of scientific management, popularized by Taylor (1911), which emphasized systematic organisation and task optimization to improve efficiency. However, Perry adapted these ideas to suit the needs of educational institutions. He argued that effective leadership and well-structured systems were essential not only for operational success

but also for fostering an environment conducive to learning. Perry's conceptualization of school management extended beyond administrative duties to include the relational dynamics among school principals, teachers, and students. He hypothesized that the quality of leadership within a school directly influences its climate, shaping the norms, values, and interactions that define the educational experience. At the core of Perry's philosophy was the belief that school leaders, particularly principals, play a pivotal role in establishing and sustaining a positive school climate. He advocated for democratic leadership, characterized by open communication, shared decision-making, and responsiveness to the needs of both staff and students. This approach was a marked departure from the hierarchical and often authoritarian structures that dominated schools at the time. Perry viewed the principal not merely as an administrator but as a leader who shapes the school's culture and fosters a sense of community and collaboration. He points out the importance of principals modeling professional behavior, supporting teacher development, and addressing the emotional and social well-being of all students.

Perry's emphasis on relational dynamics aligns with broader psychological and sociological theories that emerged in the early 20th century, such as Kurt Lewin's field theory (1936) and Émile Durkheim's work on social cohesion (1961). These theories highlighted the relationships between individual behaviors and environmental factors, affirming the role of social interactions in shaping collective outcomes. Perry's work anticipated these insights by emphasizing the relational and cultural dimensions of school management. He argued that fostering positive relationships among all members of the school community was essential for creating an environment where students and teachers could thrive. The relevance of Perry's ideas to modern educational practice is evident in the ongoing emphasis on leadership and school climate in educational research and policy. Nowadays frameworks, such as the Professional Standards for Educational Leaders (Task, 2018), reflect Perry's belief in the transformative potential of school leadership. These standards emphasize the importance of creating safe, equitable, and supportive environments that promote student learning and teacher well-being. Similarly, research on transformational leadership highlights the impact of collaborative and inclusive leadership practices on school climate and student outcomes. For instance, Leithwood & Jantzi (2005) found that transformational leadership, which emphasizes shared goals and participatory decision-making, significantly enhances student achievement and teacher satisfaction. Empirical studies provide further validation of Perry's arguments regarding the relationship between school climate

and educational outcomes. For example, Thapa et al. (2013) reviewed a broad body of literature and concluded that a positive school climate is associated with higher academic achievement, improved social-emotional development, and reduced behavioral issues. Perry's insights into the role of leadership in shaping school climate are echoed in scholarly findings that highlight the importance of supportive leadership in fostering teacher retention and morale. Boyd, Grossman, Ing, Lankford, Loeb & Wyckoff (2011) demonstrated that schools with principals who prioritize communication, collaboration, and professional development have significantly lower teacher turnover rates. In addition to leadership, Perry's focus on organisational efficiency remains important in today's discussions on school management. Contemporary initiatives aimed at improving school climate often focus on the need for clear policies, effective resource allocation, and streamlined communication processes. Moreover, a growing focus on culturally responsive leadership and teaching practices highlights the importance of creating environments where all students feel valued and supported. Perry's vision of school management as a relational and collaborative effort provides a historical foundation for the modern approaches we use today.

Nevertheless, it is important to situate Perry's contributions within their historical context. The focus on administrative efficiency and management structures reflected the needs and challenges of early twentieth-century schools, which were largely homogenous and less influenced by the complexities of globalization, technological advancement, and cultural diversity that characterize modern education. However, his insights have been expanded and enriched by subsequent research that incorporates broader theoretical frameworks. For example, Bandura's & Wessels's (1997) concept of self-efficacy and Bronfenbrenner's (1979) ecological systems theory provide additional dimensions for understanding how organisational structures and environmental factors influence individual and collective behaviors within schools.

3.1.2. John Dewey's Relational and Social Theory of Education

John Dewey's contributions to education, particularly through his seminal work *Democracy and Education* published in 1916 (2024), remain a cornerstone for understanding the intersection of school climate and the broader aims of education. Dewey redefined the purpose of education as a social and moral process essential for fostering democratic ideals and holistic development. His ideas emerged during a transformative period in American history characterized by industrialization, urbanization, and the rise of the progressive movement. Dewey's work

challenged traditional, authoritarian models of education that prioritized rote memorization and teacher-centered instruction, instead advocating for schools to serve as microcosms of democratic society. These institutions, he argued, should respect principles of collaboration, mutual respect, and active participation, shaping students not only as learners but also as citizens. Central to Dewey's philosophy was the belief that education is inherently relational and social process with the notion that the quality of interactions within schools reflects and shapes the values of the broader society. For Dewey, schools are not merely venues for knowledge transmission but dynamic environments where students learn through active engagement with their peers, teachers, and the surrounding world. His theory of "learning by doing" (2024) emphasized experiential education, advocating for a curriculum that connects academic content with real-world applications.

Dewey's ideas remain profoundly relevant in contemporary education. Modern frameworks for improving school climate often draw directly from his principles, emphasizing the need for inclusive, student-centered environments. His influence is also evident in contemporary restorative practices in schools. Restorative approaches prioritize dialogue, accountability, and community-building over punitive disciplinary measures, resonating with Dewey's emphasis on respect and ethical relationships. By upholding a sense of shared responsibility and mutual understanding, restorative practices create climates where students feel valued and supported. Gregory, Clawson, Davis & Gerewitz (2016) highlight the effectiveness of these approaches in improving teacher-student relationships and reducing disciplinary incidents, affirming Dewey's insights into the transformative power of social interaction.

Another critical aspect of Dewey's legacy is the emphasis on student voice and agency in shaping school climate. Dewey's belief in empowering students to take an active role in their education is reflected in initiatives such as participatory decision-making, student-led councils, and project-based learning. These approaches enable students to contribute meaningfully to the school community, creating a sense of belonging and ownership. Mitra (2004) demonstrates that when students are involved in shaping school policies and practices, they are more engaged and motivated, leading to more positive school climates. Empirical research continues to validate Dewey's theoretical insights into the relational and social dimensions of education. Fredricks, Blumenfeld, & Paris (2004) emphasize the role of school climate in fostering student engagement, showing that collaborative and respectful environments enhance motivation and participation.

Hamre & Pianta (2001) show the importance of teacher-student relationships, finding that positive interactions are linked to higher academic achievement and fewer behavioral problems. Dewey's philosophy also informs the efforts to address equity and inclusivity in education. The insistence on the relevance of education to students' lived experiences provides a foundation for culturally responsive pedagogy, which seeks to affirm and value the diverse cultural backgrounds of students. Culturally responsive teaching fosters climates where all students feel respected and supported, addressing systemic inequities and promoting social justice. Gay (2018) argues that such approaches not only enhance academic outcomes but also contribute to more inclusive and affirming school environments.

Despite the transformative potential of Dewey's philosophy, implementing his principles in modern educational systems is not without challenges. The emphasis on standardized testing and accountability in many educational systems often conflicts with the goals of fostering democratic participation and experiential learning. These competing priorities may create tensions for schools seeking to balance the demands of performance metrics with the need to cultivate positive school climates. Furthermore, Dewey's vision requires significant investment in teacher training and resources, which may be difficult to achieve in under-resourced schools. Addressing these challenges requires a commitment to integrating Dewey's principles into educational policy and practice, as well as innovative approaches to reconcile the tensions between traditional measures of success and the broader aims of education. Dewey's emphasis on experiential learning and participatory decision-making has also found new relevance in the context of digital education. The rise of technology in classrooms presents opportunities to create collaborative and interactive learning environments that reflect Dewey's philosophy. Digital tools can facilitate project-based learning, enable real-world problem-solving, and promote global citizenship by connecting students across cultural and geographical boundaries. However, these opportunities must be balanced with critical considerations of equity and access, ensuring that technological advancements contribute to inclusive and supportive school climates.

3.1.3. Kurt Lewin's Principles of Topological Psychology

In 1936, Kurt Lewin's *Principles of Topological Psychology*, proposed a framework for understanding behavior as a function of the interaction between a person and the environment (Lewin, 2013). This simple idea shifted the focus of psychological and social analysis from the

individual to the dynamic interplay between people and the environments in which they operate. In educational contexts, Lewin's ideas laid the ground for exploring how school climate, a composite of social, emotional, and organisational factors, affects students, teachers, and the overall educational experience (Thapa et al., 2013). Lewin's theory is centered around the concept of the "life space," which integrates all psychological and environmental factors influencing an individual at a given moment. Through the theory, environments are not passive backdrops but active and dynamic forces that shape behaviors, attitudes, and interactions. This perspective aligns with modern understandings of school climate, which emphasize the reciprocal and evolving relationships between individuals and their environments (Thapa et al., 2013). A school climate that supports collaboration, emotional safety, and inclusivity is therefore not merely a static outcome but a continuously constructed reality shaped by interactions within the school community (Gregory et al., 2016).

Similarly to Perry and Dewey, Lewin's ideas emerged during a period of intellectual transformation in psychology and the social sciences. In the early 20th century, as industrialization and urbanization reshaped social life, researchers increasingly sought to understand how social and environmental factors influenced individual and group behaviors. His work bridged the gap between psychology and sociology, offering a framework for analyzing not only individual behaviors but also the collective dynamics of groups. In schools, where diverse individuals such as students, teachers, administrators, and families interact, Lewin's ideas into group behavior and environmental forces have proven particularly influential (Olweus, 1993).

Central to Lewin's contributions is his concept of "group dynamics," which argues that groups are not aggregates of individuals but cohesive systems with shared norms, values, and interactions (Lewin, 2013). This vision has direct implications for understanding school climate, as schools function as social systems where group norms, peer relationships, teacher-student interactions, and institutional practices collectively define that environment. A key practical extension of Lewin's theoretical contributions is a development of action research, a methodology that combines inquiry and problem-solving to address real-world challenges while generating new knowledge (Elliott, 1991). Action research follows a cyclical process of planning, acting, observing, and reflecting, making it particularly well-suited for addressing complex and evolving issues such as school climate (O'Grady, 2018). In education, action research has been widely used to improve school environments, assess the effectiveness of interventions, and empower

stakeholders to collaboratively create positive change. For example, schools have used action research to address bullying, improve teacher-student relationships, and enhance management strategies, all of which are critical components of a supportive school climate. The enduring relevance of Lewin's ideas is evident in modern educational practices and frameworks that seek to enhance school climate. A widely used example is the *Positive Behavioral Interventions and Supports* (Bradshaw, Koth, Bevans, Ialongo & Leaf, 2008), a framework that applies principles consistent with Lewin's field theory. Empirical research supports Lewin's theoretical assertions to improved school climate, reduced behavioral problems, and enhanced academic outcomes. Studies consistently demonstrate that a positive school climate is associated with improved academic performance, enhanced social-emotional well-being, and stronger teacher retention (Bradshaw et al., 2008; Boyd et al., 2011). Another important application of Lewin's theories lies in culturally responsive pedagogy, an approach that emphasizes the importance of affirming and valuing students' cultural backgrounds in shaping educational practices. Research by Gay (2018) and Ladson-Billings (1995) demonstrates that culturally responsive practices not only improve student engagement and achievement but also contribute to more inclusive and affirming school climates. Despite the significant influence of Lewin's work, today's application in education contexts is not without challenges. One limitation of field theory is its broad and abstract nature, which can make it difficult to operationalize in specific educational contexts. Additionally, the complexity of modern educational systems, characterized by diverse student populations, competing policy priorities, and resource constraints, poses challenges for implementing Lewin's principles. To address these limitations, researchers have sought to adapt Lewin's ideas to contemporary realities, integrating them with insights from other theoretical frameworks, such as Bronfenbrenner's ecological systems theory (Bronfenbrenner, 1979) and others.

3.1.4. Émile Durkheim's Social and Moral Dimensions of Education

In *Moral Education*, Durkheim (1961) argued that schools play a basic function in teaching students the norms, values, and collective consciousness to promote social solidarity. He viewed education as a moral trajectory that involves more than intellectual instruction, seeking to promote the socialization of students into society. These ideas are central to modern school climate debates, which explore how the social and moral climates of schools affect students' academic and personal development. Durkheim's theory came at a period of social transformation in Europe between the

late nineteenth and early twentieth centuries. Education assumed the central role of securing social solidarity and forging a collective identity in the midst of these transformations. Durkheim believed that schools are microcosms of society where individuals become socialized into common norms, values, and rules. This perception has remained highly relevant to modern-day education systems, since schools continue to provide the system through which people are bonded to society by the creation of a sense of shared purpose and community (Hargreaves, 1995). Implicit in Durkheim's educational theory is the idea of collective consciousness, which has been defined as common moral and social values binding individuals together in a shared context. For instance, structured interactions in learning environments, such as classroom conversations, group assignments, and co-curricular activities, offer room for students to internalize social norms and develop relational skills necessary for productive engagement in society. This trend is squarely within contemporary conceptions of school climate that promote the importance of relationships, belonging, and moral education in establishing climates in which students feel safe, respected, and engaged (Mitchell, Bradshaw & Leaf, 2010).

Durkheim's emphasis on discipline as an essential element of moral education marks the need to build certain and uniform behavioral norms in schools. According to Durkheim (1961), discipline was about the restrictive system but an educative means of instilling students with the value of self-restraint and respect for others. This position is supported by research findings that show schools with clearly stated norms and frequent rules of conduct foster climates that support student engagement and reduce conflict (Bear, 2010). For example, whole-school positive behavior systems that encourage prosocial behavior align with Durkheim's perspective of discipline as a process that enriches and teaches. Durkheim focused on cooperation as a component of moral education, pointing out that schools must ensure unity and mutual understanding among students. Collaboration creates a sense of unity and shared accountability, which are essential aspects of a perfect learning environment. This concept aligns with modern practices such as cooperative learning, where students learn in groups and work towards common goals, building their interpersonal skills and establishing classroom trust (Johnson & Johnson, 1999). Studies have shown that cooperative learning strategies not only improve academic success but also attitudes towards inclusiveness and equity, which is highly consistent with Durkheim's vision of education as a tool for social cohesion (Slavin, 2015). One thing that is unique in Durkheim's writing is his focus on the educator as a moral agent. He viewed educators as being at the center of the process

of moral education, not just in transmitting knowledge, but as models of moral conduct and as working to create a sense of moral community within the classroom. Durkheim's insights are confirmed in more recent research that highlights teacher-student relationships as central to the development of school climate. For instance, Roorda, Koomen, Split & Oort (2011) found that positive teacher-student relationships are associated with students' higher motivation, engagement, and general well-being. Moreover, fair, empathetic, and respectful teachers create an environment in which students feel valued and supported, which also supports the general positive school climate (Pianta, Hamre, & Allen, 2012).

Durkheim's account of schools as moral institutions is within the organisational paradigm, where he emphasized the importance of shared goals and values in defining institutional function. He believed schools should be integrated communities where everyone involved strives for common purposes. This perspective is consistent with transformational leadership theory, which emphasizes the school leader's function in establishing collaboration, trust, and a shared vision for change (Hallinger, 2003).

3.2. Domains of School Climate

3.2.1. School Safety

Safety is a component of school climate that has physical and psychological aspects influencing the experience and success of the students, teachers, and other employees (Wang & Degol, 2016). School safety, in a general sense, refers to an absence of physical injury, preventing violence, harassment, bullying, and creating a climate in which people feel safe, respected, and valued (Cornell & Mayer, 2010). Safety, as a central construct within the school climate literature, plays a critical role in fostering healthy academic, social, and emotional development. Safety is both a prerequisite for effective teaching and learning processes and a measure of a school's general climate and organisational health. The safety theme in schools evolved with the changing societal and educational contexts. Early school safety discussions focused primarily on avoiding physical harm, both accidental and violent. However, with the growth of psychological theory in the mid-twentieth century, safety became associated not only with physical aspects but also with emotional and social aspects. This was influenced by Maslow's & Lewis's (1987) *Hierarchy of Needs*, which defined safety as a basic need for human functioning and self-actualization. Maslow's conceptual

framework highlighted the interconnectedness of physical safety, emotional security, and overall well-being, and thus theoretically justified the examination of safety as part of the school climate.

From a methodological perspective, school safety includes a variety of approaches, ranging from large-scale quantitative studies to in-depth qualitative studies. Quantitative studies, such as those drawing on national surveys such as the United States Department of Education's *School Survey on Crime and Safety* (Diliberti, Jackson, Correa & Padgett, 2019), have provided critical data on trends in violence, bullying, and school safety perceptions. These questionnaires often examine variables such as the prevalence of bullying, the use of security policies, and the influence of school policy on student perceptions of safety. Together, these methods have deepened the understanding of school safety as a complex and contextually mediated construct.

Theoretical models have been key to developing research on school safety. Bronfenbrenner's *Ecological Systems Theory* (1979), emphasizes the interplay between individual, interpersonal, and institutional agents in creating safety and a range of aspects of the educational setting. Here, safety is conceptualized as an intersubjective experience rather than a private occurrence; it is the outcome of those interactions that take place over a set of ecological levels, including those taking place in the domains of school, family, and community life. For example, one's sense of safety may be influenced by their interactions with others (microsystem), school discipline (mesosystem), and general societal attitudes toward violence and diversity (macrosystem). Similarly, Bandura's (1989) *Social Cognitive Theory* provides insightful information about the processes by which the sense of safety is increased in schools. His emphasis on observational learning and self-efficacy highlights the importance of modeling behavior and social norms in creating safe habits and discouraging risky behaviors. For instance, schools that establish definite expectations of respectful behavior and exemplify these expectations by consistently exhibiting the same behavior by teachers and principals are likely to develop a culture of safety.

In modern educational discourse, the issue of safety has emerged as a priority agenda for researchers, policymakers, and educators specifically because of increasing concerns with violence in schools, bullying, and mental well-being. High-profile cases, such as the American school shootings, have created a heightened sense of awareness among the public and accelerated the move towards making schools safer through reactive and proactive measures. Interventions introduced include implementing physical security measures such as the usage of surveillance

cameras and metal detectors, and interventions aimed at establishing positive relationships and the underlying causes of violence (Cornell & Mayer, 2010). One of the most significant trends in school safety research and practice is the emphasis on *Social-Emotional Learning* as a means of promoting psychological safety. Social-emotional learning programs aim to develop students' emotional intelligence, empathy, and conflict resolution skills, by reducing the likelihood of violence and fostering a sense of belonging (Durlak, Weissberg, Dymnicki, Taylor & Schellinger, 2011). Research has shown that schools with strong social-emotional learning programs tend to report lower rates of bullying and higher levels of student engagement, highlighting the interconnectedness between safety, relationships, and overall school climate (Zins, 2004). These findings align with Durkheim's (1961) emphasis on moral education and the role of schools in fostering social cohesion and collective responsibility. Another approach to enhancing school safety is the implementation of restorative practices. Restorative practices prioritize relationship-building and conflict resolution over punitive disciplinary measures, focusing on repairing harm and restoring trust among students and staff. These practices align with theories of relational trust, which emphasize the importance of respectful and equitable interactions in creating a safe and supportive school climate (Schneider & Bryk, 2002). Research indicates that restorative practices are effective in reducing suspensions, improving relationships, and fostering a sense of safety and belonging (Gregory et al., 2016). For example, schools that implement restorative circles and peer mediation programs report higher levels of student satisfaction and lower rates of conflict compared to schools that rely solely on punitive approaches. The role of equity and inclusion in school safety has also gained increasing attention in recent years. Studies have highlighted the disproportionate impact of unsafe environments on marginalized groups, including students of color, LGBTQ+ students, and students with disabilities (Kosciw, Clark, Truong & Zongrone, 2020). Efforts to address these disparities have focused on promoting culturally responsive practices and ensuring that all students feel valued and respected. For instance, culturally responsive teaching, which affirms students' cultural identities and fosters inclusivity, has been shown to improve perceptions of safety and reduce experiences of discrimination (Gay, 2018).

Technological innovations have also influenced modern-day approaches to school safety. New digital tools, such as anonymous reporting systems and social-emotional learning apps, have been developed to help schools monitor and address safety concerns more effectively. For instance, apps that allow students to report bullying or threats anonymously have been credited with

preventing potential incidents and fostering a culture of accountability (Cornell, 2020). Paradoxically, the use of technology for safety in schools has ethical and privacy concerns pertaining to the surveillance of students and misuse of the information collected. These are some of the reasons thoughtful implementation and ongoing evaluation are necessary to ensure the positive impact of technological solutions on school safety. Despite the gain made so far in understanding and addressing school safety, there are still some challenges. Among these, one of the most pertinent challenges focuses on maintaining a proper balance between physical security and the provision of a welcoming, inclusive atmosphere. Research has identified that an over-reliance on security measures, including metal detectors and armed guards, could create a climate of fear and distrust that undermines students' sense of belonging and psychological safety (Bachman, Gunter & Bakken, 2011). In this regard, experts recommend an integrated approach that should also include physical security to improve positive relationships and emotional well-being. Furthermore, the point at which safety and mental health intersect constitutes a critical area of continued research and intervention. The rising cases of mental disorders among students have heightened the need to ensure that service provisions include counseling and crisis intervention. Schools that center their safety efforts on mental health support have higher outcomes not only in the area of student well-being but also in general school climate conditions (Roeser & Eccles, 2000). These findings make the case for integrated approaches to address the intertwined dimensions of safety, mental health, and academic success.

3.2.2. School Relationships

School relationships involve interactions among students, teachers, principals, and outreach to the greater school community. To this end, positive relations are crucial for building trust, collaborative, respectful relationships among its members. Positive relationships at school are meaningfully important in promoting academic achievement and social-emotional well-being, and overall success for both students and educators. School relationships are defined by empathy, open communication, and shared responsibility, all elements that have a very real impact on the lived experiences of all who share in and the character of school life in general. The concept of school relationships is multilayered, involving a wide array of interpersonal and organisational dynamics. The heart of relationships within schools includes teachers and students, students among themselves, teachers and staff, and schools and families. When such relationships are trusting,

respectful, and accompanied by a common focus on pupil success, they may constitute a positive school climate which nurtures feelings of belonging and engagement. Conversely, poor or dysfunctional relations create alienation, conflict, and a reduction in academic and social outcomes of pupils (Schneider & Bryk, 2002).

The significance of school relationships is grounded in several influential theoretical frameworks. *The Attachment Theory*, developed by Bowlby (1979), provides an interpretation for understanding the emotional and relational dynamics within schools. Bowlby's work emphasizes the importance of secure and trusting relationships for emotional and social development. In educational settings, attachment theory underscores the critical role of teacher-student relationships in providing students with a sense of security and belonging. Research has shown that when students feel emotionally supported by their teachers, they are more likely to engage in learning, exhibit prosocial behavior, and achieve academic success (Roorda et al., 2011). *The Social Capital Theory*, articulated by Coleman (1988), further illustrates the importance of relationships in schools. Social capital refers to the resources embedded within relationships, such as trust, norms, and networks, that facilitate collaboration and collective action. Within schools, high levels of social capital enable teachers, students, and families to work together effectively, fostering a shared commitment to educational goals. For example, schools with strong relational networks often experience higher levels of student achievement, teacher satisfaction, and parental involvement (Epstein, Galindo & Sheldon, 2011). The research of school relationships has employed diverse approaches to capture their complexity and significance. Social network analyses provide insights into patterns of collaboration and communication within schools, revealing how relational dynamics influence organisational effectiveness (Moolenaar, Slegers & Daly, 2012). Qualitative methods, including interviews, focus groups, and ethnographic studies, complement quantitative approaches by offering rich, contextualized insights into the lived experiences of school stakeholders. These methods have been particularly valuable in exploring how cultural norms, power dynamics, and historical contexts shape relationships within diverse educational settings (Howard & Rodriguez-Minkoff, 2017).

In post-coronavirus pandemic years, the importance of fostering positive school relationships has gained increasing recognition, reflecting a broader understanding of the interdependence between relational dynamics and educational outcomes. Restorative practices represent another significant development in fostering positive school relationships. These

practices prioritize relationship-building, dialogue, and collective problem-solving over punitive approaches to discipline. Restorative practices, such as restorative circles and peer mediation, aim to repair harm and restore trust following conflicts, fostering a culture of accountability and mutual respect. Studies have shown that restorative approaches reduce disciplinary incidents, improve student-teacher relationships, and enhance students' sense of belonging and safety within schools (Gregory et al., 2016). Technology has also emerged as a tool for strengthening school relationships, particularly in the context of online and hybrid learning. Digital platforms facilitate communication and collaboration among students, teachers, and families, enabling the maintenance of connections despite physical distance. For example, tools that promote peer collaboration, real-time teacher feedback, and parental involvement have been shown to enhance relational dynamics and support student engagement (Chen & Chen, 2025). However, the reliance on technology also presents challenges, including equity concerns, digital fatigue, and the potential for reduced face-to-face interactions, underscoring the need for a balanced approach to integrating technology into relationship-building efforts.

The role of equity and inclusion in shaping school relationships has gained prominence, particularly as research highlights disparities in relational experiences among students from different racial, cultural, and socioeconomic backgrounds. Culturally responsive teaching, which seeks to affirm and value students' diverse cultural identities, has been shown to foster positive relationships and improve perceptions of inclusivity within schools (Gay, 2018). By creating an environment where all students feel respected and supported, culturally responsive practices contribute to a sense of belonging and connectedness, enhancing the overall climate of the school (Ladson-Billings, 1995). Despite significant progress, challenges remain in fostering positive school relationships. Structural barriers, such as hierarchical and siloed organisational practices, can limit opportunities for collaboration and communication among teachers, administrators, and students. External factors, such as socioeconomic inequality and societal polarization, further complicate efforts to build cohesive school communities. Schools in economically disadvantaged areas, for example, often face higher levels of stress and conflict, which can strain relationships and hinder the development of a positive climate (Lupton, 2004). Addressing these challenges requires systemic approaches that prioritize relational trust, empathy, and shared responsibility at all levels of the educational system.

3.2.3. Teaching and Learning

The teaching and learning domain of school climate derives collective beliefs and practices regarding curriculum design, instructional methods, and assessment strategies that directly influence both teacher efficacy and student outcomes (Cohen et al., 2009). At its core are four interrelated dimensions: clarity of learning goals, coherence of curriculum, quality of pedagogical support, and the use of formative assessment (Thapa et al., 2013). When these dimensions are well aligned, teachers experience heightened instructional self-efficacy and students demonstrate increased engagement, persistence, and academic competence (Cohen et al., 2009; Rapti, 2013). Drawing on Moos's (1973) *Theory of Human Environments*, the teaching and learning climate can be understood along the personal development dimension, opportunities provided for mastery experiences, and the goal orientation dimension as clarity and attainability of academic objectives. Empirical studies reinforce the centrality of this domain in effective school climates. Thapa et al. (2013) reported that strong instructional leadership characterized by principals who articulate clear curricular priorities and facilitate professional learning communities was significantly correlated with student achievement gains and positive teacher morale. Similarly, Bryk (2010) found that sustained teacher collaboration in data-driven inquiry cycles yielded improvements in instructional quality and reduction of achievement gaps. Cohen et al. (2009) demonstrated that regular use of formative assessment provided students with actionable feedback, fostering a sense of agency and belonging in the classroom.

In practice, cultivating a positive teaching and learning climate involves several strategies. First, curriculum coherence requires alignment of standards, pacing guides, and unit plans, often supported by curriculum specialists working alongside teachers (Fullan, 2002). Second, continuous professional development enables collective reflection and continuous refinement of pedagogical practices (Eaker & DuFour, 2009). Third, embedding formative assessment in daily instruction, including self- and peer-assessment activities, encourages students to monitor their learning and teachers to adjust instruction responsively (Black & Wiliam, 1998). Finally, instructional leadership from principals and teacher-leaders through classroom observations, feedback conferences, and resource allocation reinforces a culture where teaching excellence is recognized and supported (Leithwood & Jantzi, 2005).

3.2.4. Institutional Environment

A positive school climate depends on the institutional environment that supports high-quality instruction by ensuring that classrooms are safe, well-equipped, and conducive to collaboration, and that organisational policies and support systems promote teacher agency and professional growth. Kariippanon, Cliff, Lancaster, Okely & Parrish (2019) found that flexible learning spaces and reliable technology not only facilitate innovative pedagogical practices but also foster stronger teacher collaboration and experimentation. When schools invest in up-to-date classrooms, stable internet connectivity, and adaptable classroom configurations, teachers report greater autonomy in designing lessons that engage diverse learners (Higgins, Hall, Wall, Woolner, & McCaughey, 2005; Ronfeldt, Farmer, McQueen, & Grissom, 2015). Equally important are transparent and participative governance structures. Ingersoll & Smith (2004) report that clear policies on workload distribution, performance evaluation, and career progression build trust and reduce uncertainty lowering turnover intentions. Johnson, Kraft & Papay (2012) show that when teachers are included in scheduling decisions, policy committees, and budget allocations, collective efficacy strengthens, leading to sustained improvements in instructional quality. Decision-making processes and inconsistent policy enforcement contribute to burnout and withdrawal, particularly among early-career educators (Johnson & Johnson, 2017). Within these structural and policy dimensions are professional support systems that operationalize the institutional commitment to teacher development. Longitudinal research by Smith & Ingersoll (2004) revealed that novice teachers who participate in formal induction programs with dedicated mentors exhibit significantly lower attrition rates that are nearly half that of peers without such support. Vescio, Ross & Adams (2008) showed that professional learning communities, characterized by regular peer observation, data-driven inquiry, and joint problem-solving, foster a culture of continuous improvement and resilience.

On the other hand, resource equity remains a consistent challenge in many institutional environments. Ladd (2011) highlighted that schools in high-poverty areas often lack instructional materials and experienced teachers, creating achievement gaps and undermining teacher morale. Darling-Hammond (2010a) argued that targeted funding and resource redistribution are necessary to ensure that all schools can provide the foundational infrastructure and supports that underpin a positive school climate. Strengthening the institutional environment involves regular facility audits, technology needs assessments, and inclusive decision-making processes that engage

teachers in shaping their work conditions (Hénard & Roseveare, 2012; Leithwood & Jantzi, 2005). Allocating budget lines for induction programs, professional learning communities' facilitation, and classroom resources demonstrates a school's commitment to instructional excellence and staff well-being.

3.2.5. Equity and Inclusion

Equity and inclusion within the of school climate refer to the policies, practices, and cultural norms that ensure all students and staff, regardless of race, ethnicity, language background, socioeconomic status, gender identity, ability, or other characteristics, have fair access to resources, opportunities, and supportive relationships (National School Climate Council, 2007). Equity involves the distribution of material and human resources but also the removal of systemic barriers that perpetuate opportunity gaps (Darling-Hammond, 2010b). Inclusion involves fostering a sense of belonging and ensuring that diverse perspectives are represented in curriculum, instructional practices, and decision-making processes (Banks, 2015). Together, equity and inclusion form the ethical and practical foundation of a positive school climate, shaping how members of the school community experience respect, recognition, and empowerment. Ladson-Billings (1995) identified culturally relevant pedagogy as a vehicle for academic success and cultural competence, asserting that when students see their histories and identities reflected in course content, engagement and achievement increase. In practice, schools committed to curricular equity conduct systematic audits of textbooks, lesson plans, and assessments to identify and remove cultural biases, ensuring that every student's voice is valued and every learner has access to high-quality content and pedagogical scaffolds. Discipline policies and school routines significantly influence perceptions of fairness and belonging. Zero-tolerance policies and disproportionate disciplinary actions against students of color or students with disabilities undermine inclusive climates and contribute to the school-to-prison pipeline (Skiba, Horner, Chung, Rausch, May & Tobin, 2011). In contrast, restorative justice practices and positive behavior interventions and supports build relationships and community-building, resulting in reduced suspensions and improved school connectedness (Gregory, Clawson, Davis & Gerewitz, 2016). For staff, inclusive policy frameworks, such as clearly communicated anti-discrimination procedures, accommodations for religious or cultural observances, and formalized processes for requesting support, signal institutional commitment to respecting individual needs and rights.

The demographic composition of school staff and leadership also affects school climate through representation and role modeling. Research indicates that a diverse teaching force improves outcomes for students by enhancing academic engagement and aspirations (Nicholson-Crotty, Grissom, Nicholson-Crotty & Redding, 2016). Professional inclusion also extends to staff development: equitable access to professional learning opportunities, culturally sustaining pedagogies, and affinity groups empowers educators to bring their full identities into their work, supporting a more authentic and connected community (Alim, Paris & Wong, 2020). A truly inclusive school climate engages families and community stakeholders as partners in decision-making and learning. Engaging multilingual families through translation services, culturally responsive communication channels, and home visits reduces barriers to participation and strengthens trust (Jeynes, 2012). United Nations Educational, Scientific and Cultural Organization (2020) emphasizes that inclusive education is a shared societal responsibility, requiring collaboration among schools, families, and community institutions to dismantle exclusionary practices and co-create equitable learning environments. Grounded in research and guided by ethical imperatives, a focus on equity and inclusion is essential for nurturing democratic, effective schools where every member can thrive.

3.2.6. Emotional Climate

While other domains of school climate focus on structural, instructional, or social dimensions, emotional climate refers to the overall emotional tone of everyday interactions in a school, the extent to which individuals feel understood, valued, and supported in expressing their feelings (Cohen et al., 2009). A positive emotional climate is characterized by warmth, mutual trust, and resilience in the face of stressors, whereas a negative climate evidences pervasive anxiety, fear of failure, or emotional isolation among stakeholders (Jennings & Greenberg, 2009; Oberle & Schonert-Reichl, 2017). Research points out the great impact of emotional climate on educational outcomes. Pianta & Hamre's (2009) revealed that classrooms with high levels of emotional support measured through teacher sensitivity, positive affect, and responsive instruction exhibit improved student engagement, higher academic achievement, and reduced behavioral problems. Similarly, Hamre & Pianta (2001) linked emotionally supportive teacher-student relationships with gains in reading and mathematics, controlling for baseline performance and demographic variables.

A core element of the emotional climate is the degree to which students perceive the school as a safe space for emotional expression. Many studies demonstrated that when students feel secure in sharing concerns, academic or personal, they are more likely to seek help from adults, participate in collaborative learning, and persist through challenges (Kitsantas & Chow, 2007; Slavich & Zimbardo, 2012; Wentzel & Watkins, 2002). Noddings (2005) further articulates that emotionally safe environments allow students to take intellectual risks, ask probing questions, and develop meta-cognitive awareness of their learning processes. Emotional climate also includes the emotional well-being of teachers and their capacity to regulate affect in pedagogical contexts. Chronic stress, burnout, and emotional exhaustion are widespread among educators, with negative implications for instructional quality and retention (Leiter & Maslach, 2017). Jennings & Greenberg (2009) argue that teachers' social-emotional competence (e.g., self-awareness, emotion regulation, empathy) directly shapes classroom school's emotional climate. Educators who received training in mindfulness and emotional regulation strategies reported reduced burnout and created more supportive emotional environments, which in turn predicted higher student social competence and academic performance (Jennings, Brown, Frank, Doyle, Oh, Davis & Greenberg, 2017). Beyond teacher-student interactions, the emotional dynamics among peers contribute significantly to the emotional climate. Wentzel (2017) indicates that positive peer relationships marked by empathy, cooperative conflict resolution, and inclusive friendship networks correlate with stronger school belonging and lower levels of peer victimization.

School principals play an important role in modeling and setting the emotional climate at the institutional level. Hargreaves (2001) described emotional geographies of leadership, asserting that principals' emotional expressions such as optimism, calmness, or frustration, ripple through the organisational culture. In another study, Tschannen-Moran & Gareis (2015) showed that leaders who practiced authentic, compassionate communication and acknowledged emotional challenges within the staff engendered greater trust and collaborative problem-solving, strengthening overall emotional climate. Emotional climate is closely linked to teacher retention and job satisfaction. Reinke, Herman & Dong (2018) found that educators reporting greater emotional support from colleagues and administrators exhibited higher organisational commitment and were less likely to leave the profession within five years. Professional peer networks and informal support systems such as gratitude circles and reflective practice groups serve as emotional buffers against stress, reinforcing a sense of belonging (White & Murray, 2015).

Evidence-based interventions targeting emotional climate range from school-wide social-emotional learning programs to targeted teacher support initiatives. At the teacher level, *Mindfulness-Based Stress Reduction* and peer coaching have been associated with enhanced emotion regulation capacity and more positive emotional climates (Flook, Goldberg, Pinger, Bonus & Davidson, 2013; Jennings, Doyle, Oh, Rasheed, Frank & Brown, 2019). Emotional climate is inherently cultural, influenced by community norms, values, and historical contexts. Research in culturally diverse schools points out that emotional expression norms vary across groups; for example, some cultures emphasize communal harmony over individual emotional disclosure (De Leersnyder, Boiger & Mesquita, 2013). Emotional climate intersects dynamically with other domains. It is fostered by supportive teaching and learning practices, sustained by equitable and inclusive institutional policies, and reflected in organisational structures. For example, when teachers feel supported by leadership and equitable policies, they are better equipped to provide emotional support to their students (Pianta & Hamre, 2009).

3.2.7. Student Engagement

Student engagement is recognized as a central pillar of a positive school climate, reflecting the extent to which students invest behaviorally, emotionally and cognitively in their educational experience (Fredricks, Blumenfeld, & Paris, 2004). Behavioral engagement manifests in on-task participation, attendance, and involvement in school activities, emotional engagement encompasses affective reactions such as interest, belonging, and school identification, whereas cognitive engagement refers to investment in learning, self-regulation, and strategic thinking (Reeve, 2013; Skinner & Belmont, 1993). Theoretical conceptualizations situate student engagement within transactional ecological frameworks that emphasize reciprocal influences between the individual and the learning context. Bronfenbrenner's ecological systems theory (1979) shows how microsystem interactions-classroom climate, teacher support and peer relations influence engagement. Moreover, engagement is dynamic, fluctuating over time and across subjects, and is influenced by factors at the individual, relational, and organisational levels (Appleton, Christenson, & Furlong, 2008; Fredricks et al., 2004).

Behavioral engagement is often the most observable dimension, reflecting on students' effort, attention, participation in class discussions, completion of assignments, and participation in extracurricular activities (Marks, 2000). High behavioral engagement has been linked to improved

academic outcomes and reduced dropout risk (Finn & Rock, 1997). Teachers can promote behavioral engagement by providing clear expectations, structured routines, and prompt feedback, strategies that reinforce positive behaviors and establish an environment in which persistence and active involvement are valued (Alspaugh & Harting, 1998). Emotional engagement refers to students' affective experiences in school, including the degree to which they feel supported, respected, and connected to teachers and peers (Zullig, Koopman, Patton, & Ubbes, 2010). Research demonstrates that emotional engagement predicts feelings of school belonging and psychosocial well-being, where warm, responsive teacher-student relationships and opportunities for meaningful peer interaction encourage emotional investment in learning (Hamre & Pianta, 2001; Libbey, 2004). Cognitive engagement involves students' willingness to exert the mental effort necessary to comprehend complex ideas, apply metacognitive strategies, and engage in deep learning (Parsons & Taylor, 2011). It is supported by tasks that challenge students, require critical thinking, and encourage reflection. Educational interventions such as reciprocal teaching, problem-based learning, and scaffolding techniques have been shown to enhance cognitive engagement by prompting students to monitor their understanding and persist in problem solving (Blumenfeld, Soloway, Marx, Krajcik, Guzdial & Palincsar, 1991; Hattie, 2009). Student engagement is both a contributor to and an outcome of a supportive school climate. Wang, Eccles, Willet & Peck (2011) found that dimensions of engagement mediate the relationship between school climate factors and long-term academic trajectories, and showed that improvements in school climate measures correspond with longitudinal increases in all four engagement dimensions, suggesting reciprocal influence. Promoting student engagement requires intentional pedagogical and organisational strategies. High-quality instruction characterized by relevance, challenge, and active learning directly supports cognitive and behavioral engagement. Fredricks et al. (2004) emphasize the importance of linking curriculum content to students' interests and real-world applications. The role of school leadership is critical in shaping an environment conducive to engagement. Leaders who articulate a clear vision for student-centered learning, allocate resources for professional development in engagement-oriented pedagogy, and recognize innovative classroom practices develop a culture in which engagement is valued (Leithwood, Louis, Anderson & Wahlstrom, 2004). School policies that support smaller class sizes, collaborative teacher planning time, and flexible scheduling can remove barriers to sustained engagement (Darling-Hammond, 2010a). Contemporary challenges and opportunities also shape

engagement. Digital learning environments, accelerated by the COVID-19 pandemic, require adaptation of engagement strategies to virtual contexts.

3.2.8. Leadership and Administration

Leadership and administration integrate the strategic, operational, and relational dimensions through which school principals shape the conditions for effective teaching, meaningful learning, and sustainable professional growth (Leithwood et al., 2004). This domain includes three core functions: instructional leadership, organisational management, and relational leadership. These together form the base of the school's daily routines, long-term vision, and cultural norms. Rather than operating in isolation, school principals embed pedagogical priorities into scheduling and resource decisions, model collaborative behaviors, and cultivate trust, creating a shared sense of purpose (Donaldson, 2006; Drago-Severson, 2012; Fullan, 2023). Central to instructional leadership is the articulation of clear, ambitious academic goals, coupled with supportive structures that enable teachers to refine their craft. Effective principals establish a shared vision for student achievement and co-construct performance targets with teachers, ensuring that goals resonate with classroom realities (Donaldson, 2006; Rani, Aslam & Asif, 2025; Robinson, Lloyd, & Rowe, 2008). Classroom walkthroughs provide leaders with real-time insights into instructional practice and when paired with reflective debriefs, they offer formative feedback that balances reinforcement of effective strategies with constructive suggestions for growth (Fullan, 2002; Hallinger & Heck, 1996). Job-embedded professional development, such as peer coaching, lesson study groups, and instructional rounds promotes learning in day-to-day teaching, creating collective responsibility for pedagogical innovation and elevating teacher efficacy over time (Knight, 2007; Vescio, Ross, & Adams, 2008). Emerging scholarship highlights distributed instructional leadership, in which authority for curriculum design, assessment, and professional learning is shared among teacher-leaders, specialists, and administrators (Spillane, Halverson, & Diamond, 2004).

Organisational management provides the scaffolding that transforms vision into operational reality. Strategic resource allocation signals priorities from directing budget to co-teaching roles, specialized intervention staff, or extended learning time demonstrates a commitment to differentiated instruction and inclusive support (Tallerico, 2005; Santamaria & Thousand, 2004). Clear policy frameworks, detailing protocols for attendance, discipline, facility

usage, and extracurricular supervision, reduce ambiguity and allow teachers to focus on pedagogy rather than logistics (Hargreaves & Fink, 2006). Advanced models of organisational management emphasize adaptive scheduling and resource fluidity, where time, space, and personnel are reconfigured in response to evolving student needs and teacher feedback. For example, schools might implement “flex blocks” for targeted tutoring or allow interdisciplinary co-planning across grade levels to address complex projects, reflecting a systems-thinking approach to time and space management (Park & Datnow, 2009). Core to relational leadership is the development of interpersonal trust which is an essential ingredient for innovation, collaboration, and resilience (Bryk & Schneider, 2002). School principals’ model emotional intelligence by practicing active listening, soliciting candid feedback, acknowledging their own vulnerabilities, and demonstrating that learning is a shared journey (Goleman, Boyatzis, & McKee, 2013). Empathetic communication during routine and crisis situations supports psychological safety, enabling staff to voice concerns, experiment with new practices, and recover from missteps without fear of reprisal (Edmondson, 2018). Shared and distributed leadership strategies further democratize decision-making by embedding teacher expertise into governance structures, distributing accountability and enhancing collective efficacy (Leithwood, Mascall, & Strauss, 2009; Spillane, Halverson & Diamond, 2004).

Recent global challenges have accentuated the need for adaptive and digital leadership competencies. Crisis leadership demands rapid decision-making, clear stakeholder communication, and prioritization of community well-being, as exemplified by schools that co-developed health protocols, accelerated technology distribution, and embedded mental health supports during closures (Leithwood, Harris & Hopkins, 2020). Moreover, sustainable improvement hinges on cultivating leadership capacity at all levels. Effective models blend mentoring, coaching, and networked learning communities to support emerging leaders (Portin, Schneider, DeArmond & Gundlach, 2003). Multi-method assessment strategies gauge the effectiveness of leadership practices on school climate. Outcome measures from teacher retention rates, staff morale indices, student achievement trajectories to engagement metrics triangulate leadership influences across relational, organisational, and instructional domains (Ingersoll, 2001). School principals operate within policy, financial, and sociocultural constraints that shape their latitude for innovation. District mandates, funding formulas, and community expectations can limit

resource autonomy, while demographic and socioeconomic factors influence stakeholder needs (Hale & Moorman, 2003).

In essence, the leadership and administration domain functions as the nexus where vision, structures, and relationships converge to animate the organisational school climate. Instructional, managerial, and relational competencies operate in a rhythm, infusing daily practices with a shared purpose and aligning individual actions with collective goals. Through intentional leadership behaviors grounded in equity, emotional intelligence, and adaptive capacity, school leaders create the patterns of interaction that constitute the school's "personality," producing a climate in which teachers and students alike can succeed. In the context of the doctoral dissertation, leadership and administration is seen as a valid domain, one in which instructional vision, organisational systems, and relational trust converge. It is essential to situate these insights within the broader organisational school climate framework. In this comprehensive perspective, the patterns of leadership behavior and administrative practice serve as the organizing logic that synchronizes the other climate domains (e.g., teaching and learning, institutional environment, equity and inclusion, emotional climate, and student engagement). By mapping how principals' decisions, resource allocations, and relational actions interlock with structural conditions and social processes, the framework highlights the dynamic interplay among domains. The next chapter will integrate the eight domains into a unified model, illustrating how leadership behaviors cascade through organisational systems to influence teacher collaboration, student well-being, and institutional resilience to leverage points for targeted interventions in both policy and practice.

4. ORGANISATIONAL SCHOOL CLIMATE

There is a consensus in educational research that while school leadership may not directly influence student learning and achievement, it does present a measurable effect on academic outcomes (Hallinger & Heck, 2011; Louis, Leithwood, Wahlstrom & Anderson 2010). In addition, leadership substantially shapes features of school organisational systems (e.g., climate, collaboration, resource allocation, etc.) in ways that enhance instructional quality, learning and climate (Leithwood, 2019). Over the past two decades, meta-analyses, systematic reviews, and large-scale empirical studies have identified a relatively stable set of leadership practices that demonstrate effectiveness across national, cultural and social contexts (Day & Sammons, 2013; Day, Sammons, Leithwood, Hopkins, Gu, Brown & Ahtaridou, 2011; Leithwood, Jantzi & McElheron-Hopkins, 2006). Within this domain, further research on school climate have expanded to a broader spectrum of organisational attributes and relation dynamics that define the daily life of schools (Hoy, Tarter & Kottkamp, 1991; Thapa et al., 2013; Wang & Degol, 2016; Zullig, Koopman, Patton & Ubbes, 2010; Zullig, Collins, Ghani, Hunter, Patton, Huebner & Zhang, 2015). Through the concept introduced by Cohen et al. (2009, p. 182), organisational school climate is understood from “patterns of people’s experiences of school life” and as mirroring norms, goals, values, relationships, pedagogical practices, and structural configurations. There are extensive empirical studies that show how the quality of a school climate from an organisational perspective significantly contributes in shaping students’ emotional, cognitive and physical well-being. Supportive and inclusive environments are consistently associated with higher levels of self-esteem and academic motivation (Hoge, Smit, & Hanson, 1990). Positive organisational school climate has been linked to reduced depressive and anxiety effects and to fewer behavioral symptoms against the negative effects of self-criticism, reducing internalizing symptoms and promoting adaptive coping (Kuperminc, Leadbeater, & Blatt, 2001; Kinder, Araya, Donovan & Gunnell, 2012; Way, Reddy, & Rhodes, 2007).

However, despite extensive research on organisational school climate’s influence on teacher and student mental and physical health, there remains a gap in the literature on examining how these environmental factors affect principals’ own professional well-being, leadership efficacy and organisational functioning. While traditional approaches to school climate have centered on student and teacher perceptions, the construct of organisational school climate extends the lens to the structural, procedural, and cultural dimensions of the school as a workplace. This

perspective puts the focus on the school not only as a pedagogical space but also as a complex organisation whose internal systems, leadership behaviours, and decision-making processes shape the overall health and effectiveness. With that, the organisational school climate within the educational leadership domain is an emergent construct in the scholarly community, with limited empirical and methodological research. In the context of the dissertation, organisational school climate is understood as the collective perspective that refers to the collective perceptions of teachers, staff, and administrators regarding leadership practices, decision-making processes, resource allocation, and workplace relationships (Hoy, Tarter & Kottkamp, 1991). In this view, climate reflects how school principals' leadership style, communication practices, and management structures influence morale, collaboration and collective efficacy. Examining organisational school climate from that point of school leadership perspective will help develop a more profound understanding of how leadership both shapes and is shaped by the psychological and structural dynamics of the school.

4.1. Framework Origins and Theories

Often associated with the work of Halpin & Croft (1963), organisational climate has deeper historical roots that can be traced back to the mid-twentieth century, reflecting broader shifts within organisational psychology and educational administration. The concept was first developed within organisational psychology with the idea of exploring how organisational characteristics influence individual behavior, attitudes, and overall group dynamics. Kurt Lewin's work in the 1930s and 1940s laid foundational ideas about group dynamics, leadership styles, and organisational environments, developing a framework for future organisational climate research. Lewin (1947) emphasized that behavior is a function of both individuals and their environments, drawing on the connection between people and organisational contexts. The earliest reference to the concept of the organisational climate can be traced to the study by Lewin, Lippitt & White (1939), which investigated experimentally induced social climates among groups of adolescent boys. While this work marked an important early contribution to understanding group dynamics and leadership styles, the authors did not offer a formal conceptualization of the framework, nor did they propose a systematic method for its measurement. However, the concept of organisational climate began gaining significant scholarly attention within the United States educational context in the 1950s and 1960s. Prior to this period, educational administration primarily focused on formal

administrative practices, governance structures, and leadership approaches, with less emphasis on psychological and sociocultural dynamics. The post-war era brought increased attention to how school structures and leadership practices impacted teacher morale, student outcomes, and overall school effectiveness.

In the mid-1950s, the scholarly community began systematically exploring the administrative aspects of educational institutions. Early findings by Cornell's (1955) work introduced the idea of organisational climate as an interplay of perceptions among organisation members regarding their roles and relationships. Cornell (1955) described organisational climate as a "delicate blending of interpretations or perceptions by persons in the organisation of their jobs or roles in relationship to others" (p. 222). This definition shifted the focus to the perceptual and interpretive dimensions of climate, recognizing the subjective experience of organisational life. Building on these early conceptualizations, Halpin & Croft (1963) significantly advanced the study of organisational climate by developing the *Organisational Climate Description Questionnaire*, an empirical measure specifically constructed for educational institutions. This instrument marked a substantial methodological advancement, allowing researchers to systematically assess climate through quantifiable dimensions such as openness, autonomy, and trust within schools. Halpin & Croft's (1963) work was a result of extensive research on leader behaviors and interactions within educational settings, led by two critical assumptions. First, they argued that how a leader actually behaves is less critical than how their behavior is perceived by group members, with these perceptions significantly influencing members' behaviors and the overall organisational climate. Second, they proposed that a principal's effectiveness depends significantly on their capacity to foster a climate conducive to leadership, collaboration, and organisational productivity. Halpin & Croft (1963) categorized schools on a continuum ranging from "open" to "closed" climates. An open climate described schools where teachers perceived the principal as supportive, approachable, and encouraging, with clear and open communication, supporting mutual respect and collaboration. Opposite, a closed climate indicated an authoritarian, rigid environment marked by mistrust, limited communication, and restricted teacher autonomy. This conceptualization provided a clear and operational framework, facilitating further empirical research and application in educational contexts.

While researchers generally supported the *Organisational Climate Description Questionnaire* factorial structure, critiques emerged concerning its categorization of six global

climate types due to statistical and methodological limitations. The following decades saw refinements in the conceptualization and measurement of organisational school climate. Hoy & Clover (1986) and Hoy, Tarter & Kottkamp (1991) further refined and validated the *Organisational Climate Description Questionnaire*, developing two versions specifically intended for primary (*Organisational Climate Description Questionnaire-RE*) and secondary (*Organisational Climate Description Questionnaire-RS*) schools. Their work provided more clear insights into dimensions such as collegial leadership, teacher autonomy, and academic emphasis, better capturing the multifaceted nature of school climates. Throughout the 1980s and 1990s, scholarly attention increasingly focused on broader organisational theories and their applicability to schools. This era witnessed a significant theoretical and methodological diversification within the study of organisational school climate. Over time, these theories have been expanded by approaches such as social information processing (Salancik & Pfeffer, 1978) and organisational justice theory (Greenberg, 1987), which assert that individuals infer cues about acceptable behaviour and norms from their organisational setting and emphasize fairness perceptions as central to how climate is experienced. While many climate studies focus on business or health settings, the translation into educational organisations has become more robust (Hoy, Tarter & Kottkamp, 1991; Thapa et al., 2013; Wand & Degol, 2016). Other influential organisational climate theorists emphasized the role of organisational culture and underlying assumptions shaping climate perceptions (Schein, 1985). Schein distinguished organisational culture (deeply held assumptions, values, and beliefs) from climate (perceptions of surface-level practices and behaviors), clarifying the relationship between these concepts. *Ecological Systems Theory*, developed by Bronfenbrenner (1979), also contributed significantly by placing organisational climate within a broader societal and ecological context. Bronfenbrenner's framework addressed the importance of interactions across multiple environmental layers, from immediate classroom interactions (microsystems) to broader district policies and societal influences (macrosystems). This perspective encouraged researchers to explore how external factors like educational policy, community values, and resource allocation influenced internal organisational climates. Another important theoretical contribution came from *Positive Organizational Scholarship*, which emerged in the early 2000s. The *Positive Organizational Scholarship* focused on organisational resilience, positive deviance, and exceptional organisational functioning, emphasizing strengths-based approaches to understanding and improving organisational climates. Scholars like Cameron,

Dutton & Quinn (2003) focused on the importance of cultivating positive emotions, relationships, and meaning within organisational settings by highlighting the positive, growth-oriented dimensions of organisational environments.

The evolution of organisational school climate research reflects broader trends in educational administration, shifting from narrowly administrative and managerial perspectives towards more holistic, integrative approaches that consider emotional, social, and cultural dimensions. In recent scholarship, the ‘organisational’ prefix emphasizes that climate in schools is not just about student well-being or social interactions, but is a property of the school as a workplace organisation, to emphasize how policies, structures, leadership and relational systems converge or diverge into a climate (Schneider, Ehrhart & Macey, 2025). Nevertheless, there is an academic debate that organisational school climate is a higher-order construct mediating how school-level policies, principal behaviour, and teacher interactions generate conditions that are conducive (or not) to an effective school. Contemporary research increasingly recognizes organisational school climate as a critical factor influencing educational outcomes, teacher retention, and organisational effectiveness, encouraging school principals and policymakers to prioritize climate-enhancing strategies within educational practice.¹ However, methodological challenges persist. Many studies rely on self-report survey measures, raising questions about method bias and whether climate is actually a shared organisational property or an individual variable. It is common for measurement work in climate research to lack rigorous psychometric validation, especially in educational contexts (Powell, Mettert, Dorsey, Weiner, Stanick, Lengnick-Hall & Lewis, 2021). Some scholars have attempted to model climate at the school (aggregate) level, assessing agreement, discriminant validity and measurement invariance (Kearney, Sanmartín & González, 2020). Theoretically, the organisational school climate stands well grounded, empirically backed between leadership decisions and educational outcomes, but its measurement and internal mechanisms continue to be refined.

¹ For example, in multilevel models, staff perceptions of climate have been shown to predict student academic outcomes even after accounting for student-level perceptions. A study in China by Sun, Liu, Liu, Ding, Jiang & Lv (2024) found that teacher’s perceptions of school organisational climate significantly predicted their organisational citizenship behaviour with teacher self-efficacy acting as mediator (climate→ efficacy→role behaviour). In general settings, organisational climate has been strongly correlated with job satisfaction, commitments, and perceptions of performance (Berberoglu, 2018).

4.2. Defining Organisational School Climate

Organizational school climate can be defined as the collective perceptions and interpretations of the organisational environment within a school held by teachers, principals, and other school personnel regarding organisational policies, leadership behaviors, decision-making processes, institutional norms, and interpersonal relationships within the school environment (Hoy, Tarter, & Kottkamp, 1991; Schneider, Ehrhart & Macey, 2013). Originating from organisational psychology, the concept of climate was first developed to understand employees' common understandings of their work settings and the norms that guide behaviour (Lewin, Lippitt & White, 1939; Tagiuri, Litwin & Barnes, 1968). Unlike broader school climate constructs, which focus extensively on students' sense of safety, belonging, and instructional experience, organisational school climate represents a translation of these organisational constructs into the school setting, focusing on how leadership, communication, and collaboration shape principals' lived experiences and perceptions of their professional environment within institutional structures and cultures (Hoy, Tarter, & Kottkamp, 1991; Cohen et al., 2009). From the perspective of school principals, organisational school climate may be best understood as the organisational tone and psychological environment within which principals perform their professional roles (Leithwood, Harris & Hopkins, 2020; Day & Sammons, 2013). In this view, school principals influence it through their leadership behaviours, decision-making, and communication, while simultaneously being influenced by the attitudes, trust, and cohesion of other members (Berkovich & Eyal, 2020; Collie, 2023). If we apply Cohen et al. (2009) definition of school climate to the context of school principals, the definition extends beyond the student or teacher experiences to include principals' perceptions of organisational functioning, role clarity, and relational trust.

In the context of this dissertation, the focal construct is perceived organisational school climate. This wording is important because the construct is operationalized through self-report rather than through external observation or an independently aggregated school audit. Accordingly, the findings do not describe an objectively measured property of schools; they describe how principals perceive and experience their organisational environment. This perception-based approach remains theoretically appropriate because climate research is rooted in the meanings organizational members attach to the policies, practices, and relational patterns they encounter in daily work (Hoy, Tarter & Kottkamp, 1991; Schneider, Ehrhart & Macey, 2013).

Within the present study, perceived organisational school climate functions as the psychosocial context through which principals interpret demands, access support, and develop health-related capability. The conceptualization of organisational school climate is placed as a multidimensional construct that represents principals' lived experiences of their school as an organisation. It draws to the psychosocial environment to understand leadership behaviours, collegial relations, organisational structure, and emotional tone. The framework involves various domains, including but not limited to, leadership style, resource allocation, governance structures, communication patterns, and professional support systems (Torres, 2022). These dimensions (Table 1) collectively shape the organisational "personality" or tone that characterizes a school's working environment.

Table 1

Conceptual Rationale for Defining Organisational School Climate

Dimension	Literature description	Principals' perspective	Key scholars
Relational climate	Quality of interpersonal relationships, trust, communication, and collegial support within the school.	Perception of collaboration, openness and trust among teachers and staff.	Cohen et al. (2009); Hoy & Tarter (1997); Berkovich & Eyal (2020)
Leadership climate	Leadership style, decision-making, distribution of authority, clarity of organisational goals.	How principals perceive their leadership role, administrative autonomy and shared decision-making processes.	Leithwood et al. (2020); Day & Sammons (2013); Hoy & Miskel (2013)
Instructional, work climate	Norms and expectations about teaching, learning and work performance.	Perceptions of teachers' professionalism, motivation and alignment with school vision.	Hoy, tarter & Kottkamo (1991); Thapa et al. (2013); Wang & Degol (2015)
Emotional, psychological climate	Sense of safety, belonging, recognition and emotional support within the school environment.	Experiences of stress, support and well-being in the workplace.	Aldridge & McChesney (2018); Collie (2023); Riley et al. (2021)
Structural climate	Organizational structures, resource allocation and shared values that guide behavior.	How they interpret institutional cohesion, workload organisation and systemic support.	Schneider, Erhart & Macey (2013); Proroković, Šlišković (2008); Hoy & Miskel (2013)

Note. The table presents the conceptual rationale used to define organisational school climate within the present dissertation by integrating major dimensions identified in educational leadership, organisational psychology, and school effectiveness literature. The dimensions were synthesized to reflect principals' perceptions of their professional

and organisational environment, including interpersonal relationships, leadership processes, instructional expectations, emotional well-being, and structural organisational conditions. Literature descriptions summarize dominant theoretical interpretations reported across prior research, whereas the “Principals’ perspective” column contextualizes how these dimensions may be experienced and interpreted within the professional role of Croatian primary school principals. The “Key scholars” column identifies influential authors and theoretical traditions that informed the conceptual framing of organisational school climate used in the study. The dimensions presented are conceptually overlapping and interconnected rather than mutually exclusive categories. Accordingly, organisational school climate is treated as a multidimensional and perceptual construct reflecting the broader psychosocial functioning of the school environment.

Each dimension reflects a distinct but interconnected domain of organisational life where leadership captures the tone and direction set by school principals, professional teacher behavior reflects expectations for instructional excellence and collaboration, and institutional vulnerability indicates the degree of external influence or instability perceived within the organisation. By capturing multiple dimensions, these models offer a more detailed and precise understanding of how school climate operates and how it can be effectively evaluated. Additionally, organisational school climate is closely linked to organisational identity and shared meaning-making. The way school personnel interpret their roles, responsibilities, and contributions is shaped by the climate in which they operate. Like every other theory, organisational school climate is shaped by historical and contextual factors unique to each institution. Schools carry forward legacies of past leadership styles, community relationships, cultural norms, and resource decisions, all of which significantly influence current climate perceptions and dynamics. This historical continuity shows the complexity of organisational school climate, as schools must navigate internal legacies while adapting to external pressures such as policy mandates, community expectations, and broader sociocultural changes. Organisational school climate should be understood as a dynamic construct, evolving in response to both intentional interventions and emergent conditions. Leadership transitions, policy reforms, demographic shifts, and crises (such as public health emergencies like the COVID-19) can rapidly reshape organisational climates. Similarly, institutional responses to crises can either strengthen or fracture relational trust and organisational efficacy, supporting the importance of resilient, adaptable climate structures.

4.2.1. Relational Climate Domain

The quality of interpersonal relationships, norms and interaction, and social exchanges that pattern everyday work fall under the domain of relational climate. Within organisational school climate, relation climate domain is a foundational element since it conditions how other domains are interpreted. For school principals, relational climate is both a context for leadership and a product of leadership as it shapes opportunities to mobilize people and resources, while principals' day-to-day behaviours help create expectations and shared meaning that define how we treat one another. According to Schneider & Bryk (2002), relational trust is conceptualized as an organisational property and grounded in respect, personal regard, competence and integrity across role sets. In their longitudinal analysis on public schools in Chicago, higher levels of relational trust showed stronger cooperation, greater collective problem solving and higher probability of improving student achievement over time. Other authors like Tschannen-Moran (2014) distinguished a number of trust categories (trust in principals, teachers, students, parents) to explain that trust improved information sharing, reduced defensive routines and accelerated coordinated action. From a leadership standpoint, trust enables influence by lowering perceived risk in collaboration and by strengthening attributions of principals' reliability. Beyond trust, the relational domain also includes routines of collaboration. For school principals, building the relational climate often means creating structures and norms that make such disciplined collaboration possible such as transparent agendas, protocols and protected team time. But not all collaboration is equally productive. Research distinguishes mandated cooperation which lacks genuine interdependence, from authentic joint work which requires mutual adjustment and shared instructional commitments (DuFour, 2004). This brings us to the role of psychological safety. According to Edmondson (1999), psychological safety is a shared belief that the team is safe for interpersonal risk taking. In psychologically safe environments, practitioners admit mistakes, ask for help, and offer dissent without fear of embarrassment or retaliation, resulting in more experimentation, faster error detection and better collective learning.

Applied to school context, principals influence safety by modeling vulnerability, by responding appreciatively to risk taking, and by creating norms that separate critique of practice from for example teachers. Relational climate also carries a justice component which includes perceptions of fairness in procedures, distribution of resources and interpersonal treatment. Fair climates increase organisational commitment and cooperative behavior, where the unfair ones

provoke withdrawal and counterproductive dynamics. Although much justice research comes from general organisational studies, its implications in schools can be translated. Consistent, transparent processes for workload allocation, recognition and student discipline signal respect and reduce resentment. School principals operationalize justice through setting clear criteria, transparent rationales and other practices that align with and reinforce relational domain. The consequences of relational climate are visible not only in achievement but also in motivation, health and staying power. Studies summarized in the *Learning from Leadership* project show that leadership influences student outcomes largely through its effects on teacher motivation and work settings (Louis, Leithwood, Wahlstrom & Anderson, 2010). Where relationships are supportive and norms emphasize cooperation and shared purpose, teachers report greater organisational commitment, lower intentions to leave and stronger engagement. In contrast, climates presented with unresolved conflict increase cognitive load and emotional exhaustion, and potentially lead to a turnover risk. For principals, the relational climate has reciprocal effects. Leaders sustain a positive climate through trust-building, yet their own well-being is shaped by the relational tone they inhabit. Numerous surveys indicate that collegial support and quality relationships buffer the high job demands that principals face, protecting engagement and health (e.g., Australian principal well-being surveys, studies during COVID-19) (Riley et al., 2021; Upadyaya, Toyama & Salmela-Aro, 2021). In practical terms, relational capital is occupational health capital as it reduces the physiological and psychological toll of role overload, helps prevent conflict, and makes problem solving more efficient.

4.2.2. Leadership Climate Domain

The leadership climate of a school refers to the shared perceptions of how leadership is performed and experienced. Specifically, leadership style, decision-making routines, the distribution of authority, clarity and coherence of goals, and the degree to which organisational work is aligned around teaching and learning. In organisational terms, it is the “signal system” that tells people what is expected, what is valued, and how decisions get made. In the context of this dissertation, where school principals are both architects and participants in organisational school climate, leadership climate explains how principals perceive and perform their role, the latitude they have to exercise administrative and instructional judgment, and the quality of shared decision-making processes that bind teachers and leaders into purposeful collective action (Day &

Sammons, 2013; Hoy & Miskel, 2013; Leithwood, Harris & Hopkins, 2020). A coherent leadership climate begins with clear, public, and shared purposes that link school-wide goals to day-to-day work. Direction setting includes articulating specific learning goals, aligning them with standards and local needs, and ensuring that staff can see what success looks like and how to get there. Research syntheses attribute meaningful, positive effects to principals' work on vision and direction when these are coupled with monitoring and feedback, not simply slogans, but operationalized goals embedded in schedules, routines, and professional learning (Leithwood et al., 2020; Day & Sammons, 2013). Leadership climate is also defined by how decisions are made, who has voice, how information is used, and how consequences are handled. A climate of shared decision-making does not devalue leadership but it creates reciprocal accountability and heightens the quality of decisions by bringing relevant expertise to bear. Research shows that when teachers experience genuine participation in goal-setting, curriculum coordination, and assessment design, schools see higher instructional coherence and stronger professional commitment (Robinson et al., 2008; Grissom et al., 2021). In complex school organisations, leadership is rarely a solo act. A distributed leadership role assigning authority to teams and individuals in ways matched to their expertise has become a more common feature of effective leadership climates. Distributed leadership increases responsiveness, builds leadership capacity among staff, and integrates improvement work in everyday routines rather than sporadic initiatives (Spillane, 2006; Diamond & Spillane, 2016). Importantly, distribution is designed, not accidental. Principals decide who leads what, with what decision rights, and with what forms of accountability. This distribution experienced by staff as legitimate, coherent, and fair constitutes a defining element of leadership climate.

The leadership climate is made visible in how school principals designate people and time. Hiring strategically, inducting and supporting novice teachers, brokering expertise, protecting collaboration time, and aligning budgets with instructional priorities. Synthesis work on principal effects highlights human-capital decisions and resource allocation as central contributors to teacher retention and school effectiveness as teachers remain and grow where leadership climate signals fairness, clarity, and support (Grissom et al., 2021). In the Croatian context where principals juggle instructional leadership with substantial administrative mandates, clarity about decision rights and shared leadership is key. Explicit charters for leadership teams and transparent criteria for resource allocation help stabilize the leadership climate even when policy demands shift.

4.2.3. Instructional and Work Climate Domain

The domain of Instructional and work climate usually carries the shared norms and expectations that define teaching, learning and professional performance in schools. The domain centers around what staff believe “good work” looks like, how consistently instructional goals are pursued, and the degree to which day-to-day practices align with the school’s pedagogical positioning. In school climate research, this domain would typically fall under the teaching and learning dimension (and/or other closely related labels) alongside relationships, safety, and institutional environment (Thapa et al., 2013; Wang & Degol, 2016). Put differently, the instructional and work climate is the organisational “engine room” where a school;s purposes are translated into a coherent routine of planning, teaching, assessment and improvement. From an organisational perspective, different instruments for measuring school climate and health (e.g. the *Organisational Climate Description Questionnaire* or the *Organizational Health Instrument*) have long emphasized academic focus as a signature of healthy work climates. These schools have high but attainable expectations, time and resources are provided for learning, and teachers insist on quality work from themselves and students (Hoy, Tarter & Kottkamp, 1991). In these frameworks, academic emphasis sits alongside collegial leadership, teacher affiliation and resource influence as a central feature of organisational health (p. 79). Academic emphasis explains the extent to which school’s staff collectively value academic excellence, communicate high expectations and maintain a persistent focus on learning. Some organisational studies link academic focus to achievement after controlling for socioeconomic status, indicating that shared norms around effort and expectations are not just side effects of having certain types of students but represent a meaningful feature of the school;s climate itself (Sweetland & Hoy, 2000). Furthermore, program coherence is a property of work climate because it is experienced by teachers as an alignment, where unit plans build toward shared outcomes, formative assessment inform consistent responses and professional learning targets the same goals. Newman, Smith, Allensworth & Bryk (2001) define it as a set of interrelated programs for students and staff that are guided by a common framework for curriculum, instruction, assessment and learning climate, pursued over a period of time, and supported by coherent organisational policies and practices.

For school principals, supporting and building on coherence involves selecting and sequencing improvement work, aligning with the organisational goals and supporting initiatives that bring the whole team to the focus. The instructional and work climate is also created by

professional norms, what Louis, Marks & Kruse (1996) call ‘professional community’. In practice, professional norms become visible in routine expectations like turning assessments on time, using agreed-upon rubrics or visiting colleagues’ classrooms. These routines form a social foundation that allows teachers to actually use evidence and data in their teaching. School principals share this part of the school’s work climate by setting up shared professional norms. They also do this by protecting time for collaboration or by showing openness to feedback, which encourages others to do the same.

4.2.4. Emotional and Psychological Climate Domain

The emotional and psychological climate of a school refers to the shared perceptions of how safe, caring, and emotionally supportive the setting is, and the extent to which members feel that they belong, are respected, and can express concerns without fear of embarrassment or reprisal. In education, this domain is typically discussed under constructs such as psychological safety, belonging, recognition, and affective support, and is treated as a core element of school climate alongside relationships, teaching and learning, and the institutional environment (Cohen et al., 2009; Thapa et al., 2013; Wang & Degol, 2016). A positive emotional and psychological climate is consistently associated with better mental health and adaptive coping among school community members. While primarily the evidence comes from student and teacher literatures, emerging research on principals does show similar patterns. (Aldridge & McChesney, 2018; Cornell & Huang, 2016; Collie, 2023; Riley, See, Marsh & Dicke, 2021). A systematic review of 48 studies by Aldridge & McChesney (2018) shows that psychosocial school climate is reliably related to adolescent mental health and well-being, including fewer internalizing symptoms and risk behaviors when climate is supportive and safe. Other studies also show that “authoritative” climates combining clear, fair discipline with supportive relationships are associated with lower student risk behaviors and better academic engagement (Cornell & Huang, 2016). For school staff, climate is a robust correlate of stress, burnout, and job satisfaction. Teachers who perceive a stronger social and emotional learning culture and positive climate report lower stress and higher efficacy and satisfaction (Collie, Shapka, & Perry, 2012).

Although the principalship has received less empirical attention than teaching, the recent literature shows that leaders’ emotional well-being is under sustained pressure. Long-running national surveys in the United States document elevated rates of stress, burnout, and sleep

problems among principals relative to general population norms. Critical drivers include emotional demands (conflict, crisis response), role overload, and exposure to aggression (Riley et al., 2021; Dicke, Jardine, Grining, Barrance, Gordon, Marsh & Ko, 2024). Studies using *Job Demands-Resources* models (Bakker & Demerouti, 2007) find that resourceful climates, participatory decision-making, collegial climate and opportunities for learning predict higher principal job satisfaction and occupational commitment, while barriers and staff shortages undermine these outcomes (Collie, Granziera & Martin, 2020; Marsh, Dicke, Riley, Parker, Guo, Basarkod & Martin, 2023). From a job demands-resources perspective, principals operate in roles with chronic high demands (emotional labor, conflict resolution, crisis management), so the availability of strong climate resources (trust, voice, collegial support, respectful norms) is the mechanism by which leaders maintain engagement and protect health. Emotional and psychological climate shapes the meaningfulness and manageability of the work (Maslach & Leiter, 2016) influencing leaders' stress physiology, sleep, and coping habits (e.g., help-seeking, health information use), all of which are proximal pathways to occupational health outcomes. Also, social capital in and around the school (bonding, bridging, linking) appears to buffer principal well-being over time, pointing to the relational foundations of emotional climate in leadership work (Beusaert, Froehlich, Riley, & Gallant, 2023).

4.2.5. Structural Climate Domain

Shared perceptions of the formal arrangements, resources, and institutional logics that organize work in schools falls under the structural climate domain. It defines roles, rules, routines, decision rights, resource allocation, time, people, materials, information, and shared values about how the organisation should function that together guide behavior and make collective action possible. In the organisational perspective, climate captures how these features are experienced by members (Schneider, Ehrhart, & Macey, 2013). Through the educational lens, structural climate may be understood as the “infrastructure” of organisational school climate. It explains what teachers and principals are able to do, how efficiently they can do it, and how reliably instructional intentions are translated into practice (Hoy & Miskel, 2013; Proroković & Šlišković, 2008). As school principals are both designers and occupants of structure, they interpret institutional cohesion, division workload and schedules, mediate external mandates, and secure systemic

support on which all other climate domains (relational, leadership, work and instructional, emotional and psychological) depend.

Although labels vary across research, the literature agrees on several facets through which members experience structural climate. Clear role definitions (labeled usually as ‘formalization’) lower role ambiguity and role conflict, both of which are consistently linked to stress and lowered performance (Rizzo, House & Lirtzman, 1970). In schools, teachers and principals experience enabling formalization through routines (e.g., special education referral processes, planning calendars, safety protocols) that minimize “reinventing the wheel” and free additional cognitive pressures for instructional work. Structure also specifies decision rights (centralization vs. distributed decision-making) and the routines that dictate interdependence (Mintzberg, 1979). Effective structural climates allow decisions to the smallest unit that has the expertise to make them, while preserving coherence through agreed procedures (e.g., curriculum coordination, placement processes, student-support teams). Schools with such structures report fewer delays and rework, more consistent follow-through, and stronger perceptions of institutional cohesion (Hoy & Miskel, 2001; Sweetland & Hoy, 2000). School members judge structural climate in part by whether time and resources align with core goals. Common planning, staffing for intervention, access to materials and data, and timely operational support (such as information and technology facilities) comprise the infrastructure that makes instructional routines feasible (Newmann, Smith, Allensworth & Bryk, 2001). Perceived resource adequacy is also a matter of fairness and organisational justice. Schools that allocate support transparently and equitably tend to have stronger commitment and lower turnover (Johnson, Kraft & Papay, 2012; Kraft, Marinell & Yee, 2016). Structural climate includes how information flows (what gets documented, how quickly data are accessible, and whether processes link information to timely action). Reliable data systems (attendance, assessment, behavior, human resources) and simple, well-understood routines increase organisational responsiveness (Newmann et al., 2001; Schneider et al., 2013). Schools sit in larger systems where structural climate includes perceived support from the district/municipality/ministry. Meaning access to services, clarity of compliance processes, timely guidance, and flexibility to adapt. As school principals are the primary boundary between internal and external, they interpret and buffer external requirements, and their judgments of systemic support are central to how they and their staff experience structure.

Literature links the organisational context to teacher retention, growth, and student outcomes. In a study by Johnson, Kraft & Papay (2012), teachers' perceptions of school working conditions which included professional culture, order, leadership, and facilities, predicted retention and effectiveness. Kraft, Marinell & Yee (2016) found that schools with stronger organisational contexts (including leadership, collaboration structures, and safety/order) experienced lower teacher turnover and better student achievement growth. At the same time, Kraft & Papay (2014) demonstrated that professional environments are associated with steeper growth in teacher effectiveness over time. Studies of Croatian primary schools suggest similar dynamics. Proroković & Šlišković (2008) reported associations between perceived organisational climate (including structural aspects) and job satisfaction among teachers and principals. Because principals design much of the local structure (schedules, teaming, decision routines) and inhabit the wider system's structures (accountability regimes, human resources rules), their perceptions and choices are central. Structural climate shapes the manageability of the principalship, where role clarity and reliable routines reduce after-hours triage, transparent policies lower conflict, and adequate staffing diminishes constant coverage crises. High centralization with low flexibility or chronic resource mismatches may result in persistent role overload, rising stress and compromising leaders' health and effectiveness (Hoy & Miskel, 2013; Bakker & Demerouti, 2017).

4.3. School Principals Within the Organisational Climate System

Because school climate is, in part, shaped by organisational forms, school leadership is a primary antecedent of the organisational school climate. The role of school principals has evolved substantially over the past decade, moving from administrative supervision toward a more complex model of organisational leadership (Day & Sammons, 2013; Leithwood, Harris & Hopkins, 2020). As the central figures in the school's social and structural ecosystem, principals interpret, mediate, and enact policies in ways that shape the shared perceptions of fairness, trust, collaboration, and collective efficacy that constitute the framework of organisational school climate (Hoy, Tarter & Kottkamo, 1991; Cohen et al., 2009). The theoretical foundations of organisational school climate are rooted in social and organisational psychology and open-systems theory (Litwin & Stinger, 1968; Hoy & Miskel, 2013), which assume that organisational school climate emerges from the interaction between leadership practices, institutional structures, and interpersonal relations. Within schools, principals are the most influential source of organisational signals. They set

behavioral norms, distribute authority, allocate resources, and define expectations regarding collaboration, performance, and well-being (Hallinger & Heck, 2011; Leithwood et al., 2019). Large scale studies demonstrate that leadership indirectly affects student achievement through impact on teacher motivation, collective efficacy, and perceived organisational climate. For example, Grissom et al. (2021) synthesized over twenty years of research and found that approximately one-quarter of variance in school effectiveness could be explained by principals' capacity to build positive organisational climates. Sebastian, Huang & Allensworth, (2017) show that schools where principals foster professional trust and participatory decision-making results in higher teacher engagement and student outcomes.

Although principals are powerful agents in school climate formation, they also operate within the same climate and are therefore susceptible to its psychological and occupational effects. The school, as a workplace organisation, constitutes an occupational environment that is characterized by complex emotional demands, high accountability, and constant exposure to social and ethical dilemmas (Sen & Phillips, 2011; Aasland, Skogstad, Notelaers, Nielsen & Einarsen, 2010). Within such contexts, an unsupportive or conflictual climate can contribute to chronic stress resulting in diminished job satisfaction and burnout (Skaalvik & Skaalvik, 2017). Expanding on this perspective, their professional functioning is inherently relational, depending on the quality of interaction with teachers, staff, students and wider community. If that is the case, then school principals' shape the organisational environment through leadership behaviours (such as providing feedback or modeling norms). Yet, the ability to sustain such practices depends heavily on the support, trust, and openness of the same environment (Liu, Hallinger & Feng, 2016). Organisational school climate characterized by trust, collaboration and psychological safety will lead to school principals' displaying more transformational and instructional leadership behaviours and reinforcing positive feedback to strengthen the organisational coherence (Sammons, Davis, Day & Gu, 2014).

Emotional labor common to principalship position magnifies the connection between organisational school climate and occupational health outcomes. School principals must continuously manage their own emotions and those of others. When emotional regulation demands exceed the resources available within the school climate, professional stress can result in physical and psychological symptoms (Bakker & Demerouti, 2017). Studies in European and Australian contexts demonstrate that the organisational school climate predicts principals' perceptions of job

satisfaction, resilience, and well-being more strongly than the external policy pressures or accountability mandates (Ning, Liu & Ciu, 2022; Riley et al., 2021). In schools where collegial trust, professional respect, shared responsibility and decision-making are a must, research reports higher work engagement and lower rates of burnout, regardless of work intensity (Berkovich & Eyal, 2020). Organisational school climate relation dimension goes beyond internal school dynamics to include interactions with parents, local authorities and the wider educational system. In that essence, school principals act as an organisational liaison negotiating expectations across different institutional levels. Looking at the principals as a whole within the framework of organisational school climate, they are not merely external managers of the school but integral participants in the dynamics of a very fragile organisational ecosystem. Their health, motivation, and leadership efficacy are continually influenced by the social and emotional tone of their institutions. For that reason, it is important to recognize the bidirectional relationship between leadership and climate, where principals both construct and experience the organisational environment. A climate characterized by recognition, trust, and open dialogue fosters professional identity development and collective efficacy (Schneider & Bryk, 2002). In contrast, climates defined by fear, mistrust, or neglect often result in role ambiguity, disengagement, and professional burnout. These relational dynamics underline the centrality of organisational school climate in shaping both individual and organisational outcomes. Despite extensive research available into organisational school climate's implications for teachers and students, it has notably underrepresented the experiences and impacts of school principals. Principals significantly influence and are influenced by organisational climates, yet research addressing their health, well-being, and leadership effectiveness remains limited. Principals often face considerable stress stemming from complex roles, heightened accountability, resource constraints, and the demands of fostering positive climates. These stressors are further expanded in under-resourced schools or those serving historically marginalized communities, where leaders must navigate systemic inequities alongside their administrative duties. Moreover, principals frequently serve as intermediaries between district mandates and school-level implementation, placing them at the intersection of top-down accountability pressures and bottom-up relational demands. This positioning exposes them to chronic stress and emotional labor, both of which are significantly shaped by the organisational climate in which they operate.

4.4. Local Perspectives

Croatian scholarship on organisational school climate, often referred to as *organizacijsko školsko ozračje*, has a relatively well-established tradition that views the school both as a social and organisational system rather than just an instructional venue. One of the most influential works in the area is Domović's (2003) *Školsko ozračje i učinkovitost škole* [School Climate and School Effectiveness], which established a widely cited, multidimensional view of school climate. Domović (2003) defines organisational school climate as a “set of internal characteristics that distinguish schools from one another and that influence the behaviour of their members, indirectly affecting the quality of school processes and outcomes” (p. 123). Building on international organisational theory and school-effectiveness research, the monograph distinguishes climate from culture while showing their interdependence in everyday school life. Climate captures the shared perceptions of ‘how things are done’, whereas culture refers to deeper, historically sedimented assumptions and values. Domović's (2003) synthesis translated widely used constructs (e.g., openness of climate, academic emphasis, collegial leadership) into the Croatian professional lexicon, providing a vocabulary and conceptual map that educational researchers, practitioners, and policy documents have continued to use. A major contribution of this localization has been predominantly methodological. It is true there are numerous methodological obstacles and issues that are still not fully accounted for within the organisational school climate domain, but Croatian researchers adapted and validated instruments mostly suited to the national context. Proroković & Šlišković (2008) documented and adapted *Upitnik organizacijske klime za srednje škole* [Organizational Climate Questionnaire for Secondary Schools], aligning it with the Hoy's et al. (1991) model of school climate but adapted to fit Croatia's specific administrative and organisational context. More recently, Velki & Kuterovac Jagodić (2023) developed *Hrvatski upitnik školske klime - verzija za nastavnike* [The Croatian School Climate Questionnaire - Teacher Version], reporting satisfactory psychometric properties and ecological validity across primary and secondary samples. These tools make a step forward in making organisational school climate empirically tractable for school improvement and leadership studies.

Empirical findings in Croatia broadly mirror international patterns. Using a 63-item, domestically adapted climate questionnaire, Burušić (2019) showed that perceived learning-environment conditions differentiate schools on multiple climate dimensions, including teachers' relations and the principal's management style. Pažur, Domović & Kovač (2020) linked

democratic school leadership to democratic school culture in a large teacher sample, offering evidence that participatory, transparent leadership practices are strongly associated with more favorable climates of dialogue, respect, and shared responsibility. Distributed leadership studies (Buchberger, Kovač & Ažić Bastalić, 2018; Buchberger, Kovač & Rafajac, 2019) also present that the way authority is shared and work is organized does predict teacher satisfaction and signals a more enabling organisational environment. Literature also integrates educational and positive psychology, linking the climate construct with affective and motivational layers that matter for everyday practice. For example, Rijavec & Miljković (2010) and Vizek Vidović, Rijavec, Vlahović-Štetić & Miljković (2014) have helped normalize attention to belonging, recognition, and prosocial norms as legitimate organisational levers within schools (e.g., on positive discipline, recognition and teacher well-being). While much of this corpus focuses on classroom dynamics and teacher/student outcomes, it has influenced principal professional learning and provided local mechanisms. Empirical and review work from the same scholarly has articulated the mechanisms by which recognition, autonomy support, and strengths-focused practices support engagement and well-being (Brdar, Rijavec & Miljković, 2009; Rijavec & Miljković, 2005, 2006), and how interventions based in these principles can shift optimism and perceived classroom climate. Other contributions in organisational psychology translate these ideas to whole-school routines, highlighting how clear role expectations, fair procedures, and acknowledgment practices function as everyday climate signals for adults.

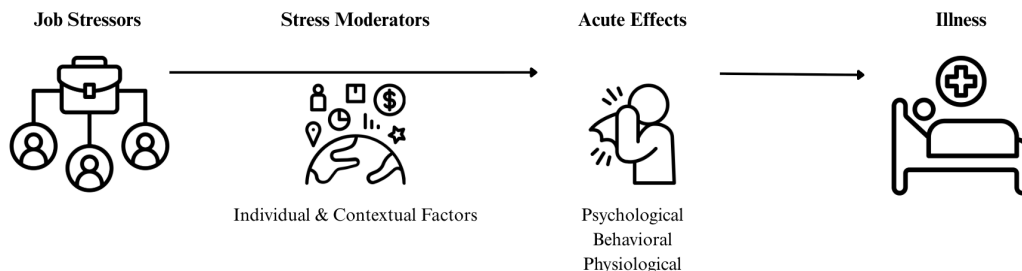
System conditions shape how principals can represent organisational school climate. *Teaching and Learning International Survey 2018* (Organisation for Economic Co-operation and Development, 2020) country notes for Croatia point to relatively constrained formal autonomy in some human resources levers, uneven patterns of teacher collaboration, and variation in feedback practices across schools. Against this governance backdrop, the shift toward principal professionalization in Croatia (Kovač & Staničić, 2019) and reinforced by national initiatives such as *Škola za život* [The School for Life] and the *Okvir za digitalne kompetencije ravnateljica i ravnatelja* [The Framework for Digital Competencies of School Principals] positions principals as organisational leaders responsible for designing enabling structures and supporting collegial, instruction-focused climates.

5. OCCUPATIONAL HEALTH

The World Health Organization defines health as a positive capacity including physical, mental and social well-being going beyond simply being absent from a disease (World Health Organization, 2020). The definition situates health within systems rather than individuals alone. Policy frameworks point out organisational responsibility for creating conditions that support well-being and lead to reduced risk exposures. In parallel, European policy centers psychosocial risk (workload, role conflict, time pressure, violence and harassment) as primary reasons of mental health at work calling for prevention and organisational control work (European Agency for Safety and Health at Work, 2022). Figure 1 shows a scheme to visualise a process and context for occupational health development according to the United States *National Institute for Occupational Safety and Health* (Alterman, Colligan, Goldenhar, Grubb, Hamilton, Hurrell & Tisdale, 1999). In the model, varying job stressors (e.g., high workload, time pressure, role conflict, social antagonism) initiate a process that yields acute effects in psychological (e.g., distress, exhaustion), behavioural (e.g., sleep disruption, increased substance use, reduced help-seeking), and physiological (e.g., autonomic activation, hypothalamic-pituitary-adrenal axis responses) domain. Together, when chronic or unmanaged, they increase risk for illness (e.g., cardiometabolic disease, anxiety/depression).

Figure 1

Conceptual Model of Occupational Health Development Based on the National Institute for Occupational Safety and Health (1999)



Note. The figure presents the conceptual progression of occupational health development proposed in the National Institute for Occupational Safety and Health occupational stress model (1999), beginning with job stressors and proceeding through stress moderators and acute psychological, behavioral, and physiological effects toward illness.

The pathway from stressors to outcomes is shaped by stress moderators (individual and contextual factors) such as personal resources, skills, and coping and organisational features (leadership, fairness, role clarity, participation, collegial support). These moderators can either buffer or amplify the translation of stressors into acute effects and subsequent ill-health. Positioned within the present study, the *National Institute for Occupational Safety and Health* model clarifies the role of organisational school climate as a contextual resource that can degrade the impact of demands on principals' psychological and physiological strain. It also provides a theory-driven bridge to the biomarker strategy (e.g., lipidic and stress-related hormones), which indexes the model's physiological acute effects domain and helps detect potential trajectories toward illness. The framework of occupational health doesn't have a single, formal definition, but rather it depends on the context and the field. For example, Sparks, Faragher & Cooper (2001) treat occupational health broadly as employees' well-being and health outcomes shaped by contemporary psychological work conditions including but not limited to job insecurity, work hours, control at work and managing style. From that standpoint occupational health is framed as the impact of changing work organisation on employee well-being rather than a narrow clinical or regulatory view. McEwen (1998) looks at occupational health as a multidimensional state resulting from workers' exposure to job demands and access to job resources. In the dissertation, occupational health is conceptualized as the capacity-based perspective that treats work as a designed environment in which job demands and job resources together shape strain, engagement and longer-term morbidity. Occupational health acts as a bridge between organisational design and human outcomes (Bakker & Demerouti, 2007). In the light of principals, whose work is boundary-spanning in relation to their families, founders/ministry and inspectors, time sensitive in regards to administrative load and emotionally charged by conflict management and crisis response, occupational health acts as a focused lens for explaining how everyday arrangements of time, decision latitude, recognition and collegial support condition well-being and performance (Organisation for Economic Co-operation and Development, 2020). Historically centred on accidents and toxic exposures, occupational health now includes psychosocial risks on the strength of converging evidence from epidemiology, organisational psychology, and stress studies (Karasek, 1979; McEwen, 1998, 2000; Siegrist, 1996). Cross-national monitoring also adds to this. In *Teaching and Learning International Survey* 2018, Croatian principals frequently reported administrative overload and changing external requirements as salient stressors, patterns consistent

with the psychosocial risk profile of leadership work (Organisation for Economic Co-operation and Development, 2020).

For those reasons, adopting a capacity-based definition has three advantages for this study. First, it allows symmetric attention to risk and resilience where both impairment (e.g., exhaustion) and adaptive functioning is documented (e.g., engagement). Second, it aligns conceptually with the dissertation's focus on organisational school climate as a resource structure where, if health is co-produced by job design and social context, then climate constitutes a natural leverage point. Third, it facilitates transparent modeling in which health-relevant processes can be specified as pathways from demands/resources to psychological states (exhaustion, engagement) and to other physiological correlates of allostasis, without medicalizing the role or implying clinical diagnosis (World Health Organization, 2013). This definition positions occupational health simultaneously as an outcome of work design (the result of how demands and resources are configured) and a determinant of leadership functioning (the capacity that underwrites decision quality, relational practice, and sustained performance). It also supports a transparent ethics stance. While the dissertation neither diagnoses nor treats medical conditions, it examines how organisational conditions relate to validated indicators of exhaustion and engagement, with physiology used descriptively where feasible.

5.1. Framework and Theories

The dissertation adopts the *Job Demands-Resources* framework as the primary analytic pathway because it accommodates heterogeneous stressors and supports in the principalship while yielding clear, testable pathways (Bakker & Demerouti, 2007; Demerouti, Bakker, Nachreiner & Schaufeli, 2001). Job demands-resources distinguishes a health-impairment process (demands → strain/exhaustion) and a motivational process (resources → engagement), arguing that job resources and personal resources (e.g., self-efficacy, optimism) can buffer the detrimental effects of demands and gain elements of well-being and performance (Bakker & Demerouti, 2007; Xanthopoulou, Bakker, Demerouti & Schaufeli, 2007). Through the framework lens, two models are introduced to position job demands-resources. *The Demand-Control-Support* model explains that high psychological demands in combination with low decision latitude and low social support (the so-called *Iso-strain condition*) increase the risk for poor psychological and cardiometabolic outcomes (Theorell, Karasek & Eneroth, 1990). *The Effort-Reward Imbalance* model argues that

continued efforts (time pressure, responsibility) that is not reciprocated by rewards (esteem, pay/career security, advancement) produces stress and ill-health states, particularly among overcommitted individuals who maintain high effort despite low return (Siegrist, 1996, 2016). Both models are consistent with the job demands-resources view in which low control and low reward are understood as resource deficits that intensify the impairment pathway. These psychosocial pathways are biologically plausible through allostatic processes where poorly designed work elicits repeated stress responses that, when recovery is insufficient, yield multisystem dysregulation (Juster, McEwen & Lupien, 2010).

To connect these psychosocial accounts to an understandable mechanism, allostatic theory is developed. Repeated or chronic activation of stress-response systems without adequate recovery results in allostatic load, i.e., cumulative “wear and tear” across neuroendocrine, immune, and metabolic systems (Juster, McEwen & Lupien, 2010). The *Job Demands-Resources* impairment goes in line with this biology. Sustained demands in settings with insufficient resources increase the likelihood of incomplete recovery between episodes, progressively shifting physiological set points and elevating risk for dysregulation. On the opposite, resource-rich environments benefit engagement and are more likely to support recovery experiences (detachment, relaxation, mastery, off-job control), thereby limiting allostatic accumulation (Mulder, Mulder, Meijman, Veldman & Van Roon, 2000; Sonnentag & Fritz, 2007). While the goal of the dissertation is not to be a clinical study, this biopsychosocial bridge justifies the inclusion of physiological proxies alongside validated psychological indicators, and it helps clarify interpretation. Several boundary conditions and extensions from the *Job Demands-Resources* literature inform framework specification. First, gain/loss spirals are possible. Resources foster engagement, which in turn builds further resources (e.g., social capital), while chronic exhaustion can erode resources over time (Bakker & Demerouti, 2007). Given the cross-sectional nature of the core data here, the dissertation treats such spirals as theoretical background, not as estimable dynamic effects. Second, cross-level dynamics matter as well. Organisational school climate is treated as the proximal resource substrate, with dimensions such as procedural justice, goal clarity, and participatory decision-making supplying the contextual supports that job demands-resources theory expects to buffer demands. Third, personal resources (e.g., self-efficacy) can both mediate and moderate job demands-resources paths (Xanthopoulou et al., 2007).

5.2. Education Sector and Local Context

The education sector's risk profile strengthens the case for modeling occupational health among school principals. International perspectives consistently identify psychosocial risks as a primary in education, including workload, role conflict, low control over time, emotional labor, and exposure to offensive behaviors. In *the Australian Principal Occupational Health, Safety and Wellbeing Survey*, leaders report persistent high workload and increasing threats, with implications for anxiety, depression and burnout (Marsh, Dicke, Riley, Parker, Guo, Basarkod & Martin, 2023). Although context differs, the pattern illustrates the health consequences of boundary-spanning leadership roles in public service organisations. Within the European context, psychosocial risks are positioned as central and actionable determinants of mental health at work, emphasizing primary prevention through organisational design (Padure & Tutuianu, 2025).

In Croatia, the *Teaching and Learning International Survey 2018* country analysis highlights administrative overload and changing external requirements as prominent stressors among school principals (Organisation for Economic Co-operation and Development, 2020). 85% of Croatian school principals reported that having too much administrative work is a source of stress “quite a bit” or “a lot” (Organisation for Economic Co-operation and Development average 69%), while 62% cited keeping up with changing requirements from local or national stakeholders (Organisation for Economic Co-operation and Development average 56%). Additional pressures include being held responsible for students' achievement and addressing parents' concerns at rates above or near *Organisation for Economic Co-operation and Development* averages (Organisation for Economic Co-operation and Development, 2020, Vol. II, Croatia note). These demands interact with a governance environment that blends centralized policy (e.g., curricula, inspection) with local variation in founder capacity and support ecosystems, yielding heterogeneous resource profiles across schools. The latter heterogeneity provides the analytic variability necessary to test job-demand resources propositions, where resources (autonomy, justice, trust, supportive services) are stronger, exhaustion should be lower and engagement higher for a given level of demands. The *Organisation for Economic Co-operation and Development* summary for *Teaching and Learning International Survey 2018* also highlights relatively low teacher involvement in school-level decision-making across many systems and calls for stronger participation in management and pedagogical tasks (Organisation for Economic Co-operation and Development, 2020). In the *Job Demands-Resources* framework, participation and voice are job resources linked to engagement

and to the buffering of demands. Interventions that expand collaborative decision-making, clarify procedures, and strengthen collegial trust should, by theory and by sector evidence, improve principals' occupational health profiles, even when macro-level demand drivers remain unchanged.

Although school principals carry the central operational responsibility for anticipating and responding to health and safety problems in schools, the empirical literature has devoted comparatively little attention to their own health status and to their views on how to develop occupational health practices within school organisations. Much of the available research in education either examines teacher well-being or student safety, or it inventories compliance processes, leaving a gap in principal-centred evidence on what upper management and school administrations could change to strengthen occupational health in practice. Strengthening principal-focused evidence by documenting current occupational health practices, clarifying leaders' expectations of their organisations, and testing which job resources actually buffer demands, would align the sector with the informed prevention and with the *European Union* guidance that treats psychosocial risk management as a core employer duty, not an individual coping task (Bakker & Demerouti, 2007; Marsh et al., 2023; Organisation for Economic Co-operation and Development, 2020).

6. HEALTH LITERACY

Health literacy has evolved from a narrow focus on patients' reading skills to a multidimensional construct central to public health, organisational design, and workplace well-being. In current scholarship, health literacy is treated as a situated, context-sensitive capability that unfolds in real time as people navigate information-dense environments, weigh competing recommendations, and translate uncertainty into practical choices. Health literacy framework aims to investigate how individuals interpret multimodal messages (text, numbers, visuals, dashboards), manage cognitive load, judge credibility amid misinformation, and mobilize help through social and professional networks. It intersects with numeracy (risk trade-offs, dose and probability), communication (framing, tone, cultural resonance), and navigation (knowing where to go, whom to ask, and how to advocate). It is also deeply temporal. The same person may display high health literacy in routine contexts but struggle under time pressure, fatigue, or crisis. For school principals, health literacy becomes a daily operational asset: reading and synthesizing guidance, advising staff on preventive practices, interpreting reports, coordinating referrals, and communicating clearly with families, often across linguistic, cultural, and digital divides. At the same time, health literacy carries an equity charge. Information environments routinely place disproportionate demands on those with fewer resources where poorly designed materials, bureaucratic pathways, and unfunctional data systems can convert manageable tasks into barriers, rising stress and eroding trust. Important to note, health literacy is increasingly digital. Search platforms, portals, and artificial intelligence-mediated tools expand what is possible while introducing new forms of complexity (curation, privacy, interface friction).

6.1. Defining Health Literacy

Literature describes health literacy as a practice-oriented repertoire that people mobilize to meet concrete health tasks such as locating information, interpreting risk and uncertainty, judging credibility, and translating advice into action within specific service systems and social contexts. Health literacy has been framed by the World Health Organization and allied guidance as the personal characteristics and social resources that enable people to access, understand, appraise, and use information and services, including the capacity to communicate, assert, and enact decisions (World Health Organization, 2013). Empirically, lower health literacy is associated with poorer overall health status, greater depressive symptomatology, and higher all-cause mortality in

population studies and meta-analyses (Fan, Yang & Zhang, 2021). The widely used model by Sørensen & colleagues consolidated prior definitions into four core competencies (access, understand, appraise, apply), and situated these across health care, disease prevention, and health promotion, emphasizing that health literacy develops across the life course and is shaped by social determinants (Sørensen, Van den Broucke, Fullam, Doyle, Pelikan, Slonska & Consortium Health Literacy Project European, 2012). In parallel, theoretical work has highlighted that health literacy varies with task demands (e.g., numeracy for probability trade-offs, multimodal comprehension of charts and visuals, and real-time decision-making under pressure), reflecting the “literacy-in-practice” character of the construct rather than a static reading score (Van den Broucke, 2014; Sørensen et al., 2012). A major conceptual development is Nutbeam’s (2008) classification of functional, interactive, and critical health literacy. This typology describes a progression from basic reading and numeracy for following instructions (functional), to communicative and participatory skills for applying information in changing circumstances (interactive), and finally to advanced analytic and advocacy competencies that enable appraisal of evidence and engagement with structural conditions (critical). The typology reframed health literacy from a narrow clinical ability toward a broader public-health asset oriented to empowerment and civic participation (Nutbeam, 2008). Policy definitions have codified a dual-level view of health literacy that assigns responsibility not only to individuals but also to organisations. In the United States, *Healthy People 2030* (Pronk, Kleinman, Goekler, Ochiai, Blakey & Brewer, 2021) distinguishes personal health literacy (“find, understand, and use” information and services) from organisational health literacy (the degree to which organisations equitably enable people to do so) acknowledging that literacy-related outcomes are co-produced by the interaction between people’s competencies and the design of information environments. The *World Health Organization* defines health literacy as personal knowledge and competencies mediated by organisational structures and resources that determine whether people can access, appraise, and use information and services to maintain health and well-being. This framing links health literacy explicitly to equity by focusing on how institutions can lower the cognitive and navigational burdens they impose (World Health Organization, 2021).

6.2. Health Literacy Within the Local Context

European monitoring of health literacy shows substantial proportions of adults with limited health literacy across participating countries (Sørensen, Pelikan, Röthlin, Ganahl, Slonska, Doyle & Brand, 2015). Within the regional context, the Croatian evidence indicates a substantial prevalence of limited health literacy and demonstrates clear consequences for access. In a nationally representative survey (n=1,000), lower health literacy was associated with higher odds of unmet medical need, with respondents frequently citing waiting lists as the primary barrier (Bobinac, 2023). The study also reports older age, lower education, and lower income align with poorer health literacy mirroring equity patterns documented elsewhere in Europe (Bobinac, 2023). Complementary European data on access further contextualize these findings. Eurostat's indicators of self-reported unmet needs (financial reasons, long waiting lists, distance) show persistent variation across the *European Union* and provide a comparative backdrop for Croatia's distribution of access barriers (Eurostat, 2024). While Croatia lacks fully comparable international statistics on specialist waiting times, recent health-system reviews note the issues of list management and referral navigation (European Observatory on Health Systems and Policies & Organisation for Economic Co-operation and Development, 2023). From a policy point, Croatia's participation in the *Acton Network on Measuring Population and Organizational Health Literacy* framework enables the use of the *European Health Literacy Population Survey 2019-2021* and related short forms to profile health literacy at population level and to identify subgroups facing disproportionate demands in navigating services (Pelikan, Link, Straßmayr, Waldherr, Alferts, Bøggild & Vrdelja, 2022; Pelikan, Link & Straßmayr, 2021). These instruments create a connection between population evidence and the education field by offering brief, validated metrics that can be embedded in routine surveys and program evaluations. In practical terms, this means local actors have tools to map needs, target supports, and monitor improvement over time.

6.3. Health Literacy Through School Principals Lens

Researchers increasingly treat health literacy as a proximal determinant of how “health-promoting” a school can become. In a multi-country study of school leaders by Dadaczynski, Rathmann, Hering & Okan (2020), higher personal health literacy correlated with more extensive implementation of *Health-Promoting Schools* practices. Same analyses confirmed that principals' attitudes and health literacy jointly predict health-promoting school implementation, whereas

principals' own health status plays a comparatively minor role. Meaning, what leaders know and believe about health promotion appears to matter more for organisational benefit than how healthy they personally feel (Betschart, Sandmeier, Skedsmo, Hascher, Okan & Dadaczynski, 2022). Teacher-focused studies also support these dynamics. Mixed-methods evaluations of a professional learning program that builds teachers' health literacy alongside curriculum resources show that teachers value concrete tools for simplifying risk communication, applying messages to local contexts, and scaffolding students' inquiry. At the same time, teachers report their own health literacy needs as an ongoing constraint on implementation (Otten, Nash & Patterson, 2023; Nash, Elmer, Thomas, Osborne, MacIntyre, Shelley & Webb, 2018). Research positions health literacy as both a teacher professional learning target and an organisational capacity. Without staff who can access, appraise, and apply guidance, even well-designed curricula struggle to translate into classroom practice. A fast-growing area concerns digital health literacy among educators. For example, a study of 1,600 German primary and secondary teachers using the *Digital Health Literacy Instrument* found substantial variability across subscales (search, evaluation, privacy, navigation), with sociodemographic and school-related factors explaining meaningful differences in the *Digital Health Literacy Instrument* profiles (Rangnow, Fischer, Hartmann, Renninger, Stauch, Okan & Dadaczynski, 2024). From a leadership perspective, health literacy gaps compound organisational demands. Schools increasingly rely on portals, e-forms, and data dashboards for attendance, immunization records, mental-health referrals, and crisis updates, and without those systems can raise cognitive load and reduce navigability for families.

7. THEORETICAL FRAMEWORK

For the scope of the dissertation, the *Job Demands-Resources* framework is used as a central explanatory lens because it accommodates heterogeneous stressors and supports in the principalship and yields clear, testable pathways linking organisational context to principal health status and health literacy (Bakker & Demerouti, 2007; Demerouti et al., 2001). The *Job Demands-Resources* uses a health-impairment process (demands → strain/exhaustion) and a motivational process (resources → engagement), and recognizes personal resources (like self-efficacy) as both mediators and moderators of these paths (Xanthopoulou et al., 2007). In that context, organisational school climate is treated as the proximal, modifiable resource that can buffer demands and enable performance, while health literacy is positioned as a personal resource that shapes appraisal, self-management, and navigation in complex service systems. Health status is modeled as a multidimensional outcome observed through validated psychological and physiological indicators. In job demands-resources terminology, low control and low reward are resource deficits that intensify the impairment pathway. Biopsychosocial processes link these work-design pathways to physiological outcomes through allostatic states. Repeated or chronic activation of stress-response systems without recovery increases allostatic load, and the cumulative “wear and tear” across neuroendocrine, immune, and metabolic systems (McEwen, 1998; Juster et al., 2010). Continued demands under low resources raise the likelihood of incomplete recovery between episodes, gradually shifting set points and elevating dysregulation risk (Sonnentag & Fritz, 2007). This logic justifies the inclusion of physiological proxies alongside psychological indicators in the current design. Organisational school climate is conceptualized here as the organisational tone and psychological environment in which principals perform their roles covering leadership/decision structures, collegial trust, procedural clarity, and communication patterns (Cohen et al., 2009; Leithwood & Jantzi, 2005). Principals both shape and are shaped by this climate, and as such, organisational school climate operates as a contextual resource with expected protective effects on exhaustion and enabling effects on engagement and appraisal (health literacy) (Berkovich & Eyal, 2020; Collie, 2022). Finally, health literacy functions as a capability pathway inside the *Job Demands-Resources*. Higher health literacy should reduce the cognitive load and ambiguity of health-relevant tasks (interpretation, navigation, decision-making) and improve self-management of risk while supporting better psychological functioning and physiological profiles. For a given demand level, a more favorable organisational school climate

will associate with higher health literacy and better health status, health literacy will associate positively with health status, health literacy may mediate part of the organisational school climate → health status link by lowering cognitive/navigational burden and improving self-management.

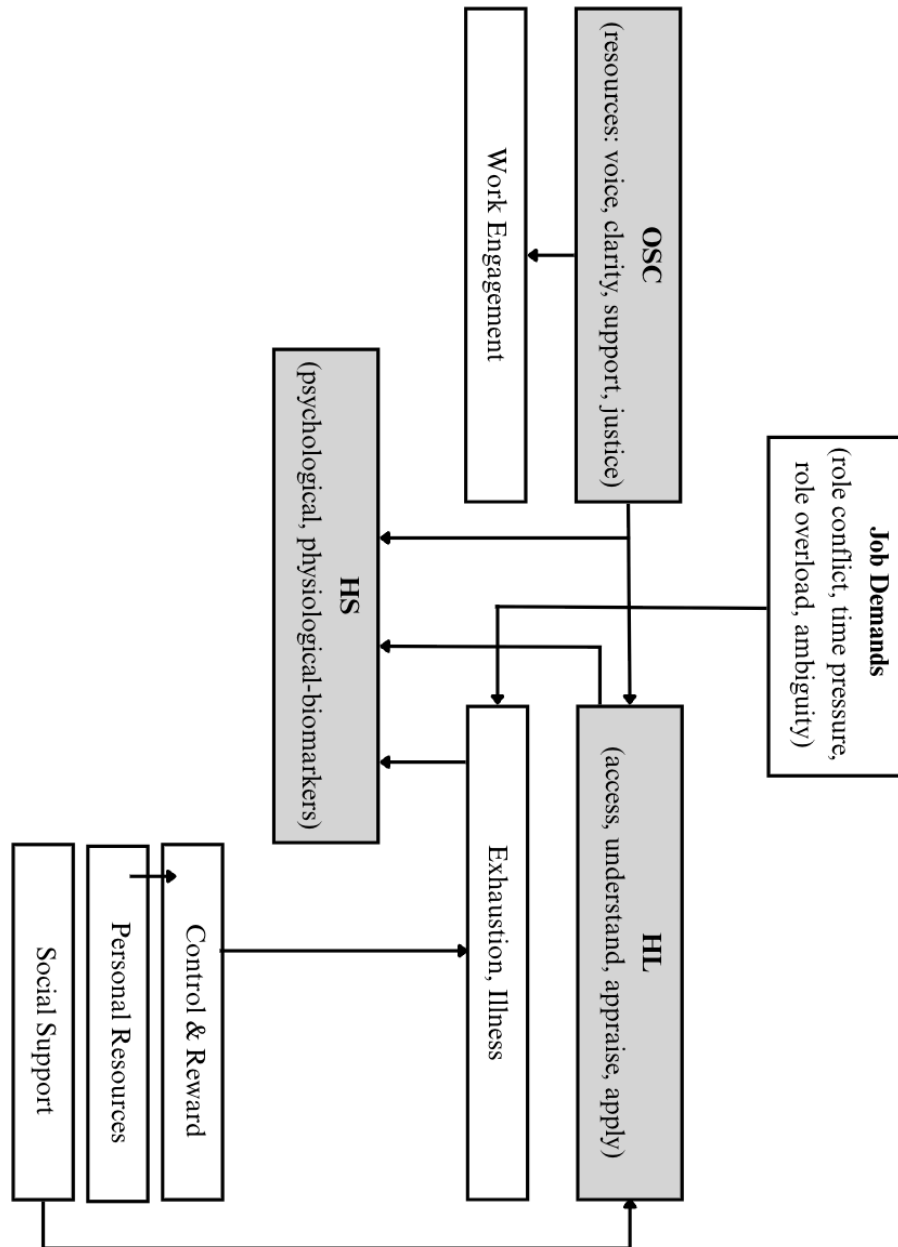
8. CONCEPTUAL FRAMEWORK

The study models principals' health within a work-design logic in which organisational school climate functions as the proximal context of resources (voice, clarity, support, procedural justice) and deficits. Health literacy operates as a personal capability resource for interpreting guidance, navigating services, and self-managing risk. Health status is observed through validated psychological states and physiological proxies consistent with allostatic-load pathways. Conceptually, three mechanisms are introduced as shown in Figure 2. First, a motivational/resource path (Path A): when organisational school climate is supportive and coherent, it expands time, information, and collegial scaffolds that enable leaders to access, understand, appraise, and apply health information, raising health literacy. Second, an impairment/protection path (Path B): adequate resources and clear procedures reduce chronic strain and facilitate recovery, predicting lower exhaustion and more favorable physiology. Third, a capability path (Path C): higher health literacy improves risk interpretation, referral coordination, and self-care, predicting better psychological functioning and healthier biomarker profiles. Mediation is treated as theoretically plausible. Organisational school climate → health literacy → health status (part of organisational school climate's influence on health status is transmitted through capability-enabled self-management), and acknowledge boundary conditions. Cross-sectional data limit inference on gain/loss spirals, and organisational school climate, though measured at the individual level, indexes a work-system property that both shapes and is shaped by leadership practice. This conceptualization is deliberately pragmatic. It links organisational design to leader capability and multi-domain health without medicalizing the role, and it is mechanistically explicit via allostasis, justifying the inclusion of physiological indicators alongside self-reports.

Figure 2

Conceptual Framework: Organisational School Climate, Health Literacy and Health Status

Within the Job Demands-Resources Framework



Note. OSC = organisational school climate; HL = health literacy; HS = health status. The model integrates organisational school climate dimensions (resources, voice, clarity, support, and organizational justice), health literacy competencies (accessing, understanding, appraising, and applying health information), and indicators of professional health status, including psychological and physiological outcomes and biomarker-based indicators. Job demands include role conflict, time pressure, role overload, and role ambiguity.

9. RESEARCH AIM, QUESTIONS AND HYPOTHESES

9.1. Research Aim

The research aim of the dissertation is to examine how primary school principals perceived organisational conditions relate to their perceived health literacy and health status. In this framework, organisational school climate is treated as an upstream, modifiable organisational exposure; health literacy as a personal resource relevant to appraisal and self-management; and health status as a multidimensional outcome observable in validated physiological indicators. More precisely, the research aim will describe and explain the associations among organisational school climate, health literacy, and health status in the population of primary school principals in Croatia, in order to inform an evidence-based educational model of occupational health support for school leadership.

9.1.1. Specific Aim 1: Descriptive Profiling

To determine levels of:

- *Organisational school climate*: As perceived by principals, covering relations among teaching staff, norms for work and student learning, and the principal's relations with staff and the school as a whole.
- *Health literacy*: Principals' perceived knowledge, motivation, and abilities to access, understand, evaluate, and apply health information for health protection, disease prevention, and health promotion.
- *Health status*: Objective cardiovascular biomarker indicators consisting of total cholesterol, triglycerides, high-density lipoprotein cholesterol, low-density lipoprotein cholesterol, total cholesterol-to-high-density lipoprotein cholesterol ratio.

9.1.2. Specific Aim 2: Associational Testing

To estimate the associations between organisational school climate, health literacy, and health status in the principal population:

- Association between organisational school climate and health literacy.
- Association between organisational school climate and health status.

9.1.3. Specific Aim 3: Knowledge Translation

To propose a targeted, empirically grounded educational model that addresses the occupational health needs of the Croatian primary school principals.

9.2. Research Question

- *RQ₁ (descriptive organisational school climate)*: What are the perceptions of primary school principals regarding the organisational school climate in Croatia?
- *RQ₂ (descriptive health literacy)*: What are the levels of health literacy among primary school principals in Croatia?
- *RQ₃ (descriptive health status)*: What is the level of health status among primary school principals in Croatia?
- *RQ₄ (associational organisational school climate × health status)*: What is the association between organisational school climate and health status among primary school principals in Croatia?
- *RQ₅ (associational organisational school climate × health literacy)*: What is the association between organisational school climate and health literacy levels among primary school principals in Croatia?
- *RQ₆ (associational health literacy × health status)*: What is the association between health literacy and health status among primary school principals in Croatia?

9.3. Hypotheses

- *1H₁ (organisational school climate → health status)*: There is a positive association between principals' perceptions of organisational school climate and their health status (coded so that higher health status = better health).
- *2H₁ (organisational school climate → health literacy)*: There is a positive association between principals' perceptions of organisational school climate and their health literacy.
- *3H₁ (health literacy → health status)*: There is a positive association between principals' health literacy and their health status.

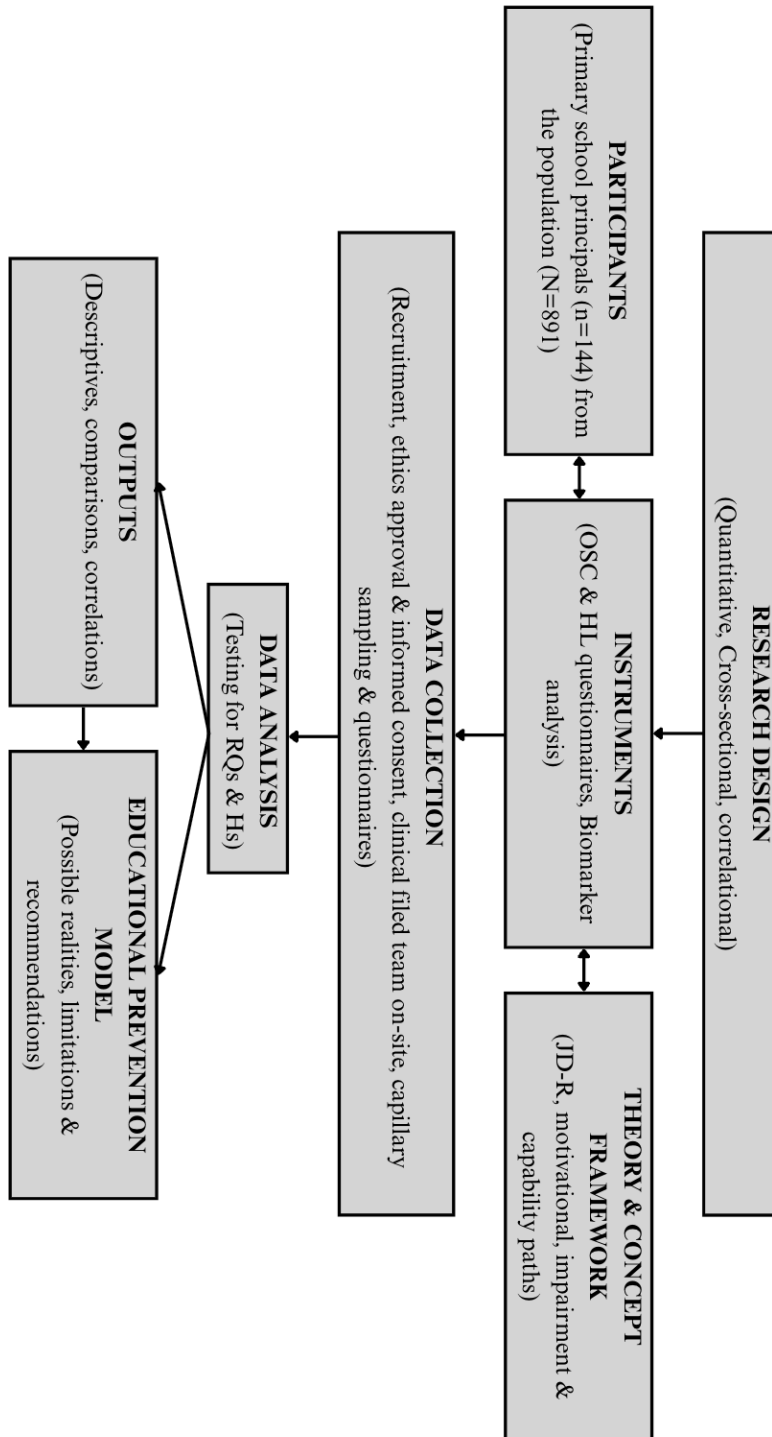
10. METHODOLOGY

10.1. Research Design

The research employed a quantitative, cross-sectional correlational design aimed at examining the associations among organisational school climate, principals' health literacy, and health status within the Croatian compulsory primary education system. The overarching purpose of the study was to understand how the psychosocial environment of schools relates to principals' individual well-being and physiological health, without manipulating conditions or introducing experimental treatments. A quantitative approach was chosen to ensure objectivity, replicability, and comparability across participants and institutions. Quantitative methodology enables the precise measurement of constructs such as school climate, literacy, and health using validated instruments, while allowing for inferential statistical analysis to identify underlying relationships and predictive trends (Creswell & Creswell, 2017). Unlike qualitative or mixed-method approaches that privilege interpretive depth, the present design prioritized statistical generalizability across the national population of Croatian primary school principals. The correlational design specifically allowed to test associations between psychosocial and physiological variables under natural conditions. This approach is appropriate when ethical, contextual, or practical constraints make experimental manipulation impossible or undesirable (Punch & Oancea, 2014). School leadership represents such a setting, principals cannot be randomly assigned to different "climates" or "health conditions," and institutional factors like size, governance, or location evolve organically within each school. For that reason, correlation-based modeling provided the optimal framework to examine how differences in organisational school climate correspond with variations in health literacy and health status outcomes while maintaining ecological validity (Figure 3).

Figure 3

Methodological Framework Diagram



Note. OSC = organisational school climate; HL = health literacy; JD-R = Job Demands-Resources model; RQ = research question; Hs = hypothesis. The figure presents the overall research design, including participant recruitment, theoretical framework integration, instrumentation, data collection procedures, and analytical processes.

This design aligns with theoretical perspectives guiding the study, particularly the *Job Demands-Resources* model (Bakker & Demerouti, 2017). According to the model, psychosocial work conditions, such as communication quality, fairness, and collegiality, function as resources that can either buffer or exacerbate occupational demands. Quantitative correlational methods are well suited to test such relationships, allowing for the identification of positive and negative associations between psychosocial resources (organisational school climate), personal capacities (health literacy), and outcomes (health status). Moreover, the inclusion of both subjective (questionnaire-based) and objective (biomarker) indicators supported a multidimensional analysis consistent with biopsychosocial models of occupational health (World Health Organization, 2024). By collecting physiological data alongside perceptions and competencies, the study bridged the traditional gap between organisational psychology and health sciences. A key strength of the cross-sectional correlational design lies in its ability to accommodate large, geographically diverse samples while controlling for demographic and professional covariates such as age, gender, tenure, and school size. This approach was methodologically aligned with prior European studies examining psychosocial determinants of teacher and principal well-being (Day & Gu, 2013; Viac & Fraser, 2020). It also allowed the integration of biomedical data collection which is a relatively novel addition in educational research, without compromising ethical or logistical feasibility. The correlational structure facilitated the testing of multiple hypotheses simultaneously, including gender differences and the interplay between organisational and individual variables, enhancing both explanatory power and empirical precision.

While correlation does not imply causation (Shadish, Cook & Campbell, 2002), the choice of design was deliberate and theoretically justified. The goal was not to establish deterministic cause-effect relations but to identify meaningful associations that could inform targeted prevention models and guide future longitudinal or experimental research. The educational and ethical context of Croatian schools precludes randomization or manipulation of leadership variables, making correlational inquiry the most appropriate methodological choice. With that in mind, findings are interpreted cautiously and situated within their cross-sectional limitations. Future longitudinal extensions (e.g., cross-lagged panel or structural equation modeling) could build on this foundation to clarify temporal precedence between organisational school climate, health literacy development, and health status.

10.2. Site and Context

The research is situated within the compulsory primary education system in the Republic of Croatia, including public primary schools that operate under the national legislation and curricular guidelines issued by the *Ministrastvo znanosti, obrazovanja i mladih* [The Ministry of Science, Education and Youth]. These institutions, together with kindergartens, high schools, vocational schools and other educational levels within the system, constitute the formal organisational settings in which principals exercise their legal, pedagogical and managerial responsibilities. Although governed by a common national framework (curriculum standards, staffing norms, and accountability requirements), Croatian primary schools are organisationally heterogeneous. They range from small (rural) schools dispersed across several counties and organized in combined (multi-grade) classes, to large urban schools which experience higher enrollment density, more complex staffing structures, stakeholder networks and more extensive support services. The structural diversity shapes the principal's role demands and the resource ecology available. School governance arrangements also matter. Principals are appointed for a fixed five-year term mandate by the school board, with prior consent of the Ministry of Science, Education and Youth, and may be reappointed (*Zakon o odgoju i obrazovanju u osnovnoj i srednjoj školi* [Law on Primary and Secondary Education], Republika Hrvatska, 2019). They operate in a multi-level governance environment where the founder (typically a local self-government unit for primary schools, county, city council or a private founder) sets key institutional parameters and finances core operations, and the Ministry of Science, Education and Youth, together with education inspectorate supervise legal and professional compliance (*Zakon o prosvjetnoj inspekciji* [Law on Educational Inspection], Republika Hrvatska, 2021). Policy is comparatively centralized in areas such as curriculum and assessment with legally binding national curriculum decisions issued for each subject and cross-curricular theme. Staffing requirements and loads together with parts of human resources practices are likewise regulated through national by-laws.

System-level initiatives bring further variation. The national digitalization program *e-Škole* [e-Schools] scaled infrastructure, platforms and capacity-building toward societal digitalization reforms. Also, professional learning is structured and state-wide supported. The *Agencija za odgoj i obrazovanje* [Education and Teacher Training Agency] coordinates national advisory work and in-service programmes via *ETTAedu* (Education and Teacher Training Agency online training portal) and related catalogues, supplying principals and teachers with ongoing professional

development opportunities. The *Zakon o odgoju i obrazovanju na jeziku i pismu nacionalnih manjina* [The Law on Education in the Languages of National Minorities] (Republika Hrvatska, 2000) provides linguistic-minority schooling and defines implementation modalities across levels. These provisions, together with *Vijeće roditelja* [The School-level Parental Bodies], shape the relational and emotional-psychological domains of climate by structuring participation, rights, and expectations. Current human resources pressures including subject-specific shortages vary by locality and interact with the abovementioned factors. The *European Union* monitoring highlights shortage signals (e.g., mathematics, physics), which can differentially burden staffing in smaller or remote schools and intensify principals' boundary-spanning work and administrative load (European Commission, 2024).

The legal framework makes a baseline safety and health obligations for schools while day-to-day well-being depends on how each institution organizes work. Under the *Zakon o zaštiti na radu* [The Occupational Safety and Health Act] (Republika Hrvatska, 2018), the employer must organize and implement occupational health and safety, conduct risk assessments, train school staff appropriately, keep records and ensure occupational-medicine services for health surveillance proportional to workplace hazards. Further procedures specify incident response and student protection steps that structure the principal's systems. For example, the *Pravilnik o načinu postupanja odgojno-obrazovnih radnika školskih ustanova u poduzimanju mjera zaštite prava učenika te obveze prijave svakog kršenja tih prava nadležnim tijelima* [The Ordinance on Procedures for School Staff to Protect Students' Rights and Report Suspected Violations] (Ministarstvo znanosti, obrazovanja i sporta, 2013), the *Protokol o postupanju u slučaju nasilja među djecom i mladima* [The National Protocol on Responding to Violence Among Children and Youth] (Vlada Republike Hrvatske, 2024), and newly established the *Protokol o kontroli ulaska i izlaska u školskim ustanovama* [The Protocol on Control of Entry and Exit in School Institutions] (Ministarstvo znanosti, obrazovanja i mladih, 2025) requiring duty schedules and entry monitoring. These instruments create a predictable routine for reporting, coordination and documentation which can either reduce or increase principals' administrative load depending on local organisation.

10.3. Participants

In addition to the primary study variables, the dissertation recorded a set of demographic and professional background variables, including gender, age, total years of service in education, years of service as principal, school size, staffing adequacy, and perceived cooperation with founders and higher administrative bodies. Gender, age, total service, and leadership tenure were retained a priori because previous literature suggests that they may shape leadership practice, perceived organisational conditions, health-information use, and health-related outcomes. School size, staffing adequacy, and cooperation indicators were included to contextualize the organisational setting in which principals work.

10.3.1. Population Frame

The target population is all principals of the Croatian primary schools holding an active mandate at the time of recruitment. For frame construction, the data was cross-referenced with the Ministry of Science, Education and Youth's official analytic interface *Školski e-Rudnik* [School e-Mine]. At the time the sampling was compiled, the dashboard listed 931 *matične*, [main] primary schools, each led by one principal. *Područne* [branch units] primary schools are dislocated teaching units, administratively linked to the main school and do not have separate principals. This yields an upper bound of N=931 eligible population members for inclusion for invitation. To contextualize the frame, the *Državni zavod za statistiku* [the Croatian Bureau of Statistics], (2025) reports N=891 main primary schools operating at the end of 2023/2024 school year, with 1062 branch units as a definitional split, which aligns with the legal structure and explains differences between the *School e-Mine* and the Croatian Bureau of Statistics at the later statistical cut-off. As the leadership arrangements and principal mandates are governed by the *Law on Primary and Secondary Education* (Republika Hrvatska, 2019), establishing the school as a public institution led by a principal, the assumption 'one principal per main school' was used for frame construction.

10.3.2. Facilitators

Given the methodological sensitivity and ethical requirements of collecting biometric data alongside psychosocial survey responses, the research design necessitated the establishment of a specialized clinical field team. This team was formed through an institutional partnership between medical and field experts at the Faculty of Kinesiology at the University of Split and the Faculty

of Teacher Education at the University of Zagreb, ensuring both scientific oversight and compliance with biomedical safety standards. A medical doctor served as the operational and regulatory partner, providing authorization, field infrastructure, and trained personnel for on-site data collection. Field relevant faculty contributed academic supervision, methodological expertise, and access to clinically certified staff with prior experience in occupational and preventive medicine. Together, this ensured that data collection adhered to national and international health and social sciences research standards. The clinical field team comprised three core roles:

- *A lead physician*, who assumed full clinical responsibility for all biochemical procedures, overseeing participant safety and data integrity.
- *A licensed medical doctor*, trained in capillary blood sampling and assessment and responsible for the direct collection and initial verification of physiological data.
- *A research coordinator*, who managed participant scheduling, survey administration, anonymization of records, and procedural documentation.

Field operations followed a standardized one-session protocol, during which participants first completed the organisational school climate and health literacy instruments, followed by the cardiovascular biomarker and capillary sampling procedures. All activities were carried out in controlled on-site environments with appropriate privacy safeguards, temperature control, and biohazard waste management.

10.3.3. Sampling

A non-probabilistic, purposive sampling strategy was applied to identify and recruit participants most relevant to the research objectives. This approach was chosen because the dissertation aimed to obtain a specialized professional group whose characteristics are not evenly distributed in the population and who represent a bounded occupational community. Purposive sampling ensured the inclusion of principals with active leadership mandates, decision-making authority, and familiarity with school governance processes. Given the administrative and logistical constraints of recruiting across 20 different *Županija* [Counties] and the sensitivity of integrating physiological health assessments with survey data, random sampling was not feasible. Instead, the study used targeted invitations distributed via multiple official and professional channels to maximize participation while preserving representativeness. These included:

- Official communication from the University of Zagreb, Faculty of Teacher Education to all *Županijska vijeća ravnatelja* [County-level principal councils].
- Direct outreach through the Education and Teacher Training Agency and regional education advisors.
- Professional networks, professional development seminars, and associations of school principals.

The inclusion criteria required that participants: (a) hold an active principal mandate in a public primary school, (b) have completed at least one full year in the role to ensure adequate organisational experience, and (c) consent to both the organisational school climate and health literacy survey, and the clinical health assessment involving biomarker capillary blood measurements. Although the sample was not obtained through probability-based random sampling, the inclusion of approximately 16% of the national population of Croatian primary school principals provides substantial population coverage and supports cautious analytical generalization of the findings. Participants were recruited through national professional seminar gatherings attended by principals from across Croatia, which enabled access to a geographically and professionally diverse cohort that would have been difficult to achieve through school-based recruitment alone. Nevertheless, because participation was voluntary, the possibility of self-selection bias cannot be fully excluded, and findings should therefore be interpreted with appropriate caution regarding full statistical representativeness.

10.4. Ethical Considerations

The study adhered to the highest ethical standards of academic research, in full compliance with the ethical guidelines. Ethical approval was formally granted by the Ethics Committee of the Faculty of Teacher Education, University of Zagreb, under the supervision of Associate Professor Nevenka Maras, PhD, Full Professor Damir Sekulić, PhD, and under medical supervision of Marijana Geets Kesić, MD. The research was classified as minimal-risk human subjects research because it involved voluntary participation of adult primary school principals and noninvasive data collection procedures. All amendments or procedural adjustments (e.g., scheduling changes for blood collection) were communicated to and verified by the Ethical Committee before field implementation. Clinical operations followed applicable medical safety standards.

Prior to participation, each school principal received a comprehensive information and consent form, detailing the study purpose, procedures, potential risks, confidentiality measures, and the voluntary nature of involvement. The form was available in Croatian language to ensure cross-contextual validity for all participants. Oral explanations were provided during on-site sessions to clarify all aspects of participation, and participants were encouraged to ask questions before signing. By signing the consent form, participants explicitly agreed to:

- *Complete validated self-report instruments on the organisational school climate* (Slišković & Proroković, 2008) and *health literacy* (Sørensen et al., 2013).
- *Undergo standardized cardiovascular biomarker capillary blood sampling* (total cholesterol, triglycerides, high-density lipoprotein cholesterol, low-density lipoprotein cholesterol, total cholesterol-to-high-density lipoprotein cholesterol ratio) performed by certified medical personnel using point-of-care devices.
- *Allow anonymized data aggregation and statistical analysis* exclusively for scientific and educational purposes.

Participants were reminded that participation was entirely voluntary, without financial compensation, and that they could withdraw at any point without providing justification or experiencing any adverse consequence. The Ethical Committee identified only minimal procedural risk associated with the capillary blood sampling. All samples were collected by trained healthcare professionals following hygiene and safety protocols. The only anticipated discomfort was a brief, mild prick sensation during sampling, estimated to last less than one second. To protect participants' welfare, all biological materials were analyzed immediately on site and disposed of as biohazard waste. No diagnostic interpretation was provided beyond standard field values; however, participants were entitled to receive a summary of their individual results upon request. A medical professional was available throughout each data-collection session to monitor well-being and respond to any adverse reactions.

Stringent measures ensured participant anonymity and data security. Each principal was assigned a unique alphanumeric identifier, used to link survey and physiological datasets without revealing personal identities. The key linking codes to personal data were stored separately and encrypted. Electronic data (Statistical Package for the Social Sciences files and coded spreadsheets) were stored on password-protected institutional drives accessible only to authorized research staff. Paper consent forms were kept in locked archives at the Faculty of Teacher

Education, University of Zagreb. Biological data were retained until the end of the analysis phase and then destroyed. All data processing conformed principles of lawfulness, transparency, and purpose limitation. Personal data and biological materials were used solely for the approved research aims and were not transferred or reused without new consent. Participants retained the right to access their personal data, review their health measurement summaries, and request withdrawal or deletion of their data at any time. Complaints or ethical concerns could be submitted to the Ethical Committee of the Faculty of Teacher Education, University of Zagreb.

The ethical framework of this research demonstrates a balance between scientific rigor and participant protection. Integrating psychosocial and biomedical data required exceptional diligence in informed consent, confidentiality, and risk communication. The dual oversight (academic and clinical) ensured that both educational and health-sector ethical standards were upheld. The research maintained full ethical integrity, prioritized participant autonomy, and contributed to a culture of responsible interdisciplinary research in education and public health.

10.5. Data Collection Instruments

The study employed a triangulated quantitative measurement framework that integrated psychosocial self-report instruments with objective physiological indicators. The instruments were selected for their established reliability, cultural adaptability to the Croatian educational context, and their relevance to leadership and organisational research.

10.5.1. Organisational School Climate Instrument

The *Organizational School Climate Questionnaire* developed and validated by Slišković & Proroković (2021) was used as the primary instrument to assess primary school principals perceived organisational school climate, that is, their self-reported perceptions of the psychosocial and organisational characteristics of their schools. This instrument is grounded in the long tradition of school climate research in educational settings, conceptualizing organisational school climate as a multidimensional construct that captures the collective perceptions, norms, and attitudes shaping the social and professional environment of a school (Hoy, Tarter & Kottkamp, 1991; Domović, 2003). The *Organizational School Climate Questionnaire* is theoretically anchored in social-organisational theory and aligns with the *Job Demands-Resources* theoretical model introduced. Within this framework, supportive leadership, collegial relationships, and clear

decision-making processes function as organisational resources that enhance engagement and buffer the negative effects of workload and role stress. The instrument operationalizes organisational school climate as both an antecedent and a mediating condition of occupational health and performance, consistent with the dissertation's integrative model linking organisational school climate, health literacy, and health status. The instrument is organized in five dimensions, each reflecting a core segment of the school's social and organisational functioning:

- *Leadership and Decision-Making*: Captures perceptions of fairness, transparency, and inclusivity in the school's leadership processes. Items emphasize participatory decision-making, consistency of policies, and the principal's role in fostering a sense of shared purpose.
- *Interpersonal Relations*: Measures perceptions of the quality of collegial interactions, including trust, mutual respect, and the extent of cooperation among staff, teachers and principals.
- *Attitude Toward Work and Students*: Evaluates perceptions of intrinsic motivation, work ethics, and principals' commitment to student learning and school improvement.
- *Workload*: Assesses perceived task demands, time pressure, and administrative burden, reflecting the intensity and manageability of daily professional responsibilities.
- *Poor Interpersonal Relations*: A reverse-coded subscale that identifies perceptions of conflict, rivalry, and communication breakdowns, providing insight into potential psychosocial risks within the organisational climate.

Responses were recorded on a five-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree). Higher composite scores indicate a more positive and cohesive organisational school climate characterized by collegiality, trust, and procedural fairness. Internal reliability coefficients were high, with Cronbach's α values ranging from .83 to .93 across subscales (Slišković & Proroković, 2008). Reliability analysis was complemented by confirmatory factor analysis and principal component analysis with varimax rotation, confirming the five-factor structure and high intercorrelation between the supportive subdimensions ($r = .58$ to $.72$), consistent with a coherent construct of overall climate. The instrument's strong psychometric stability and interpretive clarity make it particularly suitable for leadership-level respondents, whose insights integrate both managerial and interpersonal aspects of school functioning. To ensure cross-contextual validity, the *Organizational School Climate Questionnaire* was

administered in its original Croatian language, preserving semantic precision while making minor linguistic adaptations for principal respondents. For example, references to “staff cooperation” and “team meetings” were clarified to include “teacher councils” and “school boards”, reflecting the governance structures of the Croatian schools. These minimal adjustments maintained conceptual equivalence and linguistic naturalness without altering the psychometric properties of the scale. Because the *Organizational School Climate Questionnaire* was administered as a principal self-report measure, the resulting scores represent principals’ own perceptions of school functioning rather than an objective or independently verified organizational audit. This has important interpretive consequences for later analyses and is revisited in the limitations section.

The *Organizational School Climate Questionnaire* has previously demonstrated sensitivity to differences across educational levels and job roles, making it an appropriate instrument for studying principals’ dual positioning as both leaders and members of the organisational collective. Its use extends the instrument’s application from teacher populations to school leaders, offering a novel contribution to leadership-focused climate research in Croatia. The composite organisational school climate index was derived as the mean of all item responses, while subscale scores were analyzed separately to explore differential relationships with health literacy and health status. Correlational analyses examined the role of specific climate dimensions (e.g., leadership fairness, collegial support) on health literacy and health status outcomes. In line with the research hypotheses, organisational school climate was treated as an independent or mediating variable, representing the contextual condition through which occupational health and well-being manifest at the leadership level.

10.5.2. Health Literacy Assessment Instrument

The measurement of health literacy was done using the *European Health Literacy Short Survey Questionnaire*, a validated instrument developed by Sørensen et al. (2012). This instrument operationalizes health literacy as a multidimensional construct including the cognitive, social, and behavioral competencies that individuals require to access, understand, appraise, and apply health-related information across three primary domains: (1) Healthcare, (2) Disease prevention, and (3) Health promotion. Health literacy, as conceptualized in the dissertation, extends beyond individual knowledge or reading proficiency to encompass the broader capability for critical engagement with health information in complex social and organisational contexts. Within the leadership context,

health literacy represents an essential meta-competence. It enables school principals not only to manage their own well-being but also to interpret, evaluate, and act upon health-related information in ways that shape school-wide policies, model preventive behavior, and foster a culture of well-being. This conceptualization situates health literacy as both an individual resource and a leadership function.

The *European Health Literacy Short Survey Questionnaire* consists of 47 items, each representing practical health-related challenges (e.g., understanding doctor's instructions, finding reliable health information, or interpreting test results). Participants rate each item on a four-point Likert-type scale (1 = very difficult, 2 = difficult, 3 = easy, 4 = very easy). Following the *Consortium Health Literacy Project European* scoring protocol, responses are dichotomized to reflect sufficient versus insufficient perceived competence (1-2 = difficult = 0; 3-4 = easy = 1), and summed to produce a raw score between 0 and 16. This score is subsequently standardized to a 0-50 index using the formula proposed by Sørensen et al. (2015), facilitating categorical interpretation as follows:

- *Inadequate health literacy (0-25)*: Significant difficulty engaging with health information, limited autonomy in managing health-related decisions.
- *Problematic health literacy (26-33)*: Partial capacity, sporadic difficulties understanding or applying health-related information.
- *Sufficient health literacy (34-42)*: Consistent ability to locate and use information for self-care and prevention.
- *Excellent health literacy (43-50)*: Advanced competence, critical evaluation and effective application of health knowledge.

The categorical classification allows the assessment of both gradual (continuous) and threshold (categorical) differences in health literacy levels, supporting multiple analytic strategies, such as correlations, regressions, and group comparisons. The Croatian version of the *European Health Literacy Short Survey Questionnaire* used was adapted from the *European Health Literacy Survey Network's* validated translations, previously applied in national and regional studies across Europe (Dadaczynski et al., 2020; Pelikan et al., 2019). Internal reliability in prior Croatian and Central European applications has been high (Cronbach's $\alpha = .86$ to $.90$), confirming the scale's robustness across cultural contexts. Within the study's analytic framework, health literacy was operationalized as both a dependent and independent variable, reflecting its dual theoretical

positioning. As a dependent variable, health literacy was modeled as an outcome influenced by organisational school climate dimensions testing whether a positive school climate predicts higher levels of health literacy. As an independent variable, health literacy was examined as a predictor of physiological and self-reported health status, exploring whether principals with higher health literacy demonstrate better biometric profiles and stress regulation. Interpreting health literacy through the lens of leadership provides a novel perspective on preventive occupational health models. Principals with higher health literacy are better equipped to critically assess workplace health information, model adaptive coping strategies, and implement evidence-based well-being initiatives for staff.

10.5.3. Biomarkers and Blood Sample Analysis

To complement psychosocial self-report data with objective physiological indicators, the study integrated a biochemical assessment of health status². Participants were instructed in advance to attend measurement sessions in a fasting state (minimum 8 hours; water permitted), to avoid alcohol consumption and vigorous physical activity during the preceding 24 hours, and to attend testing during morning hours whenever feasible in order to reduce postprandial and circadian variation in measured values. All clinical measurements were conducted during on-site data collection sessions to ensure consistency and minimize temporal variability. Testing was performed in designated areas within local centers, under standardized conditions of temperature, lighting, and posture. Each participant underwent noninvasive biomarker screening through capillary blood sampling, executed by licensed medical personnel using calibrated, certified equipment. Indicators measured included total cholesterol, triglycerides, high-density lipoprotein cholesterol, low-density lipoprotein cholesterol, total cholesterol-to-high-density lipoprotein cholesterol ratio. A sterile finger-prick capillary sample was collected using single-use lancets. Samples were analyzed immediately using the *CardioChek PA Point-of-Care Analyzer*, a portable device compliant with ISO 13485 and *Conformité Européenne* [European Conformity] safety standards, ensuring accuracy comparable to laboratory analyzers within a $\pm 10\%$ range. Reagents and control strips were replaced regularly and recorded in calibration logs. The decision to employ

² Pre-analytical conditions matter for lipid profile measurement. Standard public-facing clinical guidance recommends fasting for 8 to 12 hours for many lipid profile tests, scheduling morning appointments when possible, and avoiding behaviors that can distort test values, including exercise during the fasting period and, depending on the test, alcohol beforehand.

capillary rather than venous sampling was guided by ethical, logistical, and practical considerations. Capillary methods are minimally invasive, reduce participant burden, and are suited for field-based health assessments in non-clinical environments. This choice enabled high-quality biochemical data collection without the procedural complexities of full laboratory draws. All tests were completed within 15 minutes per participant, integrating seamlessly with the psychosocial survey phase. Participants received immediate individual feedback on their results, together with a brief standardized explanation by the clinical team, promoting transparency and ethical reciprocity.

The physiological indicators were not treated as direct measures of momentary psychological stress or health status. Rather, lipid profile variables (total cholesterol, triglycerides, high-density lipoprotein cholesterol, low-density lipoprotein cholesterol, non-high density lipoprotein cholesterol, and the total cholesterol-to-high-density lipoprotein ratio) were conceptualized as distal cardiometabolic indicators that may reflect cumulative physiological load associated with prolonged occupational strain, incomplete recovery, and stress-related health behaviors over time. This interpretation is consistent with allostatic-load theory, according to which chronic psychosocial stress may gradually influence metabolic and cardiovascular regulation through neuroendocrine, behavioral, and recovery-related pathways (McEwen & Stellar, 1993; Juster, McEwen & Lupien, 2010).

Data accuracy and reliability were maintained through strict quality-control protocols. Anonymized numeric codes linked each physiological record with the corresponding survey responses to ensure confidentiality. The resulting biometric indices were treated as continuous variables in all statistical analyses. Descriptive statistics (mean, standard deviation, median, and range) were computed for each health marker, and population comparisons were benchmarked. To evaluate associations between psychosocial and physiological variables, the study employed Pearson's r correlations for organisational school climate and health literacy scores with key health status. These tests were designed to address research aim 2, exploring whether perceived organisational school climate and health literacy were associated with measurable aspects of principals' physical health. By incorporating objective physiological measures into an educational-leadership framework, the dissertation advances a multidimensional understanding of occupational health among school principals. The inclusion of biomarkers permits triangulation with self-reported well-being data, mitigating biases inherent to perceptual measures. Moreover, it

operationalizes the concept of “leadership vitality” within an empirical framework, allowing future investigations to link systemic climate factors to biological markers of stress and health.

10.6. Data Analysis and Measurement Procedures

All statistical analyses were conducted using IBM Statistical Package for the Social Sciences Statistics Version 29.0. Data preparation included coding, screening for missing values, inspection of distributional characteristics, and verification of data entry accuracy prior to inferential analysis. Variables derived from questionnaire instruments and biometric indicators were analyzed using a combination of descriptive and inferential statistical procedures aligned with the quantitative cross-sectional correlational design of the study. Descriptive statistics were first calculated to provide an overview of the sample and the central tendencies of the principal study variables. Frequencies and percentages were used for categorical variables such as gender, marital status, educational level, and professional characteristics. Means (M), standard deviations (SD), minimum and maximum values were calculated for continuous variables, including organisational school climate dimensions, health literacy scores, and physiological health status indicators. Results were presented in tabular and graphical formats to facilitate interpretation and comparison across demographic and professional groups.

The reliability and internal consistency of the research instruments were assessed using Cronbach’s alpha (α) coefficients. Reliability coefficients ranging between .81 and .92 indicated satisfactory to high internal consistency of the questionnaire scales used in the study. In addition, exploratory factor procedures previously validated within the Croatian context were reviewed to confirm the dimensional structure of the *Organisational School Climate Questionnaire* and the *European Health Literacy Survey* instrument. Inferential statistical analyses were aligned with the specific aims and hypotheses of the study. Background variables such as gender, age, total years of service, and years of service as principal were treated as contextual variables and used in descriptive profiling, subgroup comparisons, and stratified analyses because prior research indicates that they may be associated with both organisational perceptions and health-related outcomes. Pearson’s chi-square (χ^2) tests were used to examine gender differences in categorical demographic and professional variables. Independent-samples t tests were used to compare mean differences between male and female principals on perceived organisational school climate dimensions and health literacy scores. One-way analyses of variance (ANOVA) were used for

comparisons across age and professional-experience groups. Statistical significance was interpreted using associated F-statistics and probability values (p). Pearson product-moment correlation coefficients (r) were calculated to examine associations among organisational school climate dimensions, health literacy, and health status indicators across gender and age groups.

Multiple linear regression (R) analyses were then used to examine the contribution of perceived organisational school climate dimensions to health literacy. Because of sample-size considerations (Cohen's d and eta squared η^2) and the aim of estimating parsimonious models, the primary regression models did not include all demographic and professional background variables simultaneously as covariates. Instead, demographic variables were used to structure subgroup analyses and to guide interpretation of the main associations. Standardized beta coefficients (β), unstandardized regression coefficients (b), standard errors (SE), t-values, coefficients of determination (R^2), adjusted R^2 , and overall model significance values were reported. These procedures enabled the examination of the relative contribution of organisational climate dimensions in predicting health literacy outcomes while controlling for shared variance among predictors. Measurement procedures for physiological indicators followed standardized clinical and laboratory protocols. Prior to inferential analyses, assumptions for parametric testing were evaluated, including normality of score distributions, homogeneity of variance, linearity, and absence of excessive multicollinearity within regression procedures. Visual inspections of histograms, skewness and kurtosis indices, and Levene's tests were used where appropriate. Given the sample size and approximate normal distribution of principal variables, parametric statistical procedures were considered suitable for the analyses performed. Statistical significance throughout the study was interpreted at the conventional threshold of $p < .05$. Effect directions and practical interpretation of findings were considered alongside statistical significance in order to support theoretically grounded conclusions related to organisational school climate, health literacy, and health status among Croatian primary school principals.

Abbreviations used in statistical reporting: ANOVA = one-way analysis of variance; t = independent samples t-test value; M = mean; SD = standard deviation; r = Pearson correlation coefficient; β = standardized regression coefficient; b = unstandardized regression coefficient; SE = standard error; R^2 = coefficient of determination; R = multiple linear regression; p = probability value; χ^2 = chi-square statistic; d = Cohen's d value for effect size; η^2 = eta squared value for effect size. Ref. = reference range; TCHOL = total cholesterol; TG = triglycerides; HDL-C = high-

density lipoprotein cholesterol; LDL-C = low-density lipoprotein cholesterol; CHOL/HDL ratio = total cholesterol-to-high-density lipoprotein cholesterol ratio; mg/dL = milligrams per deciliter.

11. RESULTS

Demographic and professional variables are treated in the Results chapter as contextual and stratifying variables rather than as universal statistical controls in every model. Unless otherwise specified, references to organisational school climate in the Results chapter denote principals perceived organisational school climate as measured by self-report.

11.1. Sample Profile and Gender Comparisons

The analytic sample in Table 2 included a total of $n=148$ elementary school principals, including 57 men (38.5%) and 89 women (60.1%) with minor missing values (1.4%), aligning with national trends in school leadership demographics (Domović, 2011). A chi-square test of independence revealed a statistically significant difference in age distribution by gender ($\chi^2 = 8.14$, $p = .040$). Male principals were more often represented in the oldest age group (61 years and above), while female principals were primarily concentrated in mid-to-late career brackets, particularly the 51-60-year range (54.7%), with an additional 24.3% aged 41-50, indicating a mature and experienced leadership cohort. Only 20.9% of the total sample were over 61, confirming that the Croatian school leadership remains largely a late-career appointment, with many principals nearing retirement eligibility. This pattern reflects established regional trends in educational management, where leadership succession pipelines are dominated by late-career professionals.

All other tested characteristics showed no reliable gender differences. The education level was highly homogeneous. 91.9 % held a university degree, with 5.4 % a master's and 1.4 % a doctorate, indicating a well-qualified professional sample. Most participants were married (75 %), and 84 % were parents, typically of two children (48.6 %). The data did not indicate significant gender variation in marital or parental status, suggesting that male and female principals operate within comparable family structures and potential work-life balance dynamics. A notable portion of principals (50%) reported regular use of doctor-prescribed therapy or medication in the previous six months. While this variable does not specify diagnosis or severity, it suggests that occupational strain and age-related health factors may be common among school leaders, consistent with European studies identifying elevated rates of stress and chronic health conditions among principals aged 50 and older (Smith & Riley, 2012). Nevertheless, no gender difference was detected in medication use, implying that health-related challenges affect both male and female

leaders similarly. Approximately one-third of participants (31.1%) reported pet ownership, which has been associated in prior research with reduced stress and improved emotional regulation (Allen, Blascovich, Tomaka & Kelsey, 1991). However, this variable showed no significant association with gender or other demographic characteristics, suggesting it plays no systematic role in differentiating well-being or leadership style within the sample. The gender groups are broadly comparable on key personal characteristics, with age-distribution differences noted. This provides a balanced foundation for subsequent comparisons of occupational and psychosocial variables. Taken together, the demographic and health indicators show a highly educated, experienced, and demographically stable leadership group, largely homogeneous across genders except for age distribution. The age skew-men being older on average and women more concentrated in mid-career stages, likely mirrors the gendered progression into leadership roles, with women attaining principalship earlier in their careers as structural gender barriers in education administration gradually decline (Eagly, Carli & Carli, 2007).

Table 2*General Sample Characteristics*

	TOTAL		MALES		FEMALES		Chi-square (<i>p</i>)	
	Count	Percent	Count	Percent	Count	Percent		
<i>Gender</i>								
Male	57	38.5						
Female	89	60.1						
Missing	2	1.4						
<i>Age (group)</i>								
29-40 years	6	4.1	3	5.3	6	4.1		
41-50 years	28	18.9	16	28.1	28	18.9		
51-60 years	81	54.7	19	33.3	81	54.7		
> 61 years	31	20.9	19	33.3	31	20.9		
Missing	2	1.4	0	0.0	2	1.4	8.14	.040
<i>Education level</i>								
University level	136	91.9	57	100.0	136	91.9		
Master of Sci	8	5.4			8	5.4		
PhD	2	1.4			2	1.4		
Missing	2	1.4	0	0.0	2	1.4	NC	
<i>Marital status</i>								
Non spoused	23	15.5	3	5.3	23	15.5		
Spoused	111	75.0	52	91.2	111	75.0		
Widowed	4	2.7	2	3.5	4	2.7		
Divorced	10	6.8			10	6.8		
Missing	0	0.0	0	0.0	0	0.0	NC	
<i>Parenthood</i>								
No	23	15.5	3	5.3	23	15.5		
One child	27	18.2	10	17.5	27	18.2		
Two children	72	48.6	30	52.6	72	48.6		
Three and more	26	17.6	14	24.6	26	17.6		
Missing	0	0.0	0	0.0	0	0.0	4.6	.200
<i>Doctor prescribed therapy/medication in the last 6 months</i>								
Yes	74	50.0	29	50.9	74	50.0		
No	74	50.0	28	49.1	74	50.0		
Missing	0	0.0	0	0.0	0	0.0	.010	.990
<i>Having a pet</i>								
Yes	46	31.1	14	24.6	46	31.1		
No	102	68.9	43	75.4	102	68.9		
Missing	0	0.0	0	0.0	0	0.0	.560	.460

Note. Values are reported as frequencies (n) and percentages (%). Pearson's chi-square tests were conducted to examine gender differences across demographic variables. NC = not calculated because statistical assumptions for chi-square analysis were not met.

11.2. Professional Characteristics

The analysis of professional characteristics provides a contextual overview of principals' work environments, tenure, and institutional conditions, offering insights into the occupational background underlying psychosocial and health-related outcomes. These variables correspond to research question 1, which sought to describe the demographic and professional structure of Croatian primary school principals, and they provide a baseline for evaluating relationships addressed in later hypotheses. As shown in Table 3, the majority of participants possessed extensive professional experience within the educational system. Nearly 80% reported more than 20 years of total service, demonstrating a sample of highly experienced educators. Regarding length of service as a principal, the distribution was balanced across tenure brackets (0-5 years: 30%, 6-10 years: 32%, 11-20 years: 30%, > 20 years: 9.5%). This indicates that the achieved sample contained both novice and veteran principals, providing meaningful variation in leadership experience for correlational and comparative analyses. Importantly, chi-square tests revealed no significant gender differences in total professional experience ($\chi^2 = 1.13$, $p = .290$) or in years of service as principal ($\chi^2 = 0.97$, $p = .510$). Both male and female principals have, on average, accumulated similar tenure and professional exposure, supporting the assumption that gender-based contrasts in later analyses (e.g., organisational school climate or health literacy) are not artifacts of unequal experience.

Most principals oversaw medium-sized schools, with 35.1% managing institutions of 501-800 students, while smaller schools (up to 300 students) accounted for 18%. This profile corresponds with the national distribution of Croatian primary schools, where medium-size institutions dominate urban and suburban regions. The achieved sample broadly resembled national administrative patterns in institutional scale, although this resemblance should not be interpreted as evidence of statistical representativeness. However, structural indicators revealed systemic resource disparities. Approximately 48% of principals reported that their schools lacked the required number of professional associates (e.g., pedagogues, psychologists, special educators), and 45.9% indicated shortages in technical and administrative staff relative to the state

pedagogical standard. These findings corroborate prior evidence of staffing deficits and resource inequalities across the Croatian educational institutions (Domović, 2003; Smith & Riley, 2012). The absence of gender differences in reported compliance ($p > .050$) suggests that such challenges are structural rather than individual, affecting both male- and female-led schools alike.

Principals were also asked to evaluate the quality of institutional cooperation with key stakeholders. Results show that 63.5% reported effective collaboration with their school founder, typically local government or county administration, while fewer reported strong ties with the local community (25.7%) or the Ministry of Science, Education and Youth (10.8%). This pattern reflects the multi-level governance structure of Croatian education, wherein local founders bear primary operational responsibility, and central authorities maintain strategic and regulatory oversight (Petak, 2006). While the limited cooperation with the Ministry of Science, Education and Youth may reflect bureaucratic distance, the relatively high cooperation with local founders suggests the presence of localized professional networks that can facilitate resource sharing and psychosocial support. No gender differences were identified in perceived collaboration levels, indicating that relational networking patterns are not systematically differentiated by leader gender.

The professional profile findings are important for interpreting subsequent analyses because they establish that men and women in leadership positions share nearly identical occupational contexts, eliminating tenure or institutional composition as potential confounding variables in gender-based comparisons of perceived organisational school climate and health literacy. The data also highlight systemic challenges that transcend individual differences. The shortage of professional and technical staff and the limited cooperation with higher-level administrative bodies represent organisational constraints that may influence both occupational stress and health outcomes. Within the *Job Demands-Resources* framework, these shortages constitute job demands that increase workload and role stress, while supportive founder relationships serve as job resources that mitigate strain. This context reinforces the rationale for research aim 2, which examined how school climate (as an organisational resource) interacts with health literacy and health outcomes. The relatively uniform professional conditions across genders strengthen the validity of observed psychosocial differences in later sections, as they are likely attributable to behavioral and relational patterns rather than institutional disparities.

Table 3*Sample Professional Characteristics*

	TOTAL		MALES		FEMALES		Chi-square (<i>p</i>)	
	Count	Percent	Count	Percent	Count	Percent		
<i>Length of service</i>								
0-5 years	6	4.1	3	5.3	6	4.1		
6-10 years	3	2.0	3	5.3	3	2.0		
11-20 years	20	13.5	8	14.0	20	13.5		
> 20 years	117	79.1	43	75.4	117	79.1		
Missing	2	1.4	0	0.0	2	1.4	1.60	.640
<i>Work Experience as School Principal</i>								
0-5 years	43	29.1	16	28.1	43	29.1		
6-10 years	47	31.8	13	22.8	47	31.8		
11-20 years	44	29.7	20	35.1	44	29.7		
> 20 years	14	9.5	8	14.0	14	9.5		
Missing	0	0.0	0	0.0	0	0.0	2.32	.510
<i>Size of the school</i>								
< 100 students	4	2.7	2	3.5	4	2.7		
101-300 students	50	33.8	24	42.1	50	33.8		
301-500 students	38	25.7	14	24.6	38	25.7		
501-800 students	52	35.1	17	29.8	52	35.1		
> 800 students	4	2.7			4	2.7		
Missing	0	0.0	0	0.0	0	0.0	NC	
<i>Does the number of support and technical staff at the school comply with the State Pedagogical Standard?</i>								
Yes	80	54.1	32	56.1	80	54.1		
No	68	45.9	25	43.9	68	45.9		
Missing	0	0.0	0	0.0	0	0.0	.010	.910
<i>Does the number of professional associates at the school comply with the State Pedagogical Standard?</i>								
Yes	77	52.0	35	61.4	77	52.0		
No	71	48.0	22	38.6	71	48.0		
Missing	0	0.0	0	0.0	0	0.0	1.11	.290
<i>I'm effectively cooperating with</i>								
Local community	38	25.7	17	29.8	38	25.7		
Founder of the School	94	63.5	36	63.2	94	63.5		
Ministry of Education	16	10.8	4	7.0	16	10.8		
Missing	0	0.0	0	0.0	0	0.0	.870	.640

Note. Values are presented as frequencies (n) and percentages (%). Pearson’s chi-square analyses examined gender differences across professional characteristics and institutional variables. NC = not computed due to insufficient expected cell frequencies.

11.3. Organisational School Climate Descriptives

The analysis of perceived organisational school climate represents a central component of the dissertation, addressing research aim 1 and hypothesis 1H₁, which proposed that positive perceptions of the organisational school climate would be associated with higher well-being and health literacy among principals. Descriptive statistics for the perceived organisational school climate dimensions (Table 4) revealed that Croatian primary school principals generally perceive their organisational environments as supportive and collaborative. The mean scores for all climate dimensions exceeded the theoretical midpoint of their respective scales, indicating an overall positive psychosocial environment within schools. The highest mean scores were observed for “Interpersonal Relationships” (M = 51.92, SD = 7.53) and “Leadership Style” (M = 46.55, SD = 4.99), suggesting strong collegial relations and participative decision-making structures. Principals perceive their communication with staff as open, respectful, and conducive to mutual trust.

Table 4

Descriptive Statistics for Organisational School Climate Dimensions

	<i>M</i>	<i>Minimum</i>	<i>Maximum</i>	<i>SD</i>
Interpersonal Relationships	51.92	31.00	70.00	7.53
Leadership Style	46.55	27.00	54.00	4.99
Control	13.87	6.00	21.00	2.86
Attitude Toward Work and Students	15.15	6.00	22.00	3.30
Poor Interpersonal Relations	16.20	7.00	27.00	4.27
Workload	10.78	7.00	16.00	2.00
Total Principal Perceived OSC	58.37	0.00	74.00	12.61

Note. OSC = organisational school climate; M = mean; SD = standard deviation. The table presents descriptive statistics for organisational school climate dimensions among school principals included in the study sample. Higher scores reflect more positive perceptions of organisational school climate characteristics.

In contrast, “Workload” (M = 10.78, SD = 2.00) and “Poor Interpersonal Relations” (M = 16.20, SD = 4.27) obtained lower averages, suggesting moderate occupational strain and limited interpersonal tension. This pattern is typical of mid-career leadership cohorts managing complex

administrative and pedagogical responsibilities within resource-constrained environments. The overall principal-perceived organisational school climate score ($M = 58.37$, $SD = 12.61$) exceeded the scale midpoints, confirming a favorable psychosocial atmosphere.

Each climate subdimension provides insight into specific psychosocial processes underpinning school functioning. “Leadership Style” measures participative and supportive management practices, including clarity of direction, fairness, and encouragement of innovation (Hoy et al., 1991). The high mean score suggests that principals generally adopt transformational leadership behaviors, aligning with the principles of inclusive educational governance. “Interpersonal Relationships” capture the warmth, trust, and collegial solidarity among staff. The high score reflects a strong social identity within schools, crucial for sustaining teacher motivation and collective efficacy (Leithwood & Jantzi, 2005a). “Attitude Toward Work and Students” represents intrinsic motivation and the affective dimension of professional commitment. Elevated values on this scale imply that Croatian primary school principals continue to view their work as purposeful and socially meaningful, even under increasing administrative pressure. “Workload” and “Poor Relations” measure the strain dimension of climate, reflecting how demands and interpersonal frictions may offset the benefits of collegiality. The moderate results indicate manageable, though non-trivial, levels of occupational stress. Taken together, the organisational school climate data depict a mature, cohesive professional community characterized by collaborative leadership and balanced workload management, albeit within an aging leadership population.

11.3.1. Gender-Based Comparisons in Organisational School Climate

Independent-samples t-tests comparing male and female principals in Table 5 revealed systematic gender differences across several perceived organisational school climate dimensions. Female principals reported significantly higher mean scores on measures of “Leadership Style”, “Interpersonal Relationships”, “Attitude Toward Work and Students”, and the overall perceived organisational school climate index (all $p < .001$). Specifically, female principals scored higher on: Leadership Style: $t(144) = -4.69$, $p < .001$, Interpersonal Relationships: $t(144) = -3.16$, $p = .002$, Attitude Toward Work and Students: $t(144) = -4.39$, $p < .001$, Overall Principal Climate Score: $t(144) = -4.90$, $p < .001$, $d = .74$, and Teacher-Perceived Climate: $t(144) = -4.86$, $p < .001$. No significant gender differences were detected for “Control”, “Poor Interpersonal Relations”, or

“Workload” ($p > .05$). These findings confirm that the gender effect pertains primarily to the positive relational and motivational aspects of perceived organisational school climate rather than to perceived stress or conflict. This pattern supports Hypothesis 1H₁, with variations in organisational school climate perceptions, as female principals exhibited more positive relational orientations.

Table 5

Independent-Samples t-Test Differences in Organisational School Climate by Gender

	Male principals		Female principals		t-test		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	<i>d</i>
Interpersonal Relationships	49.35	6.32	53.40	7.88	-3.16	.002	
Leadership Style	44.08	6.42	47.89	3.22	-4.69	.001	
Control	13.23	2.83	14.15	2.80	-1.86	.064	
Attitude Toward Work and Students	13.60	3.47	15.96	2.83	-4.39	.001	
Poor Interpersonal Relations	15.46	4.08	16.63	4.39	-1.56	.120	
Workload	10.52	1.83	10.90	2.11	-1.08	.282	
Total Perceived OSC	52.28	17.83	62.03	4.81	-4.90	.001	.74

Note. OSC = organisational school climate; M = mean; t = Independent samples t-test value; d = Cohen’s d value for effect size; SD = standard deviation. Independent-samples t tests examined gender differences across organisational school climate dimensions and the overall organisational school climate score. Negative t values indicate higher mean scores among female principals relative to male principals.

11.3.2. Theoretical and Empirical Integration

The observed results resonate with broader international evidence. Studies in educational leadership report that female principals emphasize participatory decision-making, mentoring, and team cohesion, while male principals tend to adopt more task-oriented or hierarchical approaches (Grogan & Shakeshaft, 2011; Shapira-Lishchinsky, 2014). The findings confirm that such gendered leadership dynamics manifest clearly within Croatian schools. Moreover, the high internal consistency and directionally coherent pattern across climate subscales provide strong construct validity for the perceived organisational school climate measure used. The elevation of interpersonal and leadership dimensions, coupled with moderate workload scores, suggests a climate that supports psychological safety and motivation. In short, Croatian primary schools are characterized by generally positive climates, with high levels of collegiality and participative leadership. Female principals perceive and possibly cultivate more relationally supportive

environments than male principals, showing gender-linked patterns of leadership influence. Perceived organisational school climate functions as a potential enabling resource per *Job Demands-Resources* theory that develops individual health literacy and occupational well-being, justifying its role as a key predictor in subsequent research aims.

11.4. Health Literacy Descriptives and Demographics

Across the sample, the mean health literacy score was $M = 33.39$ ($SD = 8.01$), positioning the average respondent at the threshold between the “problematic” (26-33) and “sufficient” (34-42) categories defined by the *European Health Literacy Survey* classification. This indicates that, although school principals possess generally adequate functional literacy, many remain near the lower margin of sufficiency. Given their advanced education levels, this outcome suggests a gap between formal education and applied health-information competence, echoing Sørensen et al. (2012) and Dadaczynski et al. (2021), who note that professional expertise does not automatically translate into broader health-management capability. When benchmarked against the *European Health Literacy Survey* reference levels explained in the instruments section, only a modest proportion of principals reached the “excellent” (> 42) tier, while the remainder clustered within “sufficient” or “problematic” ranges. This pattern points to uneven capacity for critical appraisal and navigation of health information, particularly in digital and organisational contexts.

Independent samples t-testing (Table 6) revealed a statistically significant gender difference, $t(144) = -2.17$, $p = .03$, with female principals ($M = 34.48$, $SD = 7.90$) scoring higher than male principals ($M = 31.41$, $SD = 8.12$).

Table 6

Descriptive Statistics for Health Literacy by Gender

	Total		Male principals		Female principals		t-test		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	<i>d</i>
Health Literacy	33.39	8.01	31.41	8.12	34.48	7.90	-2.17	.030	.38

Note. *M* = mean; *SD* = standard deviation. *t* = test statistic; *d* = Cohen’s *d* value for effect size. Independent-samples *t* tests examined gender differences in health literacy scores between male and female school principals. Higher scores indicate higher levels of health literacy.

Although the effect size is small ($d = .38$), this pattern is consistent with broader European trends showing women’s greater engagement with health-information seeking and preventive behavior (Paasche-Orlow & Wolf, 2007). Within educational leadership, such a difference may also reflect gendered socialization toward relational and self-care competencies, which translate into more effective health-information management. Nevertheless, both groups remain on the lower edge of the “sufficient” category, suggesting a need for systemic literacy development across genders.

The one-way analysis of variance in Table 7 examined differences in health literacy scores across four age groups of primary school principals (29-40, 41-50, 51-60, and > 61 years). The analysis did not reveal statistically significant differences among groups, $F(3, 144) = 1.44$, $p = .23$, $\eta^2 = .03$. Mean scores were relatively similar across the three older age categories (41-50 years: $M = 33.26$, $SD = 8.50$; 51-60 years: $M = 33.57$, $SD = 7.90$; > 61 years: $M = 33.53$, $SD = 8.15$), whereas the youngest group demonstrated a lower average score ($M = 23.37$). However, because the youngest subgroup included only six participants, this result should be interpreted cautiously and does not support reliable inference regarding age-related differences. This suggests that health literacy levels remain relatively stable across age groups among Croatian primary school principals. Consequently, the non-significant omnibus ANOVA result indicates insufficient evidence to conclude that health literacy systematically differs across age groups in the present sample.

Table 7
Differences in Health Literacy by Age Group (Years)

	29-40		41-50		51-60		> 61		ANOVA		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>p</i>	η^2
Health Literacy	23.37	0.01	33.26	8.50	33.57	7.90	33.53	8.15	1.44	.230	.030

Note. *M* = mean; *SD* = standard deviation; η^2 = eta squared value for effect size; ANOVA = analysis of variance; A one-way analysis of variance examined differences in health literacy scores among school principals across age groups. *F* values represent omnibus group comparisons.

Similarly, when grouped according to total years of professional service (Table 8), health literacy scores showed a modest upward trend from principals with 0-5 years of experience ($M = 28.01$, $SD = 4.66$) to those with more than 20 years of service ($M = 33.71$, $SD = 7.91$).

Nevertheless, the overall one-way analysis of variance did not reveal statistically significant differences among groups, $F(3, 144) = 1.57, p = .21, \eta^2 = .032$, indicating a small effect size. However, the non-significant omnibus ANOVA result suggests that differences in health literacy according to professional length of service were relatively limited within the present sample. Overall, professional experience accounted for only a small proportion of variance in health literacy scores.

Table 8

Health Literacy Differences by Length of Service (Years)

	0-5		6-10		11-20		> 20		ANOVA		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>p</i>	η^2
Health Literacy	28.01	4.66	30.02	7.01	32.21	9.94	33.71	7.91	1.57	.210	.032

Note. *M* = mean; *SD* = standard deviation; η^2 = eta squared value for effect size; ANOVA = analysis of variance. One-way analysis of variance examined differences in health literacy scores among school principals across categories of professional length of service. *F* values represent omnibus group comparisons.

The progression trend, although not statistically robust, hints that accumulated organisational experience might gradually strengthen principals' navigation of health and policy information. The one-way analysis of variance presented in Table 9 examined differences in health literacy scores across categories of professional leadership experience among primary school principals (0-5, 6-10, 11-20, and > 20 years). The analysis revealed statistically significant differences among groups, $F(3, 144) = 3.71, p = .01, \eta^2 = .072$, indicating a moderate effect size. Mean health literacy scores were highest among principals with 6-10 years of professional leadership experience ($M = 35.99, SD = 7.98$), whereas principals with 0-5 years of experience demonstrated the lowest average scores ($M = 30.19, SD = 8.51$). Principals with longer professional experience (11-20 years and > 20 years) demonstrated slightly lower but relatively stable health literacy levels ($M = 33.82$ and $M = 32.95$). Overall, the findings suggest that professional leadership experience may be associated with differences in health literacy among Croatian primary school principals, with leadership experience accounting for a moderate proportion of variance in health literacy scores within the present sample. This suggests a critical mid-career phase in which principals consolidate health-information skills through accumulated administrative and staff-management responsibilities, aligning with the concept of experiential health literacy acquisition (Nutbeam, 2008).

Table 9*Health Literacy Differences by Professional Experience (Years)*

	0-5		6-10		11-20		> 20		ANOVA		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>p</i>	η^2
Health Literacy	30.19	8.51	35.99	7.98	33.82	7.91	32.95	4.46	3.71	.010	.072

Note. M = mean; SD = standard deviation; η^2 = eta squared value for effect size; ANOVA = analysis of variance. One-way analysis of variance examined differences in health literacy scores among school principals across categories of professional experience. F values represent omnibus group comparisons.

Taken together, the data show a moderate, uneven distribution of health literacy within the primary school principal population. The gender-linked advantage for women and the mid-career boost in health literacy point out the influence of social and experiential learning pathways rather than formal qualification alone. These findings emphasize the need for institutionalized health literacy training within leadership development frameworks, particularly in critical appraisal, evidence evaluation, and digital health navigation. From an analytical standpoint, these descriptive patterns establish a necessary empirical baseline for testing 2H₁ (organisational school climate ↔ health literacy) and 3H₁ (health literacy ↔ health status), both of which build on the premise that health literacy functions as an adaptive, resource-based capability within school organisations.

11.5. Health Status Descriptives and Comparative Indicators

Physiological measurements were obtained from capillary blood analyses. The biomarkers measured included lipid profile indicators (total cholesterol (TCHOL), triglycerides (TG), high-density lipoprotein (HDL-C), low-density lipoprotein (LDL-C), non-high-density lipoprotein cholesterol, and cholesterol/high-density lipoprotein ratio (CHOL/HDL)). The overall descriptive pattern falls under a mid-to-late-career professional group with biomarker values typical of adults aged 50-65 years in European populations. Mean scores for the combined sample generally fell within national reference ranges, indicating that the majority of principals were in acceptable physiological condition.

When stratified by gender, the descriptive comparison presented in Table 10 suggests notable gender-related differences across several cardiovascular health indicators. Male principals exhibited less favorable cardiovascular profiles than female ones. Male principals recorded higher total cholesterol (TCHOL M = 232.00 mg/dL, SD = 38.70) and triglycerides (TG M = 141.30

mg/dL, SD = 41.40), compared with female principals (TCHOL M = 192.60, SD = 34.50 and TG M = 100.80, SD = 35.20).

Table 10

Descriptive Statistics for Health Status by Gender

Health Status	<i>Female principals</i>		<i>Male principals</i>		<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
TCHOL (mg/dL)	192.60	34.50	232.00	38.70	1.09
TG (mg/dL)	100.80	35.20	141.30	41.40	1.07
HDL-C (mg/dL)	52.00	11.20	45.70	9.00	.61
non-HDL-C (mg/dL)	143.80	25.60	173.20	31.70	1.05
LDL-C (mg/dL)	120.50	23.90	158.10	28.80	1.45
CHOL/HDL ratio (ratio)	3.60	1.40	5.70	3.20	.92

Note. M = mean; SD = standard deviation; d = Cohen’s d value for effect size; TCHOL = total cholesterol; TG = triglycerides; HDL-C = high-density lipoprotein cholesterol; LDL-C = low-density lipoprotein cholesterol; CHOL/HDL ratio = total cholesterol-to-high-density lipoprotein cholesterol ratio. Values are expressed in milligrams per deciliter (mg/dL), except for the CHOL/HDL ratio.

Female principals showed higher protective high-density lipoprotein cholesterol levels (HDL-C M = 52.00 mg/dL, SD = 11.20) than males (M = 45.70 mg/dL, SD = 9.00), yielding a more favorable average total cholesterol-to-high-density lipoprotein ratio (CHOL/HDL 3.6 vs. 5.7). The low-density lipoprotein cholesterol (LDL-C) and non-high-density lipoprotein cholesterol (non-HDL-C) were markedly elevated among males (M = 158.10 mg/dL and 173.20 mg/dL, respectively) relative to females (M = 120.50 mg/dL and 143.80 mg/dL). The CHOL/HDL ratio demonstrated a large effect size (d = .92), indicating a substantial gender-related difference between male and female principals. Male principals exhibited notably higher CHOL/HDL ratio values compared with female principals, suggesting a comparatively less favorable cardiovascular risk profile within the male subgroup. Although these differences were not subjected to inferential testing due to sex-specific reference norms, the descriptive pattern mirrors epidemiological evidence that men exhibit greater cardiometabolic risk across middle age, while women retain higher high-density lipoprotein cholesterol (HDL-C) protection until menopause. These gender disparities are clinically relevant rather than statistically inferential, given that several male subgroups exhibited mean values exceeding recommended reference thresholds, indicating

heightened cardiovascular risk within this group. Female principals' averages remained well within reference intervals for all lipid fractions.

Age-stratified analyses revealed gradual, monotonic increases in lipid markers with advancing age for both sexes as shown in Tables 11 and 12.

Table 11

Descriptive Statistics and Reference Values for Health Status Across Age Groups in Female Principals (Years)

Female principals Health Status	29-40		41-50		51-60		>61	
	<i>M</i> ± <i>SD</i>	<i>Ref.</i>	<i>M</i> ± <i>SD</i>	<i>Ref.</i>	<i>M</i> ± <i>SD</i>	<i>Ref.</i>	<i>M</i> ± <i>SD</i>	<i>Ref.</i>
TCHOL (mg/dL)	173.9 ± 30.5	160-200	195 ± 35.1	170-210	211 ± 37.2	180-220	222.6 ± 35.1	180-230
TG (mg/dL)	78.1 ± 27.3	55-110	91.6 ± 30.9	60-125	121.1 ± 41.5	65-135	129.1 ± 41.2	70-145
HDL-C (mg/dL)	58.1 ± 11.6	50-70	51.6 ± 12.5	50-70	51.7 ± 8.9	48-65	55.2 ± 12	47-60
non-HDL-C (mg/dL)	140.1 ± 21.5	110-150	141.3 ± 25.1	120-160	158.2 ± 25.2	125-165	159.7 ± 30.6	130-170
LDL-C (mg/dL)	100.1 ± 22.1	90-130	125.1 ± 21	100-140	135.1 ± 28.2	105-145	141.6 ± 24.2	110-150
CHOL/HDL (ratio)	3.0 ± 0.9	2.5-3.5	3.8 ± 0.9	2.7-3.8	4.1 ± 1.5	2.9-4.0	4.0 ± 2.2	3.0-4.2

Note. M = mean; SD = standard deviation; Ref. = reference range; TCHOL = total cholesterol; TG = triglycerides; HDL-C = high-density lipoprotein cholesterol; LDL-C = low-density lipoprotein cholesterol; CHOL/HDL ratio = total cholesterol-to-high-density lipoprotein cholesterol ratio. Values are presented as means and standard deviations across age groups of female principals. Reference ranges correspond to age-adjusted laboratory guideline values. All biomarker values are expressed in milligrams per deciliter (mg/dL), except for the CHOL/HDL ratio.

For female principals, total cholesterol rose from TCHOL M = 173.9 mg/dL (29-40 years) to M = 222.6 mg/dL (> 61 years), while triglycerides increased from TG M = 78.1 mg/dL to M = 129.1 mg/dL. The high-density lipoprotein cholesterol remained relatively stable, fluctuating around HDL-C M = 51-58 mg/dL, suggesting preserved protective function. By contrast, in males, total cholesterol increased from TCHOL M = 199.9 mg/dL to M = 227.6 mg/dL, and triglycerides from TG M = 100.1 mg/dL to M = 161.2 mg/dL, while high-density lipoprotein cholesterol declined progressively from HDL-C M = 50.3 mg/dL to M = 36.8 mg/dL. This pattern-rising low-density lipoprotein cholesterol (LDL-C) and triglycerides (TG) combined with falling high-density lipoprotein cholesterol (HDL-C) is diagnostically characteristic of midlife metabolic aging and corresponds to the World Health Organization's occupational-health observations for managerial

populations (World Health Organization, 2024). In several male subgroups (especially > 61 years), mean low-density lipoprotein cholesterol (LDL-C) values exceeded the upper bound of reference intervals (160 mg/dL), and the average total cholesterol-to-high-density lipoprotein cholesterol ratio (CHOL/HDL 6.2 ± 3.9) surpassed the recommended ≤ 5.0 threshold, indicating potential early atherogenic risk. Female principals, by comparison, exhibited mild but subclinical elevations, consistent with perimenopausal lipid shifts reported.

Table 12

Descriptive Statistics and Reference Values for Health Status Across Age Groups in Male Principals (Years)

Male principals Health Status	29-40		41-50		51-60		>61	
	Mean ± SD	Ref.	Mean ± SD	Ref.	Mean ± SD	Ref.	Mean ± SD	Ref.
TCHOL (mg/dL)	199.9 ± 35.2	165-205	198.2 ± 38.9	175-215	217.9 ± 41.8	180-225	227.6 ± 38.9	185-230
TG (mg/dL)	100.1 ± 35.6	70-130	112.3 ± 39.1	75-145	140.1 ± 39.5	80-155	161.2 ± 51.2	85-165
HDL-C (mg/dL)	50.3 ± 12.5	40-60	39.9 ± 8.5	38-58	39.1 ± 5.9	36-55	36.8 ± 8.9	35-50
non-HDL-C (mg/dL)	148.3 ± 31.5	125-165	155.2 ± 31.9	130-170	161.2 ± 31.9	135-175	165.2 ± 31.5	140-180
LDL-C (mg/dL)	129.6 ± 32.6	105-145	135.9 ± 21.1	110-150	150.8 ± 33.1	115-155	158.6 ± 28.5	120-160
CHOL/HDL (ratio)	4.0 ± 2.2	3.5-4.5	5.0 ± 3.5	3.7-4.7	5.6 ± 3.2	3.8-5.0	6.2 ± 3.9	4.0-5.2

Note. M = mean; SD = standard deviation; Ref. = reference range; TCHOL = total cholesterol; TG = triglycerides; HDL-C = high-density lipoprotein cholesterol; LDL-C = low-density lipoprotein cholesterol; CHOL/HDL ratio = total cholesterol-to-high-density lipoprotein cholesterol ratio. Values are presented as means and standard deviations across age groups of male principals. Reference ranges correspond to age-adjusted laboratory guideline values. All biomarker values are expressed in milligrams per deciliter (mg/dL), except for the CHOL/HDL ratio.

These biometric results suggest that, despite overall occupational stability and low psychosocial turnover, principals' physiological health mirrors general population trends of age-related cardiovascular risk. The modest gender gap aligns with broader epidemiological evidence where male principals are more vulnerable to cardiometabolic strain due to behavioral and hormonal factors, while female principals retain some lipid protection but may face cumulative stress exposure. The results further support the contextual interpretation that school leadership is a cognitively and emotionally demanding occupation, but its physical-health consequences are subtle and cumulative rather than acute (Day & Gu, 2013). Given that these indicators were

measured in a cross-sectional, occupationally homogeneous sample, between-group variability was relatively low.

11.6. Association Between Health Literacy and Health Status

Understanding the association between health literacy and health status among the Croatian primary school principals corresponding to Hypothesis 3H₁, predicted that higher health literacy would be positively correlated with more favorable health status. Among female principals (Table 13), health literacy was significantly negatively correlated with total cholesterol and triglycerides, particularly in the 41-50, 51-60, and > 61-year groups (TCHOL & TG $r = -.39, -.31,$ and $-.46,$ all $p < .05$). This pattern indicates that higher health literacy was associated with lower levels of circulating cholesterol and triglycerides, both key predictors of cardiovascular risk. Similarly, non-high-density lipoprotein cholesterol, representing the total concentration of atherogenic lipoproteins, was inversely related to health literacy in the oldest age group (non-HDL-C $r = -.33,$ $p < .05$), suggesting that female principals with greater health literacy demonstrate more favorable lipid regulation. No significant correlations were found for high-density lipoprotein cholesterol (HDL-C) and low-density lipoprotein cholesterol (LDL-C) levels, suggesting that health literacy is more closely tied to behavioral modulation of metabolic risk rather than to stable or genetically influenced lipid fractions. Importantly, the direction of all significant coefficients was consistent, higher health literacy corresponded to better cardiovascular health, supporting the conceptual view that health literacy functions as a behavioral protective resource.

Table 13

Associations Between Health Status Indicators and Health Literacy in Female Principals (Years)

<i>Female principals</i> Health Status	Health Literacy (r)			
	29-40 ($n = 6$)	41-50 ($n = 28$)	51-60 ($n = 81$)	> 61 ($n = 31$)
TCHOL (mg/dL)	-.21	-.39*	-.31*	-.46*
TG (mg/dL)	-.05	-.28	-.33*	-.41*
HDL-C (mg/dL)	.01	.10	.20	.21
non-HDL-C (mg/dL)	-.11	-.09	-.05	-.33*
LDL-C (mg/dL)	-.07	-.15	-.09	-.10
CHOL/HDL (ratio)	-.02	-.28	-.21*	-.29

Note. r = Pearson correlation coefficient; n = sample size; TCHOL = total cholesterol; TG = triglycerides; HDL-C = high-density lipoprotein cholesterol; LDL-C = low-density lipoprotein cholesterol; CHOL/HDL ratio = total cholesterol-to-high-density lipoprotein cholesterol ratio. Correlation coefficients represent associations between cardiovascular health indicators and health literacy across age groups of female principals. $*p < .05$.

For male principals, a similar though statistically weaker pattern was observed as shown in Table 14. Health literacy correlated negatively with total cholesterol (TCHOL $r = -.47$, $p < .050$) and triglycerides (TG $r = -.51$, $p < .05$) in the 51-60-year group, and with triglycerides (TG $r = -.58$, $p < .05$) in those over 61 years. While several coefficients did not reach significance likely due to smaller subgroup sizes ($n < 20$ per group), the consistent negative direction across all age brackets affirms the robustness of the inverse health literacy \longleftrightarrow health status association.

Table 14

Associations Between Health Status Indicators and Health Literacy in Male Principals (Years)

<i>Male principals</i> Health Status	Health Literacy (r)			
	29-40 ($n = 3$)	41-50 ($n = 16$)	51-60 ($n = 19$)	> 61 ($n = 19$)
TCHOL (mg/dL)	NC	-.25	-.47*	-.41
TG (mg/dL)	NC	-.39	-.51*	-.58*
HDL-C (mg/dL)	NC	.05	.10	.05
non-HDL-C (mg/dL)	NC	-.12	-.22	-.18
LDL-C (mg/dL)	NC	-.08	-.19	-.21
CHOL/HDL (ratio)	NC	-.11	-.13	-.09

Note. r = Pearson correlation coefficient; n = sample size; NC = not computed due to insufficient sample size for correlational analysis; TCHOL = total cholesterol; TG = triglycerides; HDL-C = high-density lipoprotein cholesterol; LDL-C = low-density lipoprotein cholesterol; CHOL/HDL ratio = total cholesterol-to-high-density lipoprotein cholesterol ratio. Correlation coefficients represent associations between cardiovascular health indicators and health literacy across age groups of male principals. $*p < .05$.

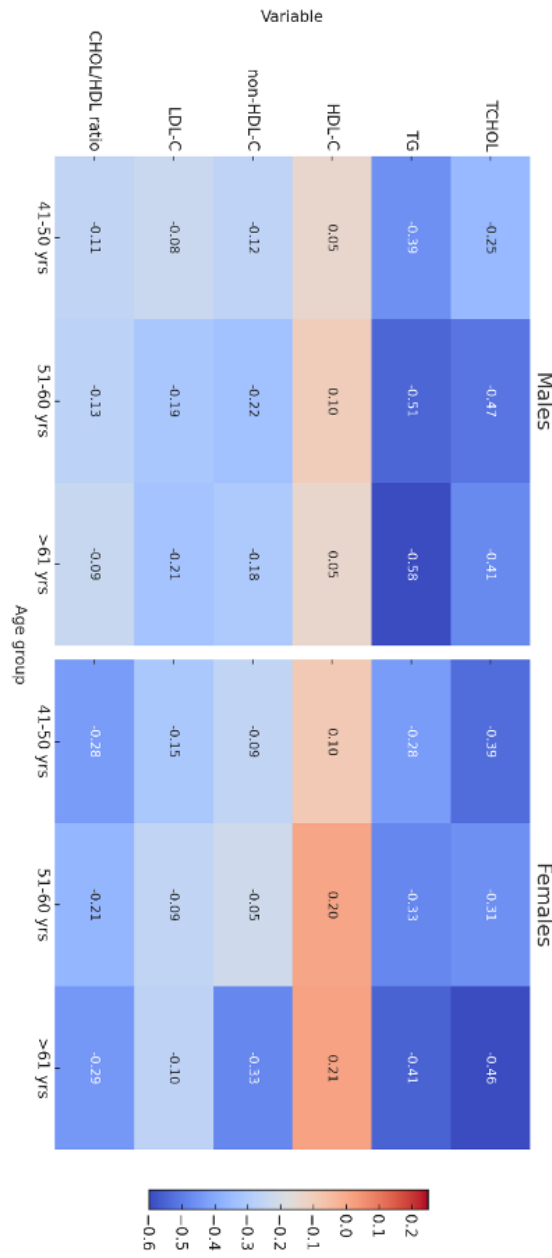
Taken together, the results show that principals with higher health literacy exhibited more favorable lipid and cardiometabolic profiles, and this relationship persisted even when controlling for age-related variability. The parallel patterns across both genders confirm the constructive role of health literacy in managing physiological health risks, aligning with international evidence linking health literacy with improved preventive behavior, medication adherence, and chronic

disease control (Paasche-Orlow & Wolf, 2007; Sørensen et al., 2015). The observed associations provide empirical support for 3H₁, confirming that health literacy functions as a behavioral and informational resource with measurable physiological implications. School principals with higher health literacy likely engage more effectively in self-regulatory behaviors such as balanced diet, routine check-ups, and stress management, contributing to healthier lipid profiles. The pattern also aligns with Nutbeam's (2008) framework, which conceptualizes health literacy as an outcome of both individual capacity and contextual opportunity in which principals with strong health literacy are more capable of critically evaluating health information, translating it into practical choices, and sustaining health-oriented habits even under occupational stress. Gender and age differences offer additional nuance. The stronger and more consistent correlations in female principals suggest that health literacy may interact with social and psychological dimensions of health behavior, such as empathy, relational awareness, and help-seeking orientation. For male principals, despite fewer significant coefficients, the relatively larger effect sizes imply a potentially latent behavioral responsiveness that could be activated through targeted interventions. Integrating health literacy development into principal professional training could potentially contribute to lower long-term cardiovascular risk. This rationale directly supports the empirical prevention model proposed under research aim 3, which conceptualizes health literacy as a modifiable personal resource mediating between organisational factors (such as school climate) and physical well-being.

The heatmap below visualizes the strength and direction of correlations between health literacy and selected physiological health indicators, total cholesterol (TCHOL), low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C) and triglycerides (TG) across gender and age groups. Warm hues (orange-red) denote stronger negative correlations, indicating that higher health literacy is linked with lower, more favorable health marker values. Cool hues (blue-green) denote weak or non-significant correlations, suggesting limited association. Female principals display stronger and more consistent negative correlations, especially for total cholesterol and triglycerides in mid-to-late career groups (41-60 years), and male principals show similar directions but weaker magnitudes, primarily concentrated in the 51-60 and > 61 cohorts. Correlations become more pronounced with advancing age, implying that health literacy protective effects strengthen as principals age, possibly due to accumulated self-management and health awareness behaviors.

Figure 4

Heatmap of Associations Between Health Literacy and Health Status Across Age Groups and Gender



Note. TCHOL = total cholesterol; TG = triglycerides; HDL-C = high-density lipoprotein cholesterol; LDL-C = low-density lipoprotein cholesterol; CHOL/HDL ratio = total cholesterol-to-high-density lipoprotein cholesterol ratio. Cell values represent Pearson correlation coefficients (r) examining associations between health literacy and health status indicators across age groups of male and female principals. Darker blue shading reflects stronger inverse associations, while lighter shades indicate weaker associations approaching zero.

11.7. Association Between Organisational School Climate and Health Literacy

Hypothesis 2H₁ proposed that a more positive perceived level of organisational school climate would be associated with higher health literacy among Croatian primary school principals. The underlying rationale draws from the *Job Demands-Resources* framework to climate as a shared psychosocial resource. Analysis of the aggregated dataset revealed that higher health literacy levels consistently co-occurred with more positive perceptions of organisational school climate, particularly in dimensions reflecting “Leadership Style”, “Interpersonal Relations”, and “Attitude Toward Work and Students”. Across the total sample in Table 15, Pearson’s correlations confirmed significant positive associations between these organisational school climate components and health literacy ($r = .21$ to $.28$, $p < .05$), while the dimension “Poor Interpersonal Relations” showed a negative association ($r = -.16$, $p < .001$).

Table 15

Associations Between Health Literacy and Organisational School Climate

Organisational School Climate	Health Literacy					
	Total sample		Male principals		Female principals	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Interpersonal Relationships	.21	.020	.24	.090	.13	.250
Leadership Style	.21	.020	.03	.820	.25	.020
Control	.07	.430	-.01	.940	.03	.820
Attitude Toward Work and Students	.28	< .001	.14	.320	.11	.320
Poor Interpersonal Relations	-.16	.080	.17	.260	-.39	< .001
Workload	.01	.870	.27	.070	-.15	.170
Total Perceived OSC	.19	.030	.02	.880	.19	.090

Note. OSC = organisational school climate; *r* = Pearson correlation coefficient; *p* = significance value. Pearson correlation analyses examined associations between health literacy scores and dimensions of organisational school climate among the total sample and across gender groups of school principals.

To test these relationships while accounting for demographic covariates (age, tenure, education), multiple linear regression analyses were performed for the total sample and separately by gender. The full model was statistically significant (Table 16), $F(5, 142) = 3.29$, $p = .01$, explaining 13% of the variance in health literacy ($R^2 = .13$, Adjusted $R^2 = .09$). Two predictors emerged as significant: “Attitude Toward Work and Students” ($\beta = .38$, $p = .01$), indicating that principals who perceive their staff as motivated and student-centered are themselves more likely

to exhibit high health literacy, possibly due to a shared orientation toward learning and problem-solving, and “Poor Interpersonal Relations” ($\beta = -.21, p = .03$), confirming that strained workplace dynamics erode the social capital necessary for information exchange and reflective practice. Although other subscales (“Leadership” and “Decision-Making”, “Interpersonal Relations”, “Workload”) did not reach statistical significance, their positive coefficients maintained the hypothesized direction, reinforcing the general pattern that supportive climates strengthen health literacy.

Table 16

Multiple Linear Regression Model Predicting Health Literacy From Organisational School Climate Dimensions

Dependent variable (HL)	β	SE	b	SE	t(124)	p
Predictor variables (OSC)						
<i>Intercept</i>			26.00	8.12	3.20	< .001
Interpersonal Relationships	-.19	.16	-.20	.17	-1.21	.230
Leadership Style	.13	.11	.22	.19	1.14	.260
Control	.03	.09	.10	.26	.38	.710
Attitude Toward Work and Students	.38	.15	.92	.35	2.60	< .010
Poor Interpersonal Relations	-.21	.10	-.38	.18	-2.15	.030
Workload	-.04	.10	-.15	.40	-.39	.700
<i>R</i>	.36					
<i>R</i> ²	.13					
<i>Adjusted R</i> ²	.09					
<i>p</i>	< .010					

Note. R = multiple linear regression; HL = health literacy; OSC = organisational school climate; β = standardized regression coefficient; b = unstandardized regression coefficient; SE = standard error; t = t statistic; p = significance value. The model examined the contribution of organisational school climate dimensions to health literacy among the total sample of school principals. R² = represents the coefficient of determination; adjusted R² = represents the adjusted coefficient of determination.

Gender-disaggregated models revealed notable differences in predictive structure and magnitude. Among female principals (Table 17), the regression model was highly significant, $F(5, 83) = 4.25, p < .001$, with an explained variance of 27% ($R^2 = .27, \text{Adjusted } R^2 = .21$). Health literacy was predicted by “Leadership” and “Decision-Making” ($\beta = .44, p < .001$) highlighting that participatory and transparent leadership climates empower cognitive and emotional

engagement with health-related issues. Also, “Poor Interpersonal Relations” ($\beta = -.45, p < .001$), again illustrating that relational strain directly undermines well-being literacy and reflective health behavior. Among male principals (Table 18), the model was not statistically significant ($p = .15, R^2 = .10$), though the direction of coefficients mirrored that of the full sample. A near-significant contribution of “Attitude Toward Work and Students” ($\beta = .51, p = .07$) suggested that male principal’s health literacy may be more influenced by motivational and achievement-oriented dimensions rather than relational factors per se. These contrasts suggest that the relational and participatory aspects of perceived organisational school climate matter more for female principals, while male principals’ health literacy engagement appears tied to professional drive and performance ethos.

Table 17

Multiple Linear Regression Model Predicting Health Literacy From Organisational School Climate Dimensions Among Female Principals

Dependent variable (HL-female)	β	SE	b	SE	t(75)	p
Predictor variables (OSC)						
<i>Intercept</i>			36.13	14.42	2.51	< .010
Interpersonal Relationships	-.26	.18	-.26	.18	-1.41	.160
Leadership Style	.44	.13	.29	.37	.78	< .001
Control	.14	.14	.34	.34	1.01	.310
Attitude Toward Work and Students	.19	.18	.52	.48	1.09	.280
Poor Interpersonal Relations	-.45	.13	-.79	.23	-3.38	< .001
Workload	-.09	.13	-.31	.48	-.65	.520
<i>R</i>	.52					
<i>R</i> ²	.27					
<i>Adjusted R</i> ²	.21					
<i>p</i>	< .001					

Note. R = multiple linear regression; OSC = organisational school climate; HL-female = health literacy perception levels for female principals; β = standardized regression coefficient; b = unstandardized regression coefficient; SE = standard error; t = t statistic; p = significance value. The model examined the contribution of organisational school climate dimensions to health literacy among female principals. R² represents the coefficient of determination, whereas adjusted R² represents the adjusted coefficient of determination.

Table 18*Multiple Linear Regression Model Predicting Health Literacy From Organisational School Climate Dimensions Among Male Principals*

Dependent variable (HL-male)	β	SE	b	SE	t(40)	p
Predictor variables (OSC)						
<i>Intercept</i>			28.06	11.65	2.41	< .020
Interpersonal Relationships	-.56	.48	-.64	.55	-1.16	.250
Leadership Style	-.06	.20	-.08	.25	-.31	.760
Control	-.17	.16	-.44	.41	-1.05	.300
Attitude Toward Work and Students	.51	.40	1.95	.88	2.22	.070
Poor Interpersonal Relations	.02	.16	.04	.30	.12	.910
Workload	.32	.16	1.56	.79	1.99	< .050
<i>R</i>	.31					
<i>R</i> ²	.10					
<i>Adjusted R</i> ²	.05					
<i>p</i>	.150					

Note. R = multiple linear regression; OSC = organisational school climate; HL-male = health literacy perception levels for male principals; β = standardized regression coefficient; b = unstandardized regression coefficient; SE = standard error; t = t statistic; p = significance value. The model examined the contribution of organisational school climate dimensions to health literacy among male principals. R² represents the coefficient of determination, whereas adjusted R² represents the adjusted coefficient of determination.

The results explained offer empirical support for 2H₁, demonstrating that perceived organisational school climate serves as both a psychosocial and structural condition for the development and application of health literacy. Within the *Job Demands-Resources* theoretical lens, supportive school climates act as job resources that buffer demands and foster growth-oriented behaviors, including reflective learning and self-care (Bakker & Demerouti, 2007). In educational leadership settings, such climates provide psychological safety, encourage dialogue around well-being, and legitimize help-seeking and health-oriented decision-making. The strong negative predictive value of poor interpersonal relations confirms that social tension and mistrust undermine the informational ecology through which health literacy develops. In such climates, leaders are less likely to access accurate information, share uncertainties, or model evidence-based practices. On the opposite, participatory and fair decision-making climates foster shared meaning-making and transparency, which amplify both personal and collective literacy. These findings also integrate conceptually with the organisational learning perspective: schools as professional

communities develop “health literacies” collectively, not only through formal training but also through everyday communicative practices like meetings, reflective supervision, and peer consultation. Principals situated in climates rich in trust and open communication thus operate within a health-enabling organisational system (Nutbeam, 2008).

The positive association between the perceived organisational school climate and health literacy supports the need to embed health literacy development within broader school climate interventions. This could include integrating health literacy and well-being modules into principal professional development programs, emphasizing evidence appraisal, digital health navigation, and risk communication. Establishing peer-reflection groups and supervision circles to sustain dialogic learning around health and leadership, or encouraging distributed leadership practices that democratize information flow and reduce psychosocial load.

11.8. Association Between Organisational School Climate and Health Status

Hypothesis 1H₁ argued that a more positive perceived organisational school climate would be associated with better health status, conceptualized through objective biomarkers. It was expected that principals embedded in supportive, collegial, and fair school climates would demonstrate lower physiological risk markers, given that psychosocial resources reduce chronic stress exposure and promote self-regulatory behaviors. Correlation matrices (Tables 19 to 25) were computed separately by gender and age group due to the non-uniform distribution of health parameters and differing sample sizes across groups. Among female principals, isolated significant correlations appeared within the 29-40 and 51-60 age groups. For example, between “Control” and high-density lipoprotein cholesterol (HDL-C $r = -.54, p < .05$) and between “Poor Interpersonal Relations” and (HDL-C $r = .92, p < .05$). However, these effects lacked internal consistency across adjacent age bands, suggesting non-systematic or sample-specific variability. Among male principals, a few significant coefficients emerged in the 41-50 and 51-60 cohorts like between “Control” and Total Cholesterol (TCOL $r = .55, p < .05$) and between non-high-density lipoprotein cholesterol and “Workload” (non-HDL-C $r = -.64, p < .05$), but again without coherent directionality or replication across indices or subgroups. While sporadic statistical significance occurred in small subgroups, the overall pattern did not support a stable or theoretically interpretable relationship between any dimension of perceived organisational school climate and measured physiological health status. These findings contradict 1H₁, showing that perceptions of

organisational school climate do not predict objective biomedical health outcomes among principals at a single point in time. For that reason, the null result is theoretically coherent when viewed through occupational health and organisational-behavior lenses. Three main explanations may be discussed.

Table 19

Associations Between Organisational School Climate and Health Status Among Female Principals Aged 29-40 Years

OSC HS	<i>(r)</i>					
	Interpersonal Relationships	Leadership Style	Control	Attitude Toward Work and Students	Poor Interpersonal Relations	Workload
TCHOL (mg/dL)	-.03	-.27	.33	.06	-.22	.46
TG (mg/dL)	.45	.43	-.3	.27	-.06	-.05
HDL-C (mg/dL)	.31	.45	-.54*	-.35	.39	-.07
non-HDL-C (mg/dL)	.38	-.32	-.36	.49	.09	-.45
LDL-C(mg/dL)	.13	.25	-.45	.31	.27	.04
CHOL/HDL (ratio)	-.48	.46	-.38	.44	-.16	.23

Note. OSC = organisational school climate; HS = health status; r = Pearson correlation coefficient; TCHOL = total cholesterol; TG = triglycerides; HDL-C = high-density lipoprotein cholesterol; LDL-C = low-density lipoprotein cholesterol; CHOL/HDL ratio = total cholesterol-to-high-density lipoprotein cholesterol ratio. Cell entries represent Pearson correlation coefficients examining associations between dimensions of organisational school climate and health status among female principals aged 29-40 years. Biomarker values are expressed in milligrams per deciliter (mg/dL), except for the CHOL/HDL ratio. $p < .05$.

Table 20

Associations Between Organisational School Climate and Health Status Among Female Principals Aged 41-50 Years

OSC HS	<i>(r)</i>					
	Interpersonal Relationships	Leadership Style	Control	Attitude Toward Work and Students	Poor Interpersonal Relations	Workload
TCHOL (mg/dL)	-.04	-.2	-.13	.23	-.07	.21
TG (mg/dL)	.30	-.13	.15	-.25	.34	.03
HDL-C (mg/dL)	-.20	.01	.31	-.24	.31	-.20
non-HDL-C (mg/dL)	.33	.64*	.22	.21	.06	.12
LDL-C (mg/dL)	-.08	-.15	.11	-.06	-.05	-.22
CHOL/HDL (ratio)	.02	-.30	.15	-.20	-.07	-.32

Note. OSC = organisational school climate; HS = health status; r = Pearson correlation coefficient; TCHOL = total cholesterol; TG = triglycerides; HDL-C = high-density lipoprotein cholesterol; LDL-C = low-density lipoprotein

cholesterol; CHOL/HDL ratio = total cholesterol-to-high-density lipoprotein cholesterol ratio. Cell entries represent Pearson correlation coefficients examining associations between dimensions of organisational school climate and health status among female principals aged 41-50 years. Biomarker values are expressed in milligrams per deciliter (mg/dL), except for the CHOL/HDL ratio. $p < .05$.

Table 21

Associations Between Organisational School Climate and Health Status Among Female Principals Aged 51-60 Years

OSC HS	<i>(r)</i>					
	Interpersonal Relationships	Leadership Style	Control	Attitude Toward Work and Students	Poor Interpersonal Relations	Workload
TCHOL (mg/dL)	-.29	.02	-.09	.10	-.78*	.23
TG (mg/dL)	.27	.30	-.25	.32	-.17	-.29
HDL-C (mg/dL)	-.17	.28	.58*	-.10	.92*	.09
non-HDL-C (mg/dL)	.11	-.01	-.05	.09	.21	.14
LDL-C (mg/dL)	-.31	.03	-.07	.24	.35	-.06
CHOL/HDL (ratio)	.10	-.77*	-.01	.33	-.19	-.05

Note. OSC = organisational school climate; HS = health status; r = Pearson correlation coefficient; TCHOL = total cholesterol; TG = triglycerides; HDL-C = high-density lipoprotein cholesterol; LDL-C = low-density lipoprotein cholesterol; CHOL/HDL ratio = total cholesterol-to-high-density lipoprotein cholesterol ratio. Cell entries represent Pearson correlation coefficients examining associations between dimensions of organisational school climate and health status among female principals aged 51-60 years. Biomarker values are expressed in milligrams per deciliter (mg/dL), except for the CHOL/HDL ratio. $p < .05$.

Table 22

Associations Between Organisational School Climate and Health Status Among Female Principals Aged > 60 Years

OSC HS	<i>(r)</i>					
	Interpersonal Relationships	Leadership Style	Control	Attitude Toward Work and Students	Poor Interpersonal Relations	Workload
TCHOL (mg/dL)	.19	-.08	.12	-.16	-.02	-.05
TG (mg/dL)	-.17	.04	.19	.05	-.10	.16
HDL-C (mg/dL)	-.04	-.12	-.03	.20	.04	-.07
non-HDL-C (mg/dL)	-.08	-.14	.17	-.10	-.03	-.19
LDL-C (mg/dL)	-.02	-.07	-.16	-.10	.07	-.16
CHOL/HDL (ratio)	-.19	.05	.11	.13	.21	.11

Note. OSC = organisational school climate; HS = health status; r = Pearson correlation coefficient; TCHOL = total cholesterol; TG = triglycerides; HDL-C = high-density lipoprotein cholesterol; LDL-C = low-density lipoprotein

cholesterol; CHOL/HDL ratio = total cholesterol-to-high-density lipoprotein cholesterol ratio. Cell entries represent Pearson correlation coefficients examining associations between dimensions of organisational school climate and health status among female principals aged > 60 years. Biomarker values are expressed in milligrams per deciliter (mg/dL), except for the CHOL/HDL ratio. $p < .05$.

Table 23

Associations Between Organisational School Climate and Health Status Among Male Principals Aged 41-50 Years

OSC HS	<i>(r)</i>					
	Interpersonal Relationships	Leadership Style	Control	Attitude Toward Work and Students	Poor Interpersonal Relations	Workload
TCHOL (mg/dL)	.15	.15	.55*	.08	.02	.17
TG (mg/dL)	.15	.17	.18	-.04	.20	.06
HDL-C (mg/dL)	.02	-.04	.19	.12	.20	.12
non-HDL-C (mg/dL)	.17	-.05	-.04	.11	-.07	-.15
LDL-C (mg/dL)	-.15	.41*	.15	-.04	-.20	-.15
CHOL/HDL (ratio)	-.12	.04	.11	.13	.03	-.03

Note. OSC = organisational school climate; HS = health status; r = Pearson correlation coefficient; TCHOL = total cholesterol; TG = triglycerides; HDL-C = high-density lipoprotein cholesterol; LDL-C = low-density lipoprotein cholesterol; CHOL/HDL ratio = total cholesterol-to-high-density lipoprotein cholesterol ratio. Cell entries represent Pearson correlation coefficients examining associations between dimensions of organisational school climate and health status among male principals aged 41-50 years. Biomarker values are expressed in milligrams per deciliter (mg/dL), except for the CHOL/HDL ratio. $p < .05$.

Table 24

Associations Between Organisational School Climate and Health Status Among Male Principals Aged 51-60 Years

OSC HS	<i>(r)</i>					
	Interpersonal Relationships	Leadership Style	Control	Attitude Toward Work and Students	Poor Interpersonal Relations	Workload
TCHOL (mg/dL)	-.34	-.36	.29	.20	.28	.24
TG (mg/dL)	-.33	-.02	-.29	-.22	-.41	-.28
HDL-C (mg/dL)	.33	-.44	-.41	-.10	.36	-.02
non-HDL-C (mg/dL)	.43	.36	.06	.27	.18	-.64*
LDL-C (mg/dL)	.19	.44	-.13	-.11	.33	-.20
CHOL/HDL (ratio)	.36	-.37	-.73*	.36	.01	-.31

Note. OSC = organisational school climate; HS = health status; r = Pearson correlation coefficient; TCHOL = total cholesterol; TG = triglycerides; HDL-C = high-density lipoprotein cholesterol; LDL-C = low-density lipoprotein

cholesterol; CHOL/HDL ratio = total cholesterol-to-high-density lipoprotein cholesterol ratio. Cell entries represent Pearson correlation coefficients examining associations between dimensions of organisational school climate and health status among male principals aged 51-60 years. Biomarker values are expressed in milligrams per deciliter (mg/dL), except for the CHOL/HDL ratio. $p < .05$.

Table 25

Associations Between Organisational School Climate and Health Status Among Male Principals Aged > 60 Years

OSC	<i>(r)</i>					
HS	Interpersonal Relationships	Leadership Style	Control	Attitude Toward Work and Students	Poor Interpersonal Relations	Workload
TCHOL (mg/dL)	-.17	-.13	-.07	.01	-.01	.16
TG (mg/dL)	-.02	-.17	.13	-.06	.04	-.21
HDL-C (mg/dL)	.21	-.40*	-.16	-.08	-.08	-.17
non-HDL-C (mg/dL)	-.05	-.20	-.03	.10	-.18	.05
LDL-C (mg/dL)	-.13	.18	-.08	.18	.08	.05
CHOL/HDL (ratio)	-.21	-.10	-.19	.08	-.12	-.12

Note. OSC = organisational school climate; HS = health status; r = Pearson correlation coefficient; TCHOL = total cholesterol; TG = triglycerides; HDL-C = high-density lipoprotein cholesterol; LDL-C = low-density lipoprotein cholesterol; CHOL/HDL ratio = total cholesterol-to-high-density lipoprotein cholesterol ratio. Cell entries represent Pearson correlation coefficients examining associations between dimensions of organisational school climate and health status among male principals aged > 60 years. Biomarker values are expressed in milligrams per deciliter (mg/dL), except for the CHOL/HDL ratio. $p < .05$.

11.8.1. Temporal and Conceptual Misalignment

The dissociation between perceived organisational school climate and health status is theoretically anticipated when the temporal and conceptual properties of both constructs are examined in detail. Organisational school climate represents a slow-moving, socially constructed phenomenon that develops over extended periods through repeated interpersonal interactions, shared norms, and institutional routines (Hoy et al., 1991; Schneider, Ehrhart & Macey, 2013). In contrast, biomarkers such as total cholesterol or triglycerides are short-horizon physiological indicators that can vary significantly on a daily or weekly basis due to lifestyle factors (diet, sleep, physical activity), pharmacological treatment, or even transient stress responses (McEwen, 1998). These parameters capture momentary biological functioning rather than enduring systemic health. Because of this fundamental difference in temporal scale, any association between organisational

school climate (a longitudinal social construct) and biomarkers (a point-in-time biological snapshot) is inherently constrained. The dissertation employed a cross-sectional design, which cannot capture lagged, cumulative, or feedback effects. Long-term exposure to positive or negative psychosocial environments may influence health status through stress regulation mechanisms (e.g., allostatic load reduction), but these effects emerge over months or years.

From a physiological standpoint, occupational stressors and resources influence health indirectly through sustained activation or recovery of neuroendocrine and cardiovascular systems (McEwen & Stellar, 1993). Chronic exposure to supportive climates may result in cortisol reactivity and improve cardiovascular resilience, but these processes depend on time and behavioral translation (e.g., sleep hygiene, coping routines). The absence of association between organisational school climate and immediate biomarker readings does not negate a possible long-term relationship, but rather it reflects a timing gap between psychosocial cause and biological effect. Importantly, the physiological indicators in this study were conceptualized primarily as distal cardiometabolic indicators of cumulative strain rather than direct readouts of psychological stress, which further explains why organisational factors were more clearly related to health literacy than to point-in-time physiological variation. Additionally, the conceptual level of abstraction differs. Organisational school climate is measured through perceptions and shared meaning-making, while health status is captured through biological measures independent of subjective interpretation. This mismatch between subjective social appraisal and objective physiological data further complicates direct alignment.

In the context of the Croatian educational leadership, this misalignment is compounded by system-level homogeneity. Principals operate under standardized administrative and curricular frameworks, meaning that variations in psychosocial climate are likely more subtle than in decentralized contexts. Yet, health biomarkers respond to broader ecological conditions (e.g., lifestyle, healthcare access, family stress), which lie largely outside the organisational domain. Expecting climate to directly predict cholesterol or triglyceride levels oversimplifies the multicausal nature of occupational health. Taken together, these theoretical and methodological factors clarify why the dissertation's findings produced no significant organisational school climate \longleftrightarrow health status association. The relationship between perceived organisational school climate and health status is slow-acting, mediated, and context-dependent, requiring longitudinal designs and multi-level modeling to detect. As such, the results should be interpreted as evidence

of temporal dissociation rather than true independence between the psychosocial and biological dimensions of leadership well-being.

11.8.2. The Invisibility of Health Conditions in Organisational Life

A main reason for the absence of a measurable link between perceived organisational school climate and health status may lie in the invisibility of physiological health conditions within the organisational life. Biological indicators such as cholesterol, triglycerides, are inherently private, internal, and clinically abstract variables. They rarely manifest in observable behaviors that would meaningfully alter everyday social exchanges in the workplace. Unless illness reaches a functional threshold that visibly affects attendance, energy, or emotional regulation, such conditions remain imperceptible to colleagues and subordinates. In the context of school leadership, interpersonal evaluation and climate formation are built around relationally observable dimensions. These cues from the social substrate through which principals, teachers and staff construct collective judgments about “what the school feels like.” As such, organisational school climate is a socially emergent construct, not a direct reflection of the physiological or medical state of the principal. This perceptual insulation between biological reality and organisational perception creates what might be termed an asymmetry of awareness. A principal may experience fatigue, hypertension, or other stress-related somatic symptoms while continuing to display professional composure, thus maintaining a positive relational climate. Indeed, leadership literature emphasizes emotional labor and impression management as core aspects of effective administration (Brotheridge & Grandey, 2002; Humphrey et al., 2016). This normative climate reinforces the invisibility of health problems. The principal’s role demands emotional stability, decisiveness, and reliability, qualities incompatible with visible vulnerability. The social dynamics of leadership function to mask the embodied dimensions of strain, separating the subjective experience of health from its organisational representation. From a psychosocial perspective, this concealment may constitute a double bind. While principals maintain relational harmony and institutional stability, they inadvertently perpetuate a cycle of unacknowledged stress and latent risk. The absence of visible cues prevents organisations from mobilizing preventive resources or redistributing workload, allowing health deterioration to progress unnoticed. In Croatian primary schools, this pattern is further amplified by hierarchical and relational expectations embedded in the system. Principals occupy a bridging position between teachers, local governance, and the

Ministry of Science, Education and Youth, requiring constant negotiation and conflict management. Because leadership culture values composure and control, discussions of personal well-being are rarely institutionalized. Health remains individualized rather than organisationally acknowledged. For that reason, the organisational discourse on well-being focuses on student safety and teacher stress rather than the leader's own physiological health.

11.8.3. Behavioral Compensation and Professional Self-Regulation

A further explanatory mechanism behind the absence of direct association between perceived organisational school climate and health status lies in the behavioral compensation strategies and self-regulatory capacities that school principals employ to maintain organisational functioning despite physical or psychological strain. Principals operate in complex, high-demand environments that require constant emotional labor, decision-making, and conflict resolution. When health challenges emerge, principals often respond not by withdrawing, but by adjusting their behavior to sustain the continuity and quality of leadership. This adaptive response can take multiple forms from strategic delegation of responsibilities, stricter time-management routines, prioritization of task efficiency, to reliance on trusted colleagues to buffer immediate demands. Through these strategies, principals maintain the external performance and relational stability necessary to preserve school climate, even while internal well-being may be compromised (Leithwood, Harris & Hopkins, 2020).

However, this compensatory dynamic also decouples physiological strain from organisational perception. Because principals continue to model calmness, fairness, and relational consistency, their health limitations remain invisible within the social context of the school. Teachers and staff encounter a principal who appears engaged and supportive, reinforcing positive climate evaluations, even when underlying fatigue or medical issues persist. This behavioral adaptation dampens the observable consequences of ill-health and obscures potential early indicators of burnout or allostatic dysregulation. Self-regulation also plays an important role in sustaining this. Principals employ mindfulness techniques, micro-breaks, or prioritization tactics to mitigate the immediate emotional effects of stress. But, while effective in preserving short-term performance and social functioning, these self-regulatory strategies may defer rather than eliminate physiological costs (McEwen, 1998). Over time, the continuous suppression of stress signals can accumulate into chronic health risks. This compensatory process is especially

pronounced in educational systems like Croatia's, where organisational continuity and interpersonal harmony are highly valued cultural norms. Principals face persistent administrative demands, policy compliance obligations, and emotional caregiving roles for staff and students. These overlapping responsibilities leave limited opportunity for rest or formalized health support, reinforcing reliance on self-directed coping. Without systemic recognition of leadership well-being as a legitimate organisational priority, principals continue to privatize health management, viewing it as a personal responsibility rather than a collective concern.

11.8.4. Systemic and Contextual Factors

Interpreting the association between perceived organisational school climate and health status also requires an understanding of the systemic and structural conditions within which Croatian principals operate. The Croatian education system is characterized by a high degree of centralization, both administratively and legally. The Ministry of Science, Education and Youth determines curricular frameworks, staffing quotas, and accountability procedures, while local founders administer financial and infrastructural aspects. This centralized governance produces a uniform policy and operational environment across the country, narrowing contextual variability in psychosocial working conditions. Because all primary schools adhere to similar regulations, evaluation systems, and safety protocols, the range of organisational differentiation (in terms of autonomy, workload distribution, and governance structure) is considerably smaller than in more decentralized systems such as those in North America or Scandinavia. Between-school variation in psychosocial climate is likely limited to micro-level relational differences rather than structural disparities. Such homogeneity removes the variability necessary for detecting statistically robust associations between perceived organisational school climate and health status in correlational models. In effect, systemic uniformity constrains observable covariance, producing a smaller window for detecting the potential influence of climate on physiological well-being.

Another contextual factor concerns the demographic composition of the principal population. The average age of Croatian principals exceeds 50 years, reflecting a late-career leadership pattern consistent with national employment trajectories. This age concentration carries two important implications. First, physiological indicators measures tend to converge around age-related norms, reducing variance and limiting the sensitivity of correlations with psychosocial variables. Second, senior principals often exhibit adaptation or normalization to chronic workload

stress, having developed behavioral routines, coping mechanisms, and professional detachment strategies over decades of service. As a result, the biological consequences of stress exposure may be diffuse and cumulative rather than acutely differentiated across individuals, further weakening cross-sectional associations between climate and health outcomes. Institutionally, Croatia's education system provides a legally codified occupational health infrastructure. The legislation mandates systematic risk assessments, employee health surveillance, and access to occupational-medicine services for all public-sector institutions, including schools. Regular medical examinations, ergonomic risk evaluations, and preventive health monitoring serve as built-in buffers that may moderate the potential effects of adverse psychosocial climates on health outcomes.

12. DISCUSSION

As the associations among perceived organisational school climate, school principals' health literacy, and other dimensions of occupational health were quantitatively established, the discussion now builds on those results by interpreting what they mean in theory and practice. The results are compared with the existing research, explaining consistencies or divergences, and drawing out the implications for educational leadership and principal well-being. A more specific emphasis is placed on connecting these findings to established frameworks introduced in the theoretical part of the dissertation. With that in mind, the discussion is organized around the dissertation's specific research aims, where each section discusses the findings related to one research aim. Following these aim-by-aim analyses, the broader implications of the research are introduced. This includes consideration of how a perceived organisational school climate contributes to principals' overall occupational health (and why these matters for effective school leadership).

12.1. Gender Role in Organisational School Climate and Health Literacy Perception Levels

Research aim 1 looked at the association between principals' perceptions of organisational school climate and their levels of health literacy. Health literacy in this context refers to the ability of principals to access, understand, appraise, and use health information to manage their own health and well-being (Sørensen et al., 2012; World Health Organization, 2021). The results of the analysis revealed a statistically significant positive association between a positive perceived organisational school climate and higher health literacy levels in the total sample of Croatian primary school principals. In other words, principals who perceived their organisational school climate more favorably also tended to score higher on standardized health literacy measures. This finding is consistent with the idea that a supportive work environment can provide leaders with more resources, motivation, and opportunities to engage in health-promoting behaviors and skill development (Bakker & Demerouti, 2007). Organisational school climate → health literacy and organisational school climate ← health literacy association was particularly significantly visible among female principals. Female school principals who reported more positive perceived organisational school climate generally showed substantially higher health literacy levels, the results that support the existing research showing women population in leadership often demonstrate greater engagement with health information and self-care practices (Dadaczynski et

al., 2020; Betschart et al., 2022). In contrast, although male principals showed a positive association in the same direction, it did not reach statistical significance for the sample. This gender-specific pattern is a central point of discussion, suggesting that the link between a supportive perceived organisational school climate and a principal's personal health literacy may be more pronounced for women principals in this context. To interpret this finding, several thematic angles in educational leadership and health psychology literature are considered. These include interpretations of how gender roles and socialization might influence principals' utilization of support systems, the differing stressors and coping mechanisms of male versus female principals, and the patterns observed by prior studies on gender differences in health literacy and well-being in school leadership (Eagly & Carli, 2007; Beusaert et al., 2023). Each of these perspectives helps to contextualize why a supportive perceived organisational school climate could be especially empowering for female principals' health literacy, while also examining why the same apparent effect among male principals did not achieve significance.

12.1.1. Communication and Leadership Styles

Research shows that women in leadership roles, on average, tend to use more transformational and relationship-focused leadership styles than men, who are somewhat more likely to rely on transactional or hands-off (*laissez-faire*) approaches. Although these gender differences are generally small, they are found across many different settings (Eagly, Johannesen-Schmidt & Van Engen, 2003; Judge & Piccolo, 2004; Wang, Oh, Courtright & Colbert, 2011). Transformational leadership involves inspiring a shared vision, offering individualized support, encouraging creative thinking, and serving as a positive role model. Principals who use this style often create a stronger perceived organisational school climate characterized by trust, collaboration, and psychological safety. From a school perspective, teamwork and supporting growth are central institutional priorities where communal behaviors are not just valued but also essential for effective coordination and the creation of a positive organisational school climate (Leithwood & Jantzi, 2005b). This context helps clarify why, in the findings, the link between perceived organisational school climate and health literacy is stronger among female principals. The same collaborative and empathetic leadership practices that enhance a supportive climate also engage these principals more often in meaningful exchanges about well-being, information

sharing, and help-seeking. As a result, their health literacy skills are more frequently activated and developed through everyday professional interactions.

Participative and dialogic communication forms the foundation of health literacy development in leadership practice. When school principals create open channels of communication, they encourage staff members to voice concerns and propose improvements, leading to increasing “voice” and “issue-selling” behaviors that benefit collective problem-solving (Detert & Burris, 2007; Edmondson, 1999). These communicative acts embody the exercise of health literacy, while repeated cycles of inquiry and response expand principals’ knowledge bases and sharpen their interpretive judgment over time (Jennings & Greenberg, 2009). A second mechanism lies in the individualized consideration characteristic of transformational leadership. Effective principals adapt their support to the specific needs of each staff member (Bass & Riggio, 2006). Doing so requires assessing individual circumstances, weighing alternatives, and communicating appropriate recommendations, all of which reflect the practical dimensions of health literacy (Sørensen et al., 2012). These micro-level interactions strengthen perceptions of fairness and care, create a better perceived organisational school climate, and simultaneously develop principals’ own health literacy competencies (Robinson et al., 2008). Empathic and nonjudgmental communication further broadens what can be openly discussed within schools. Topics such as mental health, burnout, and self-care, often stigmatized in professional contexts, become legitimate subjects of dialogue when principals model openness and psychological safety (Edmondson, 1999). This reduction of stigma expands access to credible health information and creates more frequent opportunities to practice health literacy. Consequently, a reciprocal process emerges where a supportive organisational school climate promotes health literacy development, and the active use of health literacy further strengthens that climate. Collaborative leadership structures provide an additional pathway for health literacy development. In facilitating these exchanges, principals must curate trustworthy information sources, evaluate their quality, and translate research into actionable guidance. At the same time, these practices model evidence-based reasoning and reinforce norms of transparency, trust, and reflective inquiry that sustain a healthy climate. Finally, emotional regulation functions as an enabling psychological resource linking communication, leadership, and health literacy. Transformational and communal leadership practices are associated with heightened emotional awareness and self-regulation (Jennings & Greenberg, 2009). By managing their emotional responses effectively, principals

preserve cognitive capacity for systematic information processing, expanding their ability to seek, comprehend, and apply health-related knowledge (Bakker & Demerouti, 2007).

12.1.2. Health Awareness and Well-Being Orientation

Generally, the female population demonstrates higher awareness of their health and greater engagement in preventive health behaviors than men. Studies in epidemiology and psychology find that women report paying closer attention to their physical and mental well-being, making more frequent use of preventive health services, and actively seeking health information from a range of sources (Sørensen et al., 2012; Von Wagner et al., 2007). These tendencies are often explained through both sociocultural and psychological mechanisms. Women are typically socialized to assume responsibility for the health of family and community members, and they tend to perceive health as a central element of daily functioning and personal identity. In contrast, traditional masculine norms may discourage men from expressing vulnerability or seeking help, as these behaviors can be culturally framed as signs of weakness (Mahalik, Burns & Syzdek, 2007). Such gendered expectations can inhibit men's engagement with health information and self-care, while supporting women's proactive orientation toward health and well-being. In professional contexts, these general tendencies often translate into gendered patterns of organisational health behavior. Female employees and principals are more likely to participate in workplace wellness initiatives, seek information about mental health and stress management, and facilitate open conversations about work-life balance and self-care. In education, where women represent the majority of the workforce, this heightened well-being orientation becomes visible as a principal leadership style that normalizes health-related dialogue and models healthy professional behavior (Eagly & Carli, 2007). When the perceived organisational school climate is supportive, such environments amplify principals' ability to act on their health values, transforming awareness into more concrete health literacy practices, including evaluating interventions, consulting credible sources, and modeling healthy work routines. Other empirical studies support this interpretation. For example, Dadaczynski et al., (2021) found that male principals were disproportionately represented among those with inadequate health literacy, whereas female principals were more likely to report sufficient or excellent health literacy. The researchers attributed this gap to women's stronger preventive health orientation and greater comfort discussing well-being (Pelikan et al., 2018).

The present data extend these insights to the Croatian context, suggesting that when perceived organisational school climate is high, female principals are especially well positioned to translate a supportive climate into active health literacy. Conceptually, this pattern can be interpreted through the lens of person-environment fit. When organisational resources align with personal predispositions such as health consciousness, the synergy facilitates the development of capabilities (Kristof-Brown, Zimmerman & Johnson, 2005). In practice, this means that health-aware female principals are more likely to use the emotional and informational resources of a positive organisational school climate to seek, evaluate, and share evidence-based guidance on managing teacher stress or implementing wellness programs to strengthen both their health literacy and the school's overall health culture. Moreover, research suggests that for many women, health and well-being form an important part of professional identity. Self-care and collective care are often framed as moral and leadership imperatives rather than private concerns (Springer & Mouzon, 2011). This role integration helps explain why female principals are often more responsive to health information and more likely to apply it in daily management. Contextual factors may further support these patterns. In Croatia, as in other European systems, women are more frequently found in smaller, community-oriented schools where relational climates are easier to sustain. Such conditions provide fertile ground for health-promoting leadership. Still, these trends are probabilistic rather than deterministic. Not all women are health conscious, nor are all men disengaged from well-being, but the consistent pattern of higher health awareness and health literacy among women offers a plausible explanation for the stronger association between supportive perceived organisational school climate and health literacy observed among female principals. Overall, women's greater health awareness and well-being orientation function both as predispositions and as mediating mechanisms, enabling supportive organisational school climate to activate and translate these orientations into literacy-driven practices that support individual and organisational health.

12.1.3. Health Literacy Within Emotional Regulation

Research in organisational and health psychology suggests that health literacy and emotional intelligence are deeply connected, functioning as complementary resources for effectiveness in complex, emotionally demanding environments (Cherniss et al., 1998; Bakker & Demerouti, 2007). Both involve processing information under stress and converting cognitive and

emotional inputs into adaptive behavior. While health literacy gives principals to critically evaluate, interpret, and apply health-related information, emotional intelligence allows them to use this information in socially and emotionally intelligent ways to respond to others with empathy, balance, and self-regulation. Together, health literacy and emotional intelligence form a dual-capability system that makes sound decision-making, resilience, and professional functioning. Both depend on interpretive accuracy, whether decoding emotional cues or evaluating informational evidence and on behavioral adaptability, enabling principals to respond constructively to complex situations. In practice, these capacities jointly shape how school principals perceive staff stress, monitor their own fatigue, and interpret signals of organisational strain. At a neurocognitive level, both health literacy and emotional intelligence regulate cognitive-affective load under pressure: effective emotion regulation preserves mental resources for evidence evaluation and judgment (health literacy), while high health literacy allows early recognition of stress responses, selection of appropriate coping strategies, and monitoring of emotional states that sustain adaptive performance (Bakker & Demerouti, 2007; Sheppes, Suri & Gross, 2015). Within schools, these dual capabilities manifest in daily acts such as mediating conflicts, addressing parental concerns, or implementing staff wellness policies, where emotionally intelligent communication enables principals to apply health information sensitively and effectively (Jennings & Greenberg, 2009). Female principals often display an advantage in this regard, as meta-analytic studies report that women generally score higher on empathy and interpersonal sensitivity, dimensions of emotional intelligence strongly associated with relational trust and social support (Joseph & Newman, 2010; Eagly et al., 2003). When combined with higher average health literacy, these competencies allow women to translate emotional awareness into health-promoting leadership. For example, detecting early signs of teacher exhaustion and using credible health evidence to guide interventions. The perceived organisational school climate acts as a powerful contextual amplifier of this emotional intelligence \longleftrightarrow health literacy synergy. Positive climates marked by trust, autonomy, and open communication create psychological safety for emotional expression and information exchange (Edmondson, 1999), enabling principals to integrate emotional and informational regulation more effectively. Empirical research across sectors supports this integration, showing that emotional intelligence correlates with stress tolerance and job satisfaction (Mikolajczak et al., 2007), while health literacy predicts psychological well-being and lower burnout (Mantwill et al., 2015). Viewed through the *Job Demands-Resources*

framework, both act as personal resources that help principals convert organisational support into health and performance outcomes. In this light, the stronger perceived organisational school climate → health literacy relationship observed among female principals may reflect synergistic activation of empathy and emotional intelligence within supportive climates, which enhances engagement with health information (health literacy).

12.1.4. Contextual Heterogeneity

The variability in the strength of perceived organisational school climate and health literacy relationship can be partly explained by contextual heterogeneity, the combined influence of school type, location, governance, and workload structures that shape how principals experience and conduct leadership. In the Croatian primary education system, this heterogeneity reflects several structural dimensions. School size, for example, is a strong predictor of role complexity and workload. Principals of large main primary schools, particularly those managing multiple branch schools, face substantial administrative and bureaucratic pressures that restrict time for reflection and health-related engagement (Domović, 2003; Leithwood & Jantzi, 2005), whereas principals of smaller schools often enjoy closer social ties, easier communication, and greater opportunities to apply health literacy in daily interactions. Because female principals are often more concentrated in small or mid-sized schools, they may have more opportunities to translate a supportive climate into active health literacy, while male principals in larger schools may face role overload and time scarcity that weaken this link. Geographic context also plays a role. Rural principals typically operate in tight-knit but resource-limited communities that encourage trust and collaboration yet restrict access to formal health and training networks (Day et al., 2011), whereas urban principals often benefit from institutional support but contend with greater complexity, stress, and stakeholder demands. Governance structures further constrain principals' autonomy. In Croatia, the school founder determines financial and administrative parameters (Republika Hrvatska, 2019), meaning that leaders in underfunded municipalities may lack the resources to act on health goals even within a positive organisational school climate. Gendered task distributions also influence how health literacy is applied. European data shows that male principals tend to focus more on administrative and technical work, while female principals dedicate more time to pedagogical leadership and staff well-being. These relational tasks create more frequent opportunities for health literacy use such as mentoring teachers or discussing psychosocial risks.

Overall, the linkage between perceived organisational school climate and health literacy appears context-sensitive rather than uniform. Principals in smaller, participatory, and better-resourced schools have more scope to transform supportive organisational school climate into health literacy practices, while those in complex or resource-poor environments may struggle to do so despite perceiving positive climates.

12.1.5. Causality and Alternative Paths

Interpreting the association between perceived organisational school climate and health literacy requires careful methodological restraint, as the analyses in this dissertation are based on cross-sectional data that look at correlations rather than causal pathways. This limitation is common in organisational and leadership research, where ethical and logistical constraints prevent experimental manipulation, yet acknowledging it is crucial to avoid causal overreach. A plausible explanation for the observed link is the reciprocal influence. Health-literate principals may actively shape a more supportive perceived organisational school climate, while positive climates, in turn, enable principals to develop and apply their health literacy more effectively. From a social-cognitive perspective (Bandura, 1989), principals and environments continuously influence each other through a process of triadic reciprocal determinism. Principals with higher health literacy are likely to design preventive systems, communicate transparently about well-being, and model evidence-based decision-making, leading to improving psychosocial quality of their school environments. Simultaneously, supportive climates characterized by trust, participation, and open dialogue provide social and informational resources that enhance leaders' learning and health engagement. However, third-variable explanations must also be considered. Psychological capital may lead principals to both perceive their organisational school climate more positively and invest greater effort in maintaining personal health literacy. Similarly, institutional factors such as school founders' commitment to staff development or occupational health policies could drive parallel improvements in both constructs. Without statistically controlling for potential confounds, it remains uncertain whether the organisational school climate → health literacy association is direct or mediated by other variables. It is also plausible that both directions operate simultaneously, forming a reciprocal in which favorable climates foster learning and well-being, which in turn reinforce the climate. Even without definitive causal evidence, the potential for mutual reinforcement between organisational school climate and health literacy has clear practical

implications. Strengthening either domain is likely to enhance the other. A health-literate principal is better positioned to foster a psychologically safe and trusting environment, while a supportive climate naturally promotes the ongoing learning, reflection, and well-being necessary for sustained leadership effectiveness.

12.1.6. Boundary Conditions, Moderators and Job Demands-Resources Integration

The observed gender differences in the relationship between perceived organisational school climate and principals' health literacy should be interpreted with nuance and theoretical restraint. Meta-analytic evidence indicates that gender differences in leadership style are modest in size, typically ranging between $d \approx .10$ and $.20$ (Eagly et al., 2003). While women, on average, tend to exhibit slightly more transformational and communal tendencies and men somewhat more agentic or transactional ones, there is considerable overlap across individuals. The present interpretation avoids essentialist assumptions about inherent gender traits. Rather, it emphasizes contextual patterns irrespective of the principal's gender. Supportive organisational school climate is more effectively translated into principals' own capability development, reflected in higher health literacy. This helps explain the empirically observed stronger perceived organisational school climate \rightarrow health literacy association among female principals, whose leadership styles often align more naturally with the relational demands of schooling environments. At the same time, contextual opportunity structures and workload demands may moderate this relationship. In systems where principals, often men, carry heavier administrative or managerial burdens, or operate under resource constraints and rigid accountability frameworks, opportunities to engage in reflective dialogue and health-related decision-making are reduced (Leithwood & Jantzi, 2005a). Such conditions can weaken the pathway through which organisational school climate influences health literacy. Leadership is also co-constructed in interaction with followers. Research on implicit leadership theories and gender schemas suggests that followers' expectations shape how they interpret and respond to leaders' behaviors (Lord, Foti & De Vader, 1984; Eagly & Karau, 2002). In educational contexts, communal and empathic behaviors by female principals may be perceived as more role-congruent and trustworthy, encouraging greater openness, disclosure, and co-regulation around topics such as workload, stress, and well-being. These exchanges increase both the quantity and quality of health literacy activation opportunities.

The findings can also be situated within the *Job Demands-Resources* model, which conceptualizes work environments as systems in which demands can deplete energy and resources sustain motivation, learning, and well-being (Bakker & Demerouti, 2007). Within this framework, job resources such as support, autonomy, and constructive feedback drive engagement and professional growth. Transformational and communal principal practices are resource-creating in nature. They expand trust, discretion, and opportunities for collaboration, stimulating learning behaviors such as evidence seeking, reflective dialogue, and adaptive problem-solving as the essential dimensions of health literacy. In schools, these practices have been shown to support improvement through stronger instructional focus, relational trust, and collective efficacy (Robinson et al., 2008). The present findings extend this logic to principals themselves, suggesting that in environments where such practices are more common, the conversion of organisational resources into individual capability (supportive organisational school climate → principal health literacy) is more efficient. Practical illustrations help demonstrate these mechanisms in action. Well-being rounds, for example, involve brief, structured check-ins between principals and teaching teams to discuss workload, recovery, and well-being. Such practices normalize open discussion of health-related topics (enhancing climate), require principals to consult credible evidence (activating health literacy), and model empathic, solution-oriented communication (a transformational behavior). Similarly, staffed referral pathways, co-designed with health professionals to address stress or harassment, require principals to interpret complex legal and clinical information (health literacy in action) and communicate it transparently and sensitively (climate reinforcement). Finally, data-informed adjustments such as analyzing staff surveys and piloting schedule changes to mitigate time pressure illustrate how principals apply health literacy to translate evidence into organisational interventions while reinforcing participatory norms.

Nonetheless, interpretive caution remains warranted. Critics have argued that transformational leadership may suffer from conceptual breadth and potential halo effects, inflating observed correlations (Van Knippenberg & Sitkin, 2013). The explanation offered here does not rely on transformational leadership as a global explanatory construct but rather, it identifies specific communicative mechanisms like dialogue, psychological safety, and individualized consideration that link communal leadership practices to both supportive organisational school climate and health literacy development. Moreover, the possibility of reverse causality must be acknowledged. Principals who already possess higher health literacy may be

better equipped to foster supportive organisational school climate by selecting effective well-being strategies or implementing evidence-based decision processes.

12.1.7. Integrative Interpretation

Perceived organisational school climate being positively associated with health literacy reveals a coherent, multi-level pattern that integrates organisational, psychological, and gendered perspectives. At its core, this relationship reflects the transformation of social and informational resources into personal capability. A supportive perceived organisational school climate provides relational trust, shared decision-making, and open communication, conditions that lower psychological threat, enhance engagement, and enable principals to access, appraise, and apply health information more effectively. In this sense, perceived organisational school climate functions as an enabling ecosystem that supports both cognitive and emotional processes underlying health-related decisions. From a systemic standpoint, this relationship can be understood through ecological systems theory (Bronfenbrenner, 1979) and social capital theory (Coleman, 1988), where school climate acts as the infrastructure of literacy. In climates of trust and collegiality, health information circulates freely and reflection is encouraged, and in climates of mistrust or conflict, those same processes are stifled. Gender acts as a contextual amplifier within this system. Female principals, and empathic leadership styles (Eagly & Carli, 2007; Leithwood & Jantzi, 2005) are better positioned to mobilize the psychosocial resources of a positive climate. Their greater empathy, individualized consideration, and higher health awareness and emotional intelligence make them more adept at turning supportive conditions into learning and health-promoting behavior, producing a multiplier effect in health literacy development. For male principals, these processes may be present but constrained by norms that discourage emotional openness or health-related engagement (Mahalik, Burns & Syzdek, 2007). Within the *Job Demands-Resources* framework (Bakker & Demerouti, 2007), these findings suggest that supportive climate elements act as job resources that enhance motivation and growth, with health literacy serving as a personal resource mediating the pathway from job resources to well-being and performance. Gender differences likely reflect greater efficiency among women in converting environmental resources into personal capability due to their leadership orientation and relational attunement. This interpretation also aligns with the literature on health-promoting leadership (Kaluza et al., 2020), which views leadership as both a determinant and an outcome of health

literacy in which health-literate leaders model self-care, foster psychological safety, and create climates conducive to well-being. The present findings extend this view by showing that a supportive perceived organisational school climate also enhances principals' own health literacy, illustrating that principals are both agents and beneficiaries of organisational health. Practically, two implications follow: improving organisational school climate can indirectly strengthen principals' health literacy by building structures of trust, participation, and fairness, while developing health literacy through professional learning and reflective coaching can enhance perceived organisational school climate through more empathetic, transparent leadership. Both strategies should be gender and context-sensitive, helping male principals cultivate emotional literacy and relational skills, and ensuring female principals receive institutional support to sustain health-oriented practices. Ultimately, the observed organisational school climate → health literacy relationship represents an intersection of structure and agency. The perceived organisational school climate provides the relational infrastructure, while health literacy reflects the principal's adaptive use of it. Together, they form the psychological and social foundation of sustainable educational leadership, demonstrating that fostering health-literate principals within supportive school climates is both a means and an outcome of building thriving, resilient schools.

12.2. Association Between the Perceived Organisational School Climate and Health Status

The second part of the study examined whether principals' objective health status, measured through biomedical indicators such as total cholesterol (TCOL), triglycerides (TG), high-density lipoprotein cholesterol (HDL-C) and low-density lipoprotein cholesterol (LDL-C) was related to how they perceived the organisational school climate. Contrary to common assumptions and certain occupational health models that link leaders' physical well-being to workplace functioning (Kelloway & Barling, 2010), the analysis found no statistically significant relationship between any of the measured health status markers and principals' perceptions of organisational school climate. In practical terms, principals with less favorable health profiles, whether reflecting lipid levels, metabolic efficiency, or cardiovascular risk, did not consistently view their school environments more negatively than their healthier counterparts. This pattern held across all biomarkers and throughout the full sample. Although one might expect that physically healthier principals would feel more energetic, resilient, and better equipped to create supportive and collegial school environments, the data suggest that a principal's physiological health status

is largely independent of how they experience or evaluate the social-psychological atmosphere of their school. At first, this interpretation might appear counterintuitive, especially in light of leadership theories that position vitality and well-being as essential resources for effective relational practice. Yet, conceptually, the absence of a relationship becomes clearer when considering the fundamentally different nature of the constructs. Biometric indicators capture internal physiological states that may not manifest behaviorally or influence daily functioning, whereas organisational school climate represents a relational and organisational construct shaped by social interaction, shared values, communication, and leadership style (Thapa et al., 2013). In essence, one reflects the body's internal health processes, the other the collective dynamics of a work environment.

12.2.1. Principal Behaviour Over Personal Health Status

The absence of a significant relationship between principals' physiological health markers and their perception of organisational school climate may be best understood by acknowledging foundational principles in educational leadership. Organisational school climate is more immediately shaped by what principals do than by their private health status. Numerous researchers affirm that the principal is a central figure whose leadership actions directly affect organisational school climate through decision-making, interpersonal communication, and the establishment of organisational norms (Wang et al., 2011). A principal's ability to foster trust, inspire collective purpose, and support teacher efficacy is rooted in relational competence and behavioral consistency, and not necessarily in their biometric profile or somatic well-being. Indeed, organisational behavior literature suggests that effective leadership is fundamentally a social function. It requires navigating interpersonal dynamics, resolving conflict, and providing emotional and professional support to staff (Leithwood et al., 2020). These functions demand high levels of emotional intelligence, communicative clarity, and professional experience, all of which are largely orthogonal to physical health indicators. A principal managing a chronic illness (e.g., diabetes, hypertension, or autoimmune conditions) may remain highly effective in leading a school by drawing on psychological resilience, relational intelligence, and the ability to delegate or self-regulate when needed. Moreover, health conditions are often private, non-observable variables. Unless a principal's health status leads to frequent absenteeism, cognitive impairment, or affective dysregulation, it is unlikely to be perceived by staff, much less influence their assessment of the

broader perceived organisational school climate. This notion of health as a “silent factor” is particularly relevant in high-functioning professional settings, where leaders frequently manage personal health conditions discretely and responsibly. For instance, studies in occupational psychology show that professionals with chronic but non-disabling health conditions often engage in compensatory behaviors to maintain their performance and team engagement (Demerouti et al., 2009). In such cases, climate indicators like perceived collaboration, respect, and collective morale remain stable even in the presence of latent health risks in leadership. Importantly, perceived organisational school climate is conceptualized as a social-ecological construct, reflecting the shared perceptions of norms, values, and relationships within the school community (Thapa et al., 2013). These perceptions are built over time through consistent principal behaviors and school-wide cultural patterns. A positively associated organisational school climate thrives on trust, teacher autonomy, shared goals, and emotional safety, dimensions that are cultivated through leadership practices, not health metrics. None of these mechanisms require physical vitality as a prerequisite, nor are they inherently compromised by subclinical or managed health issues. A critical interpretive point is that professional identity and role commitment may override the impact of personal health struggles on organisational outcomes. Principals often hold a strong sense of responsibility for school outcomes and possess intrinsic motivation to maintain the well-being of their team. Even under physically demanding conditions, this professional ethic may propel them to remain engaged, regulate emotional responses, and uphold a supportive environment. As such, the psychosocial outputs that shape organisational school climate are preserved through adaptive coping and professional resilience, which buffer the potential effects of declining health. This rationale affirms that interpersonal and leadership behaviors are far more predictive of organisational school climate than physical health status. Principals with health conditions can remain strong, supportive, and inspirational leaders when they employ relational intelligence, organisational foresight, and strategic self-management.

12.2.2. Psychosocial Factors and the Perceived Organisational School Climate

The null association found between school principals’ physiological health status and their perceptions of organisational school climate can also be understood through the lens of organisational and educational psychology, where psychosocial processes are identified as the primary determinants of climate. School climate is widely conceptualized not as an individual or

health-related variable, but rather as a socially constructed and shared perception of the quality of life within the school setting, encompassing the patterns of relationships, values, expectations, and institutional norms experienced by staff and students (Cohen et al., 2009; Thapa et al., 2013). As such, climate emerges from interpersonal and organisational dynamics rather than from the internal health states of individual actors, including the principal. Central components of a positive organisational school climate include relational trust, perceived support from leadership, collaborative decision-making, and the psychological safety of staff (Schneider & Bryk, 2002; Thapa et al., 2013). These elements are produced through consistent patterns of social interaction and communication, not through somatic vitality or the absence of biomedical risk factors. Therefore, it is not surprising that principals' biometric health markers do not significantly correlate with how they perceive or contribute to organisational school climate. Organisational school climate is considered a relatively stable organisational attribute, developing over time through shared experiences, institutional memory, and the cumulative effect of leadership practices (Hoy, Smith & Sweetland, 2002). It is not easily swayed by short-term or internal physiological fluctuations. In contrast, the biomarkers collected in this study, though medically significant, are temporally sensitive and individual-level measures, often subject to daily or cyclical variation due to diet, sleep, or stress. They do not inherently map onto the collective, longitudinal nature of organisational school climate, which is more attuned to sustained relational patterns than to acute personal conditions. This mismatch in the nature and scope of measurement domains (individual vs. collective, internal vs. external, acute vs. chronic) likely contributes to the observed disconnect.

Also, the daily social experience of teachers, staff, and students in a school is driven by what the principal does, not how the principal feels physically. Even a principal managing chronic health conditions such as diabetes or hypertension may remain fully capable of upholding ethical leadership, transparent communication, and staff support. As long as these professional behaviors are preserved, the health status of the principal remains largely invisible and irrelevant to the broader organisational atmosphere. This perspective is supported by empirical research indicating that effective school leaders influence climate through their presence, expectations, responsiveness, and strategic vision, none of which are necessarily impaired by underlying medical conditions (Leithwood, Harris & Hopkins, 2020). Additionally, psychosocial climates are collective products, shaped by reciprocal interactions among all members of the school community (Tschannen-Moran, 2009). Teachers' perceptions of principal fairness, emotional support, and

instructional guidance are especially important in determining how climate is evaluated. These perceptions are shaped over time and require ongoing behavioral consistency from the principal. For that reason, the perceived organisational school climate is more a reflection of social integration and shared meaning-making than a direct extension of the principal's physical health status.

12.2.3. Professionalism, Compensation and Principal Resilience

Another possible explanation for the absence of a significant association between principals' health status and organisational school climate lies in the compensatory strategies and professionalism commonly exhibited by school leaders. Leadership in educational settings is often marked by a strong sense of personal responsibility, institutional accountability, and professional duty. These traits empower principals to mitigate the potential adverse effects of personal health challenges on organisational functioning, especially in environments where consistency, visibility, and relational integrity are expected by staff and stakeholders (Fullan & Hargreaves, 2012).

Principals typically reach their leadership positions through years of teaching experience, leadership training, and socialization into complex school cultures. As such, they develop cognitive and emotional scripts that allow them to perform their roles effectively. If confronted with a health issue, whether acute or chronic, school principals are often able to adapt by drawing on institutional memory, strategic planning, distributed leadership, and emotional regulation skills. For example, they may delegate responsibilities to teachers and staff, prioritize critical interpersonal interactions, or rely on established team norms and routines that reduce the daily burden of decision-making. These actions reflect a form of adaptive leadership, whereby the principal actively protects the relational and cultural fabric of the school even when their own capacity is temporarily reduced. This behavioral pattern aligns with what occupational health literature refers to as positive presenteeism, the act of remaining engaged in one's work and fulfilling professional duties despite facing health difficulties, not out of denial or overcommitment, but out of strategic prioritization and a desire to support organisational stability (Demerouti et al., 2009). In school settings, this may be especially pronounced. Given the centrality of the principal in maintaining school operations and emotional tone, many principals may consciously suppress visible signs of personal strain to avoid triggering concern or uncertainty among staff. In this sense, health problems may be kept "behind the scenes", managed quietly

through rest, medication, or flexible scheduling, while professional behavior remains outwardly stable. Such compensatory mechanisms help explain why organisational school climate remains unaffected by variations in physiological health. Staff, students, and parents primarily interact with the role performance of the principal, not with their underlying biomedical state. If the principal continues to communicate effectively, uphold expectations, and maintain an emotionally supportive presence, then climate perceptions are likely to remain positive regardless of whether the principal is managing high cholesterol, fatigue, or metabolic issues. In this way, the professional identity of the principal serves as a buffer against potential disruptions to organisational school climate that might otherwise stem from personal health concerns. The literature on leadership resilience supports this interpretation. Resilient leaders are those who not only survive adversity but continue to function in a way that supports their teams, maintains coherence in mission, and preserves relational quality within the organisation (Day & Gu, 2013). Resilient school principals employ psychological resources such as optimism, self-efficacy, emotional control, and meaning-making to navigate personal and institutional stressors. They are also more likely to engage in constructive coping strategies, including help-seeking, boundary-setting, and team empowerment all of which contribute to the maintenance of a healthy school climate (Patterson, Goens & Reed, 2009). In addition, the expectations associated with the role of a school principal can function as behavioral scripts that override internal disruptions, guiding them to act in ways that are congruent with institutional norms even when their personal circumstances are suboptimal. This theoretical framing suggests that the behaviors which shape perceived organisational school climate may remain consistent across leaders with varying health profiles, provided that they adhere to the normative expectations of their role and utilize appropriate coping mechanisms.

12.2.4. Physical Health in Relation to Mental Health and Well-Being

The health indicators used in this study are biomedical markers of metabolic or cardiovascular function, which reveal aspects of physical well-being but remain silent about psychological resilience, stress regulation, or relational capacity. A principal may exhibit ideal physiological readings yet experience chronic stress, emotional exhaustion, or poor relational skills, all of which erode communication quality, fairness, and trust among staff. Conversely, a principal coping with mild or chronic physical health issues may demonstrate high emotional

intelligence, empathy, and self-awareness, compensating for physical limitations through warmth, compassion, and effective communication. This distinction reflects a broader biopsychosocial model of health (Engel, 1977), which proposes that well-being and performance come from an interplay of biological, psychological, and social systems. Within this framework, perceived organisational school climate corresponds primarily to the psychosocial layer, a shared emotional field sustained by interpersonal relationships, communication norms, and collective efficacy. Physical biomarkers such as cortisol and triglycerides levels, while clinically relevant for long-term health outcomes, are not functionally connected to these social mechanisms. A temporary fluctuation in blood chemistry, for instance, would have little bearing on the principal's ability to express empathy, articulate vision, or respond constructively to teachers' needs. The domains are parallel but non-overlapping. The physiological one pertains to internal bodily processes, while the organisational one arises from interpersonal meaning-making and emotional attunement. An additional nuance emerges when considering how experiencing or overcoming health challenges may actually enhance leadership capacity. Principals who have faced illness or physical adversity often develop deeper empathy and relational understanding, and these qualities can enrich their approach to managing staff well-being and conflict. Such principals may model vulnerability and authenticity, signaling to teachers that self-care and openness are valued, strengthening relational trust and enhancing perceived organisational school climate. This paradoxical effect suggests that physical health challenges do not necessarily detract from leadership quality and may, in certain cases, refine it through increased compassionate awareness. By contrast, mental and emotional well-being exert more immediate and measurable effects on climate formation. Principals who effectively regulate their emotions, demonstrate empathy, and maintain a calm, optimistic presence contribute to a psychologically safe organisational climate, where teachers feel respected, supported, and motivated. On the contrary, those exhibiting high stress or burnout tend to transmit tension throughout the organisation, leading to reduced collaboration and lower morale (Skaalvik & Skaalvik, 2017). This effect illustrates how principals' psychological states ripple through their schools, influencing collective behavior far more than private health data ever could. Studies show that a positive organisational school climate correlates strongly with lower levels of teacher burnout and with greater job satisfaction and retention (Collie, Shapka & Perry, 2012). Moreover, whole-school well-being frameworks demonstrate that environments characterized by trust, openness, and shared leadership improve not only the well-being of teachers but also that of

principals themselves. This suggests that the direction of influence is more likely to flow from psychosocial climate to emotional well-being, rather than from physiological health to climate. In short, the biomedical and psychosocial systems operate at different levels of causality, one governs physical homeostasis, the other governs relational dynamics and meaning. The absence of a significant relationship between the blood-based biomarkers and perceived organisational school climate observed in this study is theoretically consistent. The biomarkers capture internal physiological regulation, while climate reflects external relational regulation, and these systems interact weakly, if at all, in the short term. If any association were to emerge, it would likely involve psychological health indicators such as stress levels, burnout, or affective well-being, rather than biochemical measures. As such, the findings point out the importance of distinguishing between “being healthy” and “leading healthily”.

12.2.5. Timing and Visibility of Health Status Factors

A further consideration in interpreting the association between perceived organisational school climate and principals’ health status concerns the temporal and perceptual misalignment between the two constructs. The biomarkers collected represent momentary or short-term snapshots of physiological functioning, whereas school climate is a dynamic, longitudinally constructed phenomenon, evolving over years of shared experience, organisational learning, and leadership continuity (Thapa et al., 2013; Cohen et al., 2009). This fundamental difference in timescale means that even if a principal’s health status were to influence perceived organisational school climate, the relationship would likely manifest only gradually, through accumulated behavioral patterns, rather than at the single point in time when health data were collected. Cross-sectional designs like the one employed here are inherently limited in their capacity to detect lagged or developmental effects (Maxwell & Cole, 2007). Health-related changes, particularly those linked to chronic conditions unfold over extended periods, and their influence on leadership style, affective tone, or relational energy might appear only after months or years of progressive strain or adaptation. As such, the climate measured at any given time reflects enduring organisational processes, not temporary physiological states, and the timescales of the two measures do not align, reducing the likelihood of observing synchronous covariance between momentary health fluctuations and long-standing organisational school climate perceptions. Moreover, some principals may have been experiencing temporary health disturbances (e.g.,

seasonal illness, acute stress, sleep deprivation) during blood sampling that did not reflect their baseline or typical functioning, while others may have had chronic health conditions managed effectively over many years without visible behavioral effects. In both scenarios, the measured health status fails to capture the principal's long-term adaptive patterns or coping strategies that sustain effective leadership behavior, meaning the snapshot nature of physiological assessment introduces temporal noise that obscures potential slow-moving, indirect effects. Another critical factor is the limited visibility of personal health within professional settings. Many health issues are asymptomatic and not outwardly apparent in daily interactions. Staff and teachers are often entirely unaware of a principal's health status, and in the absence of visible symptoms or disruptions, there is no perceptual cue that would translate a private physiological condition into the collective experience of the organisational environment. Even when principals face symptomatic conditions (e.g., fatigue or chronic pain), they frequently employ behavioral concealment strategies to maintain professional demeanor and continuity (Kahn et al., 1964; Day & Gu, 2014). This "emotional masking" ensures stability in organisational routines and perceptions, minimizing any potential impact on staff morale or organisational school climate ratings. In educational settings, where principals are expected to demonstrate consistency, composure, and care, maintaining an image of reliability is central to leadership legitimacy. Even when internal strain exists, principals may self-regulate outward expressions to preserve institutional trust. The staff's perceptions of communication quality, support, and fairness are shaped primarily by observable principal behavior, not by unseen personal conditions. In this sense, a principal's physical health remains private and largely disconnected from organisational cognition. If health status were to influence perceived organisational school climate, the pathway would likely operate through delayed and mediated mechanisms. Chronic illness could, over time, lead to reduced stamina, diminished tolerance for stress, or shifts in emotional tone, factors that might subtly affect decision-making, relational patience, or conflict resolution. However, such effects would require long-term observation to detect. The *Job Demands-Resources* framework suggests that resource depletion processes unfold cumulatively, influencing motivation and engagement only after sustained exposure. Because data collection captured a single health assessment and a single perception of climate, these gradual effects could not emerge statistically. Likewise, reciprocal processes may operate, rather than health influencing climate, a supportive organisational school climate may buffer stress and protect health status over time. However,

testing such hypotheses requires longitudinal or cross-lagged modeling to understand directionality, which is beyond the design of this dissertation.

The absence of association should not be interpreted as evidence of independence but as a product of temporal mismatch and measurement design. These methodological and perceptual dynamics explain that perceived organisational school climate and health status exist on different temporal and visibility planes. Climate reflects enduring social interactions, while health fluctuates and is often invisible. The principal's physical condition may influence climate only indirectly and over extended periods, mediated by psychological states such as stress or burnout. In short, the "timing gap" and "visibility barrier" between health and climate measurement likely obscured any latent relationship between the two. Principals' physical health, while important for personal well-being, remains temporally transient and socially invisible compared to the stable, communicatively constructed nature of perceived organisational school climate.

12.3. The Occupational Health Educational Prevention Model

The research aim 3 was to develop an empirically informed, multi-level prevention model tailored to the occupational health needs of primary school principals in the Republic of Croatia. The analyses revealed that perceived organisational school climate was associated with principals' health literacy, particularly among females, whereas no statistically significant association emerged between perceived organisational school climate and objective physiological health status. These findings suggest that while psychosocial resources within the organisational environment can foster principals' capability to understand and manage health-related information, these benefits may not directly translate into measurable physiological outcomes, at least not within a cross-sectional timeframe. In line with the discussion, the model proposed here is designed to operate across multiple temporal and systemic layers, addressing both proximal (behavioral and psychosocial) and distal (organisational and policy) determinants of principal well-being. The conceptual foundation draws upon the *Job Demands-Resources* framework and occupational health psychology (Cooper & Quick, 2017). Within the *Job Demands-Resources* framework, school leadership roles entail considerable psychological demands balanced against the availability of resources such as autonomy, collegial support, and organisational fairness. Health-promoting leadership, in turn, emphasizes the leader's dual role as both a beneficiary and generator of health-supportive environments. Empirical findings from the dissertation align with

this paradigm: supportive climates appear to nurture health literacy, which acts as a meta-resource enabling principals to navigate health information, regulate stress, and sustain professional functioning. In contrast, the lack of direct linkage between perceived organisational school climate and health status points out the need for targeted interventions that bridge the gap between knowledge, psychosocial conditions, and embodied outcomes.

The applied implications of the model should be kept proportionate to the evidence generated by the dissertation. The results most directly support interventions aimed at proximal mechanisms, especially perceived organisational climate and health literacy, rather than immediate physiological change. In practical terms, this means that the model justifies: (a) integrating health-literacy and psychosocial-risk modules into principal preparation and continuous professional development; (b) establishing routine, multi-informant climate audits that include principal, teacher, and staff perspectives; (c) developing peer-support and mentoring structures for principals; and (d) linking existing occupational-safety procedures with systematic review of psychosocial demands, workload, and referral pathways for support. By contrast, the study does not justify strong causal claims that climate interventions alone will directly or immediately improve biomedical outcomes. Any downstream physiological benefit should be regarded as a longer-term hypothesis for future longitudinal and intervention research.

The Croatian policy context further justifies this focus. National frameworks such as the *The Occupational Safety and Health Act* (Republika Hrvatska, 2018) and the *Law on Primary and Secondary Education* (Republika Hrvatska, 2019) mandate institutional responsibility for the well-being of educational staff, including principals. However, these policies primarily address compliance and physical safety, leaving psychological and organisational health largely unoperationalized. The proposed prevention model extends existing regulatory provisions by situating principal health within an integrated system of individual competencies, organisational climate factors, and systemic governance structures.

12.3.1. Individual-Level Prevention

At the individual level, findings show the central role of health literacy as both a protective and developmental resource in principals' occupational health domain. Principals with higher health literacy demonstrate enhanced capacity to access, critically evaluate, and apply health-related information to their personal and professional contexts (Sørensen et al., 2012). Within

leadership roles, health literacy is not confined to personal well-being; it extends to the organisational domain of health-promoting behavior, influencing how principals interpret occupational risks, design preventive routines, and model healthy practices within their schools (Dadaczynski, Rathmann & Okan, 2020). A principal with high health literacy is more likely to seek credible information about psychosocial hazards, communicate transparently with staff about workload or stress management, and make informed decisions that balance institutional efficiency with human sustainability. These abilities embody the “knowledge-action-reflection” triad central to modern definitions of functional and interactive health literacy (Nutbeam, 2008). Importantly, the analysis revealed gender-differentiated patterns in the association between health literacy and perceived organisational school climate. Female principals displayed a statistically significant positive association between perceived organisational school climate and health literacy, suggesting that women may be more effective in translating psychosocial support and relational trust into personal capability growth. This may reflect gendered socialization patterns and leadership schemas, which encourage reflection and communication by strengthening their capacity to integrate health knowledge into daily routines. On the contrary, male principals, though not significantly different in correlation strength, did not reach statistical significance, possibly reflecting different self-perception styles or occupational role expectations. These findings imply that prevention initiatives must be inclusive yet gender-responsive, offering differentiated pathways for health literacy enhancement that acknowledge distinct leadership identities and learning preferences.

Individual-level prevention strategies should prioritize targeted health literacy development through professional learning programs and reflective practice. For instance, integrating modules on health communication, evidence appraisal, and digital health navigation into principal training curricula would strengthen principals’ ability to manage complex information ecosystems. Principals should be equipped to discern evidence-based health interventions from misinformation, particularly in the digital environment, where competing narratives can complicate decision-making. Training can also include case-based simulations (e.g., managing staff burnout or post-crisis recovery) to reinforce applied health reasoning. Such educational initiatives are consistent with the *Occupational Safety and Health Act* (Republika Hrvatska, 2018), which emphasizes the employer’s duty to inform and educate workers on occupational safety, but they extend that duty to include cognitive and behavioral competencies

for managing psychosocial health risks. Complementing health literacy, psychological resilience forms the second pillar of the individual prevention layer. Resilience, defined as the capacity to adapt positively to stress and recover from adversity is an indispensable leadership resource (Day & Gu, 2014). For principals operating under high job demands, resilience buffers the effects of overload, mitigates emotional exhaustion, and fosters a sense of professional meaning (Leithwood et al., 2020). It is best conceptualized as a dynamic process, developed through reflective learning, peer support, and mastery experiences rather than as a fixed trait (Luthar, Cicchetti & Becker, 2000). Therefore, prevention interventions must provide developmental scaffolds that cultivate self-efficacy, optimism, and emotional regulation. Examples could include structured reflection groups among principals, peer coaching circles focused on coping strategies, and resilience workshops integrated into the *Education and Teacher Training Agency's* professional development programs. These interventions not only enhance self-management but also reinforce a collective culture of resilience, wherein shared experiences normalize vulnerability and recovery.

Resilience training should explicitly incorporate self-regulation techniques, the third component of this model. Self-regulation refers to the intentional monitoring and management of one's thoughts, emotions, and behaviors to achieve adaptive outcomes (Bandura, 1997). In occupational health terms, it includes stress appraisal, emotion regulation, and self-care behaviors. Evidence from educational leadership research demonstrates that leaders who engage in mindfulness, cognitive reframing, and intentional recovery rituals (e.g., scheduled downtime, physical exercise, or reflective journaling) show reduced burnout and improved decision-making quality (Jennings & Greenberg, 2009; Skaalvik & Skaalvik, 2017). In Croatia's educational context, where principals often face long administrative hours and bureaucratic pressure, promoting boundary-setting practices (e.g., limiting after-hours work communication) is essential to sustain well-being.

Technology can also serve as a facilitator of self-regulation. Health-monitoring platforms, digital wellbeing apps, and human resources analytics tools could be integrated into principal development initiatives to promote data-informed self-awareness. By tracking sleep, physical activity, or workload-related stress indicators, principals can align their self-care behaviors with empirical feedback. However, such tools should be implemented with ethical sensitivity to privacy and autonomy, reinforcing their purpose as self-directed aids rather than managerial controls.

Finally, individual-level prevention cannot operate in isolation. It must be interlinked with organisational and systemic support to achieve sustainability. Even the most resilient and health-literate principal cannot thrive in chronically toxic climates or under unsupportive policy regimes. The individual level should be viewed as the entry point for change, as a sphere where cognitive, emotional, and behavioral resources are cultivated, but which must be continuously reinforced by organisational justice, professional autonomy, and supportive networks. The model conceptualizes individual-level health as embedded rather than self-contained. A resource that grows through interaction with the school's relational ecology and broader policy scaffolding.

Individual-level prevention integrates three synergistic competencies:

1. *Health literacy*: Equipping principals to navigate complex health and occupational information environments.
2. *Resilience*: Fostering adaptability, optimism, and recovery under sustained demands.
3. *Self-regulation*: Promoting awareness, emotional balance, and deliberate health-preserving behaviors.

Together, these competencies form the intrapersonal core of the empirical prevention model, enabling principals to convert psychosocial resources into sustainable well-being and leadership capacity. Developing these capacities through structured training, reflection, and digital tools provides the most immediate, cost-effective pathway for improving occupational health among Croatian school principals.

12.3.2. Organisational-Level Prevention

At the organisational level, the empirical findings from research aim 2 position perceived organisational school climate as the primary social infrastructure of prevention. Organisational school climate reflects the collective perceptions of fairness, collegiality, and trust that emerge from the daily interactions among staff and leadership (Hoy, Tarter & Kottkamp, 1991; Cohen et al., 2009). Within this shared environment, principals' behaviors, communication patterns, and decision-making processes exert a formative influence on how teachers experience their work and, consequently, on the overall psychosocial health of the school. The analysis showed a robust association between positive organisational school climate perceptions and higher levels of health literacy among principals, even though physiological health markers showed no corresponding relationship. This indicates that psychosocial climates act as capability-generating contexts: they

do not automatically improve physical health but foster the cognitive and emotional resources (e.g., health literacy, self-efficacy, empathy) that create sustainable leadership performance.

A supportive perceived organisational school climate functions as an organisational buffer against occupational stress. Research grounded in the *Job Demands-Resources* model confirms that when leaders experience high autonomy, relational trust, and feedback, they are more engaged and less vulnerable to exhaustion (Bakker & Demerouti, 2007; Leithwood, Harris & Hopkins, 2020). Within the Croatian context, where principals often face administrative overload and limited staffing, the relational dimension of climate becomes an especially critical source of protection. For instance, open communication, collegial empathy, and mutual support among staff enable principals to navigate pressure without isolation, preserving both individual and collective well-being. Improving perceived organisational school climate represents a strategic preventive intervention in itself. It shifts focus from reactive stress management to proactive cultivation of supportive relational networks. Climate improvement efforts may include structured staff dialogues about workload and expectations, feedback loops where teachers and principals jointly identify stressors, and distributed leadership mechanisms that reduce over-centralization of authority. These measures transform prevention from a set of individual coping techniques into an embedded organisational practice, integrated into the school's daily functioning.

Principal behavior lies at the heart of organisational-level prevention. Principals who model empathy, fairness, and authentic engagement are more likely to support climates of psychological safety. In Croatian primary schools, where principals are expected to be both instructional leaders and administrators, practicing visible work-life balance and transparent communication about stress can normalize well-being-oriented dialogue within the school community. Crucially, the relationship between leadership and climate is reciprocal. A healthy perceived organisational school climate supports leaders' own resilience and health literacy, while effective leadership behaviors reinforce perceived organisational school climate stability. This dual causality reflects the findings discussed, where positive organisational school climate perceptions were linked to higher health literacy scores among principals. It suggests that when leaders operate in trustful environments, they not only lead better but also become learners of health, absorbing, interpreting, and applying well-being principles more effectively. Preparing or training programs for school principals should include reflective modules on relational leadership,

equipping principals with the skills to read the emotional atmosphere of their schools and to respond constructively to early signs of strain.

Another key organisational protective factor is collegial support, which functions as both a psychological and structural resource. Supportive peer relationships among staff, especially among members of the school's leadership or administrative teams, help diffuse the emotional intensity of principalship. In Croatia, where principals often operate with limited administrative assistance, fostering shared leadership models can alleviate decision-making burden and mitigate isolation. Empirical studies have shown that collegial mentoring and peer consultation enhance both job satisfaction and retention. Establishing formal mentoring networks through local education centers could institutionalize this form of collegial care, ensuring that principals receive ongoing social and professional reinforcement. Additionally, team-based reflection protocols, regular, structured meetings for discussing challenges and successes, can serve as "climate maintenance" mechanisms. Such practices parallel the psychosocial risk assessment procedures, extending them from compliance tools into developmental dialogues. When principals and teachers jointly evaluate workload fairness, communication effectiveness, and emotional climate, the process itself becomes preventive.

For prevention to be sustainable, well-being must be integrated into the organisational routines and metrics of school leadership, not treated as an add-on. This requires systematic mechanisms for monitoring and feedback. Regular organisational school climate audits, ideally conducted in partnership with the *Education and Teacher Training Agency*, could assess dimensions such as collegial trust, communication quality, and perceived fairness. These data should then inform improvement plans discussed at school boards and teacher councils. Furthermore, schools could implement annual psychosocial well-being reports, summarizing indicators such as sick leave frequency, professional development participation, and reported stress levels. Linking these reports to leadership performance reviews would create accountability while emphasizing supportive, rather than punitive, follow-up actions. In this way, well-being becomes both measurable and actionable. Organizational prevention also involves resource-oriented job design, a principle consistent with the *Job Demands-Resources* framework. Adjusting the structure of principalship to ensure manageable workloads, clear role expectations, and adequate administrative support would enhance the sustainability of leadership across Croatian primary schools. Founders and the Ministry of Science, Education and Youth can contribute by funding

additional assistant positions or by providing flexible administrative arrangements that allow principals to focus on instructional and relational leadership tasks.

Ultimately, effective prevention at the organisational level depends on cultivating a preventive shared cultural commitment to health, dialogue, and reflection. Schools that embrace prevention as part of their mission shift from reactive coping toward collective learning about well-being. Such cultural transformation requires visible leadership endorsement, consistent communication, and recognition of well-being initiatives as integral to educational quality. When staff perceive that their emotional and physical health matters to leadership, engagement and trust increase, creating a self-reinforcing cycle of improvement. Within this ethos, perceived organisational school climate becomes the medium through which prevention is developed. This interpretation aligns with the empirical finding that perceived organisational school climate, though not directly correlated with physiological health, is a potent determinant of principals' health literacy and professional functioning. It also affirms the central premise of this dissertation that occupational health in education is best understood not as a private matter of individual wellness but as a collective property of organisational life.

12.3.3. Systemic-Level Prevention

At the systemic level, sustainable occupational health for principals depends on coherent policy frameworks, institutional coordination, and a culture of preventive governance. While the findings of this dissertation demonstrated no direct association between perceived organisational school climate and health status, they highlighted the indirect importance of systemic support, especially in how organisational and policy structures enable or constrain health literacy and climate-building behaviors among school principals. Systemic-level prevention thus targets the structural determinants of well-being, embedding occupational health into the fabric of Croatia's educational governance through legislation, training, monitoring, and cross-sector collaboration. Croatia's education system already provides a partial foundation for occupational health through legal instruments. However, these frameworks primarily focus on physical safety and risk management, offering limited coverage of psychosocial well-being, leadership health, or climate-related stressors. To operationalize the insights of this research, systemic prevention must therefore move beyond compliance-based safety to embrace holistic occupational health governance.

Embedding psychosocial dimensions into national regulation could involve amendments to require regular psychosocial risk assessments in schools, coupled with the implementation of evidence-based well-being plans. The Ministry of Science, Education and Youth could also issue by-laws specifying psychosocial well-being as a domain of educational quality assurance, aligning Croatia with the *European Union* health promotion frameworks such as the Healthy Workplaces Campaign and the World Health Organization Health Promoting Schools model (World Health Organization, 2021). These integrations would formally recognize that healthy leadership and school climate are determinants of educational quality, not peripheral concerns. The effective realization of systemic prevention requires interinstitutional coordination. The Ministry of Science, Education and Youth, as the central policy authority, should establish an intersectoral working group that includes representatives from the *Education and Teacher Training Agency*, health advisory institutions, and occupational medicine experts. Such coordination would ensure that health promotion and psychosocial risk prevention are jointly addressed in educational leadership policy, teacher training, and health monitoring systems.

At the regional and local levels, founders can integrate occupational health criteria into school evaluation processes and ensure that principals have access to preventive medical services, counseling, and stress management programs. Coordination with the regional health advisory branches could facilitate health surveillance databases that track trends in principals' well-being over time, allowing data-driven policy adjustment. This integrated approach situates prevention within a multi-level governance model, consistent with the European concept of "whole-of-government and whole-of-society" strategies for occupational health promotion.

Training is the most powerful systemic lever for prevention. The *Education and Teacher Training Agency* already mandates professional development for principals, yet the curriculum remains largely managerial and pedagogical. Expanding it to include occupational health literacy, emotional intelligence, and resilience would build the human infrastructure of prevention. Such modules should equip principals with practical skills to identify early signs of stress among staff, navigate psychosocial risks, and cultivate a positive perceived organisational school climate. To ensure scalability, the *Education and Teacher Training Agency* could adopt a modular training architecture, allowing continuous education through accredited programs on topics like "Health-Promoting Leadership in Schools," "Managing Psychosocial Risk," and "Organizational Well-

Being Audits.” These could be delivered in partnership with universities and public health institutions, integrating research-based content and reflective practice.

Systemic prevention must also be supported by monitoring mechanisms capable of linking organisational indicators with health outcomes. The absence of association between perceived organisational school climate and health status shows the need for longitudinal data systems that can track both psychosocial and biomedical parameters over time. The Ministry of Science, Education and Youth could commission annual School Health Reports synthesizing data from occupational medicine examinations, psychosocial climate assessments, and self-reported well-being metrics. This would establish a national baseline and enable longitudinal evaluation of policy interventions. Such data integration would also allow targeted resource allocation. For example, schools with persistently high stress or burnout indicators could receive priority access to mentoring or counseling programs. Embedding these monitoring systems into existing digital education infrastructure would ensure sustainability and accessibility.

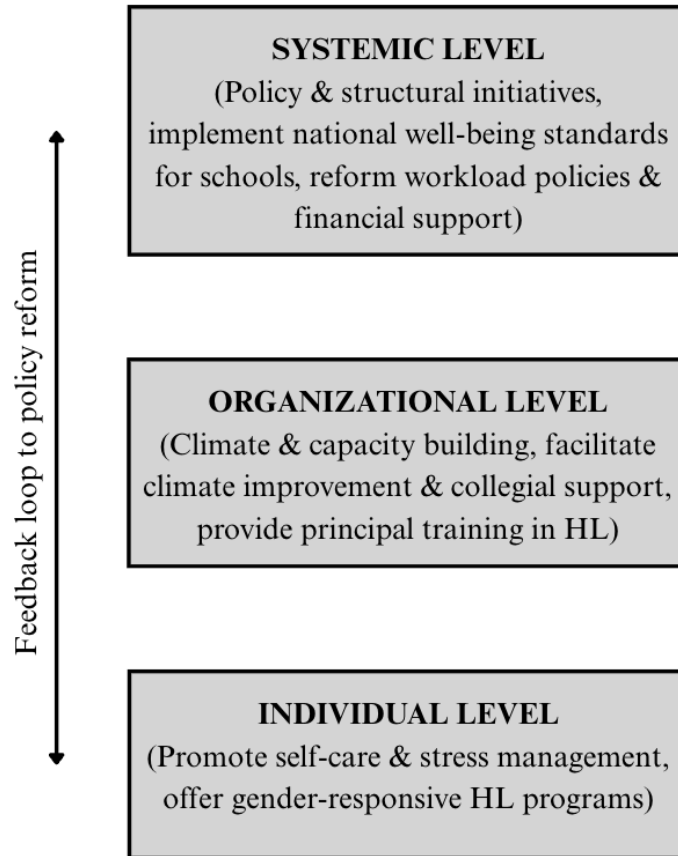
A systemic prevention approach must engage multiple sectors beyond education. Collaboration with the *Ministry of Health* could formalize protocols for occupational medicine specialists to provide consultation and follow-up tailored to school leadership roles. Partnerships with universities and research institutes could generate interdisciplinary training programs that blend organisational psychology, educational management, and public health. Ultimately, systemic prevention depends not only on policy instruments but on cultivating a preventive culture within educational governance. This culture frames occupational health as a shared responsibility among all stakeholders, principals, teachers, founders, inspectorates, and ministries. Policy communication must reinforce the idea that supporting the health of principals is an investment in educational leadership capacity and student outcomes. Systemic change occurs when well-being becomes a criterion of institutional excellence rather than a remedial concern. Integrating occupational health into the school improvement and inspection frameworks would institutionalize this shift. For example, inspectorate protocols could include indicators of psychosocial climate and leader well-being alongside pedagogical quality metrics. This reorientation toward prevention aligns with contemporary European education policy emphasizing human sustainability and professional vitality.

12.3.4. Layered Prevention Model

The layered empirical prevention model (Figure 5) developed from this study integrates findings across the three research aims into a coherent, multi-level framework for understanding and improving the occupational health of Croatian primary school principals. It recognizes that principals operate within individual, organisational, and systemic levels that collectively determine their well-being, leadership capacity, and ability to sustain healthy schools. The model translates empirical evidence into a structure for targeted, multi-tiered intervention, emphasizing interdependence between personal resources, organisational climate, and institutional policy support. At its core, the model posits that individual-level resources (e.g., health literacy, resilience, and self-regulation) mediate the association between perceived organisational school climate and occupational health. Systemic structures such as laws, policies, training systems, and intersectoral partnerships serve as the outer layer that either enables or constrains these interactions. The absence of a direct organisational school climate → health status association in this study reinforces the model's assumption that health outcomes depend on multi-layered resource conversion processes, rather than linear causal chains. Because the model draws partly on self-reported perceived organisational school climate and self-reported health literacy, its practical application should not rely on principal self-assessment alone. Where the model is implemented in practice, climate monitoring should ideally combine principal, teacher, and staff perspectives, together with administrative indicators, in order to reduce interpretive bias and improve actionability. The layered prevention model is therefore best understood as a practice-guiding framework rather than a validated causal intervention sequence. Its central empirical message is that supportive perceived organisational conditions appear to foster principals' health literacy and related self-regulatory capacity. The most defensible practical translation is thus to intervene first at the level of psychosocial conditions, professional learning, and reflective support. If such interventions are sustained, it is plausible that they may contribute to better long-term health and occupational functioning; however, that downstream proposition remains to be tested directly in longitudinal and quasi-experimental research.

Figure 5

Conceptual Prevention Framework for Organisational School Climate and Health Literacy



Note. HL = health literacy. The prevention model illustrates interconnected systemic, organizational, and individual intervention levels designed to promote healthier organisational school climates and support the professional health of school principals. The systemic level emphasizes policy and structural initiatives; the organizational level focuses on climate improvement, collegial support, and health literacy capacity building; and the individual level targets self-care, stress management, and gender-responsive health literacy interventions. Bidirectional arrows represent feedback loops between organisational implementation and policy reform.

The model consists of three interconnected layers arranged hierarchically but functionally reciprocal:

Individual Level (Core Layer)

Principals' personal capacities include health literacy, emotional regulation, and resilience form the nucleus of prevention. These capacities determine how effectively principals can interpret health information, manage stress, and translate well-being knowledge into daily decisions. Results show that higher health literacy correlates with positive organisational school climate perception, particularly among women, indicating that personal competencies amplify organisational resources.

Organizational Level (Intermediate Layer)

The school's psychosocial environment defined by collegial relationships, communication quality, trust, and fairness acts as a contextual amplifier or inhibitor of individual resources. A supportive organisational school climate enhances principals' sense of efficacy and engagement, allowing health literacy and resilience to flourish. This level is where preventive practices (e.g., team reflection, distributed leadership, mentoring) become embedded in the culture of the school, transforming well-being from an individual coping effort into a collective organisational practice.

Systemic Level (Outer Layer)

Policy, governance, and institutional infrastructures establish the boundary conditions for prevention. These include regulatory standards, health surveillance systems, leadership training curricula, and funding mechanisms. When well-aligned, they sustain and scale preventive practices across the education system. On the contrary, gaps at this level such as fragmented policy or lack of intersectoral coordination can neutralize the gains achieved within schools.

Together, the three levels form a dynamic prevention ecosystem, where information, resources, and norms circulate vertically and horizontally. For instance, principals who gain health literacy through training (individual) can foster healthier climates (organisational), which in turn contribute to national benchmarks and professional standards (systemic). The process is iterative rather than linear, ensuring adaptability over time. The layered model visualized in Figure 5 captures bidirectional flows among levels. Upward feedback: local experiences of stress, health issues, or innovative well-being practices are communicated to regional or national authorities through monitoring systems (e.g., the *Education and Teacher Training Agency* reports), informing policy refinement. Downward flow: national policies and training frameworks provide guidelines,

funding, and resources that influence school-level climates and leadership behaviors. Horizontal exchange: peer networks among principals create lateral learning opportunities, disseminating effective practices in climate management and health promotion. These loops prevent the isolation of any single layer and transform the prevention system into a self-learning mechanism, capable of ongoing recalibration based on empirical feedback.

12.3.5. Conceptual Flow Interpretation and Dynamic Processes

The Conceptual Flow Diagram shown in Figure 6 synthesizes the dynamic relationships proposed in the dissertation into a practice-oriented interpretive model of leadership health within schools. The diagram should be read as a theoretically informed synthesis of observed associations and plausible mechanisms, not as a tested causal pathway. It visually articulates how organisational school climate has an indirect but meaningful influence on occupational health through the mediating function of health literacy, and how this relationship is shaped by moderators such as gender, contextual conditions, and emotional regulation. The diagram positions organisational school climate, health literacy, and occupational health not as static variables, but as interacting processes that evolve within an ecological system of leadership, learning, and well-being. The first segment of the diagram captures the organisational school climate → health literacy pathway, supported empirically by the significant positive correlation found in research aim 2. A supportive organisational school climate creates an environment in which principals can access and interpret information with clarity and confidence. This corresponds to what Sørensen et al. (2012) describe as the “situated competence” dimension of health literacy, the ability to make meaning from health-related data in specific social contexts. In schools with transparent communication structures, principals are more likely to engage with information on occupational safety, psychological risk, and staff well-being. The findings only reaffirm that organisational context shapes cognitive capacity, psychosocial safety and mutual trust function as “enabling conditions” for health-related learning and application. Gender patterns observed suggest that female principals may translate these conditions into health literacy more effectively, possibly due to relational leadership tendencies and stronger orientation toward self-care and empathy. However, the underlying mechanism remains universal.

The second link, health literacy → occupational health, represents the transformation of information into behavioral adaptation. High health literacy principals are better equipped to

manage stress, interpret physiological cues, and engage in preventive health behaviors. This reflects the self-regulatory function of health literacy, whereby knowledge informs coping and resilience. Principals who understand psychosocial risks and recognize early symptoms of exhaustion can proactively adjust workload, seek support, or delegate responsibilities. This translation process, however, depends on both agency and autonomy. Health literacy must be coupled with the freedom to act on acquired knowledge. Within the *Job Demands-Resources* model, this corresponds to the interaction between personal resources (health literacy, resilience) and job resources (supportive climate, autonomy). When both resource types are present, positive health and engagement outcomes are maximized; when one is absent, even strong health literacy may have limited impact.

The bidirectional arrows between organisational school climate and occupational health reflect the theoretical expectation of reciprocal causality. While a positive organisational school climate can nurture health through reduced stress and increased support, healthy and engaged principals can, in turn, enhance school climate. Empirical literature supports this two-way mechanism: leaders' emotional well-being predicts staff morale and trust (Leithwood et al., 2020), while positive relational climates protect leaders against burnout. In practical terms, a principal who maintains good health is more patient, communicative, and consistent in decision-making. Similarly, schools characterized by collective efficacy and relational warmth provide an emotional buffer that sustains principals' energy and resilience. This feedback loop embodies the preventive ethos of the model: well-being generates the conditions for more well-being, creating a self-reinforcing system. Between organisational school climate and occupational health, the model identifies emotional regulation and resilience as mediating mechanisms. Emotional regulation enables principals to manage affective responses under stress, preserving interpersonal harmony even during crises. Resilience complements this by fostering adaptability and optimism, allowing recovery from setbacks without erosion of confidence or efficacy. Reflective practice operates as a meta-cognitive mediator. Principals who habitually reflect on their experiences are more likely to integrate new health-related insights into their routines, converting situational learning into stable behavioral patterns.

The model includes gender and contextual factors as moderators that shape the strength and direction of relationships. Gender differences in leadership communication, empathy, and self-care orientation can intensify or attenuate how organisational school climate translates into health

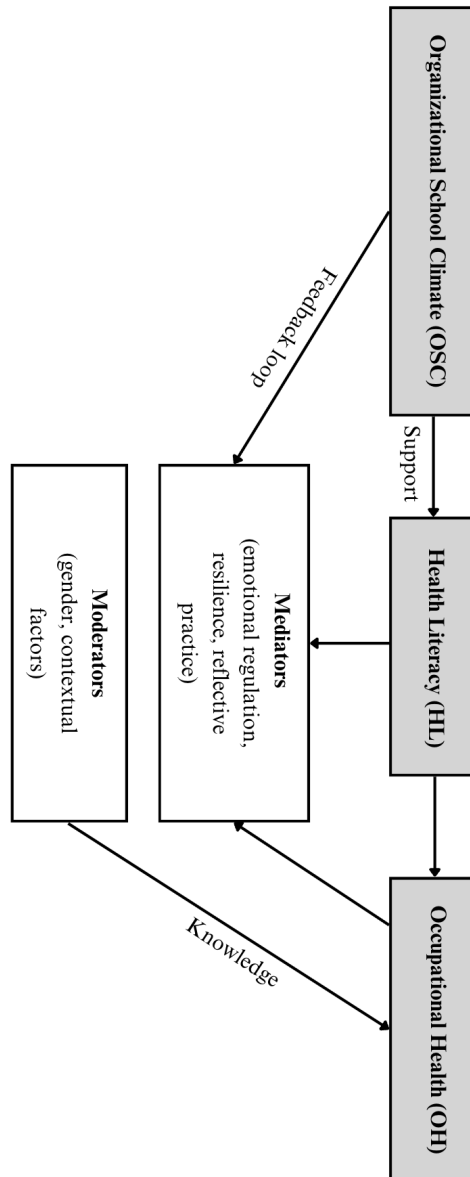
literacy, as observed empirically. Contextual variables such as school size, urban/rural setting, or founder support further condition these relationships by determining the availability of resources and organisational stress profiles. For instance, principals in smaller or rural schools may experience tighter resource constraints but greater community cohesion, influencing how climate and health interact. Multi-level future analyses could examine cross-level interactions (organisational school climate \times context \rightarrow health literacy) to determine how systemic inequities influence health-capability development among leaders.

The temporal dimension is crucial to interpreting the model. The cross-sectional nature of the dissertation captures correlations at one point in time, but the underlying processes unfold longitudinally. The pathway from organisational school climate \rightarrow health literacy \rightarrow occupational health operates as a developmental cycle, with delayed effects. Climate improvements may take months to translate into increased health literacy, and further time to manifest in measurable health outcomes. The model is best understood as a recursive system of adaptation, in which change at any level (e.g., policy reform, training intervention, personal stress recovery) propagates through the others over time. This dynamic framing aligns with ecological systems theory (Bronfenbrenner, 1979) and offers a basis for designing longitudinal research or intervention evaluations.

The final component of the diagram highlights the feedback loop between empirical data and policy learning. By institutionalizing climate audits and health literacy assessments, policymakers can capture patterns of strain or success, informing resource allocation and training needs. This transforms the prevention model into a learning system, capable of continuous self-correction. Over time, such systemic feedback would create a virtuous cycle. Data on principal health and climate inform training and policy refinement, which then enhance conditions at the school level, further improving health and leadership outcomes. This multi-level learning loop is essential for sustaining occupational health as a cornerstone of educational quality in Croatia.

Figure 6

Full Model of Dynamic Relationships: Organisational School Climate → Health Literacy → Occupational Health



Note. OSC = organisational school climate; HL = health literacy; OH = occupational health. The model illustrates dynamic and reciprocal relationships among organisational school climate, health literacy, and occupational health. Organisational school climate is hypothesized to influence occupational health directly and indirectly through health literacy processes and mediating mechanisms such as emotional regulation, resilience, and reflective practice. Moderating influences include gender and broader contextual factors. Directional arrows indicate hypothesized pathways, whereas feedback loops represent reciprocal influences between organisational processes and health-related outcomes.

13. LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

While the findings advance understanding of the association between perceived organisational school climate, health literacy, and health status among Croatian primary school principals, several limitations must be acknowledged. These limitations reflect methodological, conceptual, and contextual realities that shape both the interpretation of the current results and the design of future studies. A primary limitation stems from the cross-sectional design, which restricts causal inference. Although significant associations were identified particularly between supportive organisational school climate and higher health literacy, it remains unclear whether positive climates support the development of health literacy or whether health-literate principals create better climates. Future research could address this ambiguity through longitudinal or cross-lagged panel designs, which would clarify temporal ordering and reciprocal influence. In such designs, earlier increases in health literacy could be examined for their predictive power on later improvements in perceived climate or conversely, whether sustained supportive climates contribute to health literacy growth. To further investigate these associations, structural equation modeling or multilevel structural equation modeling could be employed to distinguish individual-level effects (e.g., a principal's health literacy and leadership style) from institutional-level effects (e.g., school size, location, or founder characteristics). This approach would align with the multilevel ecological assumptions of the theoretical framework developed in this dissertation. Both perceived organisational school climate and health literacy were assessed using self-report instruments, which introduces the possibility of shared method source bias. Respondents' affective state, self-presentation tendencies, and subjective interpretive style may influence how they rate both their work environment and their health-related competence. Consequently, some part of the observed association between these constructs may reflect common-method variance rather than substantive relationship alone. This does not invalidate the findings, but it does mean they should be interpreted as associations among perceptions and self-reported capabilities rather than as objective organizational effects. Future research should therefore incorporate methodological triangulation, such as teacher or staff-reported climate data, administrative indicators, or observational measures of organizational processes, together with behaviorally anchored or performance-based indicators of health literacy. However, the gender-differentiated patterns observed, where significant associations emerged for women but not for men, suggest that shared method bias alone is unlikely to account for the findings. A uniform inflation effect would not

selectively affect one subgroup. Nonetheless, future research should pursue methodological triangulation. Combining self-reports with multi-source assessments. For instance, including teacher, staff, or parent ratings of school climate would reduce bias and provide a more ecological perspective. Behavioral or documentary indicators of health literacy (e.g., implementation of evidence-based wellness policies, frequency of communication initiatives, or participation in preventive programs) could complement subjective reports, enriching validity. Another limitation concerns the temporal and conceptual misalignment between the variables measured. School climate represents a long-term organisational construct, while the health indicators analyzed in this study capture short-term physiological states. Because these two domains evolve on different timescales, cross-sectional snapshots may obscure lagged effects. For example, prolonged exposure to a negative climate could gradually affect physiological health through chronic stress mechanisms, whereas acute health variations may not immediately alter perceived climate. Future longitudinal studies integrating biomedical monitoring and psychosocial assessments would enable the exploration of delayed, bidirectional effects testing whether prolonged stress exposure in low-support environments predicts physiological dysregulation or whether improved psychosocial climates foster recovery.

An additional limitation concerns external validity. Although the study achieved Croatia-wide coverage and included a substantial proportion of the principal population, participants were recruited through purposive, nonprobability procedures. As a result, the findings should not be generalized to the national population in a statistical sense, but rather interpreted as evidence from a large, policy-relevant, yet non-random sample of Croatian primary school principals. While the sample of Croatian primary school principals was substantial, certain demographic imbalances, notably the smaller proportion of male principals limited statistical power for subgroup analyses. The findings may also not generalize to other educational levels (e.g., secondary schools, kindergartens) or cultural contexts where leadership structures and gender norms differ. Moreover, Croatia's specific governance model, where local founders and the Ministry of Science, Education and Youth jointly shape resource allocation, creates unique structural pressures not fully comparable to other systems. Future comparative studies across European contexts could clarify whether the relationships observed here reflect broader trends or are culturally contingent. The current study is observational. For that reason, it cannot determine the effectiveness of specific interventions. Experimental and quasi-experimental designs offer promising directions for testing

causality and applied relevance. For example, health literacy training programs for principals combining workshops, peer coaching, and reflective journaling could be evaluated for their downstream effects on staff well-being, trust, and communication openness. Similarly, interventions aimed at improving school climate through collaborative decision-making frameworks, relational communication training, or team reflection protocols could be assessed for effects on principals' health literacy and stress management. Such studies would provide direct evidence for the mechanisms hypothesized in this dissertation's model.

The dissertation also highlights a systemic data limitation. Croatia currently lacks integrated, longitudinal data systems that link principals' occupational health records with psychosocial indicators at the school level. Establishing such infrastructure potentially through collaboration between the Ministry of Science, Education and Youth, health advisory agencies, and the Education and Teacher Training Agency, would enable real-time monitoring of psychosocial risk factors, leadership health, and organisational well-being. This would also facilitate the evaluation of national programs, ensuring policy learning grounded in empirical evidence. The conceptual model primarily operationalized occupational health in terms of physiological indicators, yet leadership well-being includes additional psychological dimensions such as burnout, engagement, and meaning in work (Schaufeli & Bakker, 2004). These dimensions may serve as critical mediators linking organisational school climate and health literacy to overall health outcomes. Furthermore, cultural and emotional variables such as norms of care, identity, and professional values were not directly measured but may explain gendered and contextual variations observed in the analysis.

Finally, potential barriers to applying the model in real-world settings must be acknowledged. Croatian schools often face resource constraints, administrative overload, and fragmented intersectoral cooperation, which may limit the feasibility of comprehensive prevention programs. Translating the empirical model into practice will require institutional commitment and policy continuity, as well as capacity-building at all governance levels. Pilot implementations should therefore emphasize scalability, cost-effectiveness, and stakeholder buy-in, ensuring that prevention efforts align with schools' existing structures and priorities.

14. CONCLUSION

The dissertation examined the complex link between organisational school climate, health literacy, and health status among primary school principals in the Republic of Croatia. Through a mixed bio-psychosocial lens integrating occupational health, organisational behavior, and *Job Demands-Resources* theory, the research advanced understanding of how individual and organisational resources intersect within the demanding professional context of school management. By combining validated psychosocial instruments with objective health biomarkers, this study provided a comprehensive perspective of Croatian school principals' occupational well-being, an area previously underexplored in both national and international literature.

The first research aim established the baseline conditions of principals' organisational school climate, health literacy, and health status. Results demonstrated a generally positive organisational school climate perceptions across Croatian schools, marked by collegiality, fairness, and strong professional commitment. Health literacy levels were predominantly in the "sufficient" range, confirming that most principals possess the cognitive and motivational competencies necessary to access and apply health information. However, the distribution revealed modest gender-ordered differences favoring female principals, suggesting that experiential and social learning pathways may shape health literacy development more than formal qualifications. In contrast, the physiological indicators reflected a mature workforce with standard midlife health risks, including elevated lipid profiles consistent with European benchmarks for middle-aged working populations.

The second research aim explored inter-variable relationships. Findings confirmed a significant positive association between perceived organisational school climate and health literacy (supporting 2H₁) and between health literacy and health status (supporting 3H₁), but found no significant association between perceived organisational school climate and health status (rejecting 1H₁). The perceived organisational school climate \longleftrightarrow health literacy linkage revealed that supportive, participatory climates enable principals to translate social and informational resources into higher health literacy competence. This effect was especially visible among female principals, whose leadership style appears to amplify the translation of psychosocial support into health-promoting capabilities. On the opposite, the absence of a direct organisational school climate \longleftrightarrow health status link reflects the temporal and perceptual misalignment between

enduring organisational processes and physiological measures, as well as behavioral compensation mechanisms through which principals maintain professional performance despite health strain.

The third research aim synthesized these insights into a Layered Educational Prevention Model for Principals' occupational health. The model integrates three levels:

(1) *Individual-Level Prevention*, emphasizing health literacy, self-regulation, and resilience-building.

(2) *Organizational-Level Prevention*, promoting supportive organisational school climate, distributed leadership, and collegial networks.

(3) *System-Level Prevention*, embedding occupational health priorities into educational policy, professional standards, and national leadership development frameworks.

The dissertation contributes to theory in several ways. First, it connects the *Job Demands-Resources* model (Bakker & Demerouti, 2007) with Health Literacy Theory (Sørensen et al., 2012), demonstrating that health literacy functions as a personal resource within occupational contexts, and the one that enables principals to interpret, communicate, and act upon health-related information in ways that support both individual and organisational functioning. Second, by including objective biomarkers, the analysis advances the methodological integration of psychosocial and biomedical assessment, showing how physiological data can complement traditional self-report approaches in occupational health research. Third, it extends the literature on educational leadership well-being by positioning health literacy within the broader ecology of school climate, revealing how relational trust and fairness benefit principals' capacity for self-care and informed decision-making.

The findings also have practical significance for leadership preparation, educational policy, and occupational health practice. At the individual level, principal training programs should integrate health literacy and resilience modules within standard professional development curricula. These should include components on critical appraisal of health information, evidence-based stress management, and digital health navigation. At the organisational level, maintaining a supportive climate through shared governance, open communication, and collegial mentoring can indirectly support principals' well-being, literacy and engagement. At the systemic level, the Ministry of Science, Education and Youth and the Education and Teacher Training Agency could integrate well-being metrics into leadership evaluation frameworks, creating occupational health monitoring adapted to school principals, and create national guidelines for preventive care in

educational institutions. Also, the institutionalization of principal peer-support networks and collaboration with occupational medicine services could create feedback loops between health data, psychosocial indicators, and professional practice. These initiatives would align Croatia with concurrent European approaches to sustainable school leadership that recognize well-being as a professional competence.

While the inclusion of both psychosocial and biomedical data shows as a methodological strength, the dissertation's cross-sectional design prevents causal inference. At the same time, because the climate and health-literacy constructs were measured through self-report, the findings should be read as evidence about principals' perceptions and self-reported capability, not as direct evidence about objective school climate conditions. Future longitudinal or quasi-experimental designs could better capture temporal dynamics, including potential reciprocal effects (e.g., whether improved health literacy enhances perceived organisational school climate or vice versa). Similarly, expanding measurement to include mental health indices (e.g., burnout, affective engagement) would enrich understanding of psychological pathways linking climate and physiology. The reliance on self-reported climate and health literacy measures introduces potential common-method variance, although gender-differentiated patterns mitigate concerns about uniform inflation effects. Future studies should employ structural equation modeling (SEM) or multilevel modeling to disconnect individual from institutional effects, as well as designs to determine temporal precedence between health literacy and perceived organisational school climate. Experimental interventions such as principal health literacy training or organisational school climate improvement programs could be evaluated for downstream effects on physiological and psychosocial outcomes. Comparative research across more decentralized systems would show how governance structure moderates the organisational school climate → health literacy → health status pathways.

The findings of this dissertation affirm that school leadership health is both an individual and a systemic phenomenon. A supportive organisational school climate provides the relational and informational foundation upon which health literacy, and, ultimately, health status can increase. With that in mind, principals' resilience and well-being cannot rely on personal adaptation alone. They require institutional recognition and structural support. By understanding how psychosocial environments shape the capacity for health-related decision-making, the

dissertation advances a more integrated and human-centered vision of educational leadership, one that treats well-being not as a byproduct of performance but as its precondition.

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16. APPENDICES

16.1. Appendix I: Research Instrument - General

UPITNIK ORGANIZACIJSKE KLIME, ZDRAVSTVENA PISMENOST I STRES OSNOVNA ŠKOLA

OPĆI DIO

1. Ime i prezime (ili šifra)

2. Spol

- M
 Ž

3. Dob (godine)

- od 29 do 40 godina
 od 41 – 50 godina
 od 51 - 60 godina
 od 61 i više godina

4. Stupanj završenog obrazovanja:

- visoka stručna sprema (VSS)
 magisterij znanosti
 doktorat znanosti

5. Radni staž:

- od 0 do 5 godina
 od 6 do 10 godina
 od 11 do 20 godina
 21 i više godina

6. Radni staž na mjestu ravnatelja:

- od 0 do 5 godina
 od 6 do 10 godina
 od 11 do 20 godina
 21 i više godina

7. Veličina škole u kojoj radite:

- do 100 učenika
- od 101 do 300 učenika
- od 301 do 500 učenika
- od 501 do 800 učenika
- više od 800 učenika

8. Bračni status:

- neoženjen/neudana
- oženjen/udana
- udovac/udovica
- razveden/razvedena

9. Broj djece u vašoj obitelji:

- nemam djece
- 1 dijete
- 2 djeteta
- 3 i više djece

10. Posljednjih 6 mjeseci koristim od liječnika propisanu terapiju/lijekove:

- Da
- Ne

11. Imam kućnog ljubimca

- Da
- Ne

12. Odgovara li broj pomoćno-tehničkog osoblja škole Državnom pedagoškom standardu osnovnoškolskog sustava odgoja i obrazovanja?

- Da
- Ne

13. Odgovara li broj stručnih suradnika škole Državnom pedagoškom standardu osnovnoškolskog sustava odgoja i obrazovanja?

- Da
- Ne

14. Dobro surađujem s:

- lokalnom zajednicom
- osnivačem škole
- resornim ministarstvom

16.2. Appendix II: Research Instrument - Organizational School Climate

UPITNIK ORGANIZACIJSKE KLIME, ZDRAVSTVENA PISMENOST I STRES OSNOVNA ŠKOLA

ORGANIZACIJSKA KLIMA

15. Molimo Vas da pažljivo pročitate dolje navedene tvrdnje te procijenite u kojoj se mjeri one odnose na školu u kojoj radite. Odaberite tvrdnju (rijetko-ponekad-često-gotovo uvijek) koja Vam najviše odgovara.

	Rijetko	Ponekad	Često	Gotovo uvijek
U slobodno vrijeme učitelji pomažu učenicima	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji koji imaju osobnih problema dobivaju podršku od svojih kolega	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Strogo upravljam školom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji su netolerantni jedni prema drugima	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji su preopterećeni poslom u školi	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Strogo vodim računa o tome kada učitelji dolaze na posao	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji su nezadovoljni načinom rješavanja problema u školi	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Međusobni odnosi u školi su prijateljski	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Učitelji ne uvažavaju jedni druge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji su voljni održavati izvannastavne aktivnosti	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Svojim napornim radom pružam primjer ostalima	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji cijene profesionalnost svojih kolega	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji se privatno druže i izvan posla	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Međuljudski odnosi u školi su loši	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji ostaju u školi nakon posla kako bi pomogli učenicima	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pomno provjeravam sve nastavne aktivnosti	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji vrše pritisak na suradnike koji se ne slažu s većinom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prihvaćam prijedloge svojih suradnika/učitelja	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
U zbornici vlada opuštena atmosfera	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tretiram sve učitelje jednako	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji ogovaraju jedni druge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji imaju previše obaveza izvan aktivnosti u školi	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dajem konstruktivne kritike učiteljima	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Dok govore na sastancima, učitelji ometaju jedni druge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji pružaju svojim učenicima više nego što moraju	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Previše je administrativnih poslova koje učitelji moraju obavljati	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Na školskim sastancima učitelji „spuštaju“ jedni drugima	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trudim se iskazati poštovanje svima	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji ismijavaju druge kolege koji su drugačiji od njih	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ponekad sam nepravedan/na prema učiteljima	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji odlaze iz škole odmah nakon nastave	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Radna atmosfera u školi je poticajna	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji se rado međusobno družu tijekom radnog vremena	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Za pomoć sam dostupan/na i nakon posla	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji se žale na mane	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pažljivo pratim sve što učitelji čine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji dobro međusobno surađuju	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učiteljima ukazujem na njihove pogreške	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji se ne mogu pouzdati jedni na druge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Kad god je potrebno, učitelji si pomažu	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Brinem za dobrobit ustanove	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji priređuju zabave jedni za druge (zakuske i sl.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Većina učitelja u školi tolerira propuste svojih kolega	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Potičem samostalnost učitelja	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Na školskim sastancima učitelji često skreću s teme	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji pružaju socijalnu podršku svojim kolegama	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji predano pomažu svojim učenicima	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pohvaljujem učitelje	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Druge školske obaveze ometaju učitelje u nastavnom radu	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji su ljubazni jedni prema drugima	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unatoč svojim obavezama, pomažem učiteljima	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji pozivaju kolege u kućne posjete	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ne uvažavam mišljenje učitelja	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji prihvaćaju dodatne obaveze ako to koristi učenicima	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Potičem kreativnost učitelja	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Učitelji su nepristojni prema svojim kolegama	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji si međusobno pomažu i podupiru	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učenici kojima je potrebna dodatna pomoć mogu je dobiti	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji vole slušati tračeve o svojim kolegama	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Otvoren/a sam za sugestije učitelja	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Učitelji su nekolegijalni	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ravnatelj pomno nadzire učitelje	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
U školi vlada dobra atmosfera	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16.3. Appendix III: Research Instrument - Health Literacy

UPITNIK ORGANIZACIJSKE KLIME, ZDRAVSTVENA PISMENOST I STRES OSNOVNA ŠKOLA

ZDRAVSTVENA PISMENOST

16. Molimo Vas da iskreno odaberete tvrdnje za koje mislite da Vam najviše odgovaraju. Na skali od vrlo lako do vrlo teško, koliko Vam je lako:

	Vrlo teško	Teško	Lako	Vrlo lako
pronaći informacije o simptomima bolesti koje vas se tiču?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
pronaći informacije o liječenju bolesti koje vas se tiču?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
saznati što učiniti u hitnim slučajevima?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
saznati gdje dobiti medicinsku pomoć u slučaju bolesti?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

razumjeti što liječnik savjetuje?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
razumjeti upute o lijeku?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
razumjeti što učiniti u hitnim slučajevima?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
razumjeti upute svog liječnika ili ljekarnika o uzimanju propisanog lijeka?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
procijeniti kako se uputa liječnika odnosi na vas?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
procijeniti prednosti i nedostatke različitih načina liječenja?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
procijeniti kada vam je potrebno mišljenje drugog liječnika?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
procijeniti je li informacija o bolesti u medijima pouzdana?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
upotrijebiti informacije liječnika u donošenju odluka o vašoj bolesti?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
pratiti upute na lijekovima?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
nazvati hitnu pomoć u slučaju nužde?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
pratiti upute vašeg liječnika ili ljekarnika?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
pronaći informacije o suočavanju s nezdravim navikama kao što je pušenje, niska tjelesna aktivnost i pretjerana konzumacija alkohola?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

pronaći informacije
o suočavanju s
problemima
mentalnog zdravlja
kao što su stres ili
depresija?

pronaći informacije
o cjepivima i
zdravstvenim
pregledima koji su
vam potrebni?

pronaći informacija
o sprječavanju i
suočavanju sa
zdravstvenim
stanjima poput
pretilosti, povišenog
krvnog tlaka i
kolesterola?

razumjeti
zdravstvena
upozorenja o
navikama poput
pušenja, niske
tjelesne aktivnost i
pretjerane
konzumacija
alkohola?

razumjeti zašto vam
je potrebno cjevivo?

razumjeti zašto vam
je potreban
zdravstveni pregled?

procijeniti koliko su
pouzdana
zdravstvena
upozorenja o
navikama poput
pušenja, niske
tjelesne aktivnost i
pretjerane
konzumacije
alkohola?

procijeniti kada bi
trebali obaviti
zdravstveni pregled
kod liječnika?

procijeniti koja su
vam cjeviva
potrebna?

procijeniti koji su vam zdravstveni pregledi potrebni?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
procijeniti je li informacija o zdravstvenim rizicima u medijima pouzdana?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
odlučiti treba li vam cjepivo protiv gripe?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
odlučiti kako se zaštititi od bolesti slušajući savjete obitelji i prijatelja?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
odlučiti kako se zaštititi od bolesti slušajući savjete iz medija?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
pronaći informacije o zdravim aktivnostima poput tjelovježbe, zdravoj prehrani i namirnicama?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
saznati više o aktivnostima koje su važne za mentalnu dobrobit?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
informirati se o tome kako vaša okolina može poticati zdravlje?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
informirati se o političkim promjenama koje mogu utjecati na zdravlje?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
informirati se o tome kako promicati zdravlje na poslu?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
razumjeti savjete o zdravlju od članova obitelji ili prijatelja?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
razumjeti informacije na pakiranju namirnica?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

razumjeti savjete medija o tome kako postati zdraviji?

razumjeti informacije o održavanju mentalnog zdravlja?

procijeniti što u vašem životu utječe na vaše zdravlje i dobrobit?

procijeniti kako vam smještajni uvjeti pomažu u očuvanju zdravlja?

procijeniti koje se svakodnevne navike odnose na vaše zdravlje?

donijeti odluke o poboljšanju vašeg zdravlja?

uključiti se u sportski klub ili program tjelovježbe ako to želite?

utjecati na životne uvjete koji djeluju na zdravlje i dobrobit?

sudjelovati u aktivnostima koji poboljšavaju zdravlje i dobrobit u vašoj zajednici?

16.4. Appendix IV: Informed Consent Form

INFORMIRANI PRISTANAK NA SUDJELOVANJE U ISTRAŽIVANJU

„Ispitivanje utjecaja organizacijske školske klime na profesionalno zdravlje ravnatelja osnovnih škola u Hrvatskoj“

Borna Nemet, mag. prim. educ., borna.nemet@ufzg.hr

Sveučilište u Zagrebu, Učiteljski fakultet, Savska cesta 77, 10000 Zagreb

Poštovani,

Pozivamo Vas da u svojstvu ispitanika sudjelujete u znanstvenom istraživanju u kojem se ispituje percepcija kvalitete organizacijske školske klime, razina zdravstvene pismenosti te razina zdravstvenog statusa. Sudjelovanje u istraživanju je dobrovoljno, te se za isto ispitaniku neće isplaćivati naknada za sudjelovanje u istraživanju.

Voditelj istraživanja je mag. prim. educ. Borna Nemet (UFZG) uz mentorstvo izv. prof. dr. sc. Nevenke Maras te prof. dr. sc. Damira Sekulića (KIFST). Istraživanje se provodi na teritoriju Republike Hrvatske u vremenu od siječnja do svibnja 2024. Istraživanje se provodi u svrhu izrade doktorske disertacije. Molimo Vas pažljivo pročitajte ovaj Informirani pristanak za sudjelovanje u istraživanju u kojem se objašnjava zašto se ispitivanje provodi i koji su potencijalni rizici ukoliko pristanete sudjelovati.

U slučaju da ne razumijete bilo koji dio Informiranog pristanka molimo Vas da se za objašnjenje obratite ispitivaču u istraživanju. Vaše sudjelovanje u ovom ispitivanju je dobrovoljno i možete se u bilo kojem trenutku povući. Ukoliko odlučite sudjelovati u ovom istraživanju od Vas će se tražiti da potpišete Informirani pristanak uz naznaku datuma. Informirani pristanak potpisuje i istraživač, a potpisan preslik Informiranog pristanka dobit ćete osobno prije početka navedenog istraživanja. Original Informiranog pristanka nalazi se kod istraživača ovog ispitivanja.

PODACI O ISTRAŽIVANJU

Danas postoje empirijski dokazi koji ukazuju na to da je školska klima značajno povezana s pozitivnim razvojem učenika, prevencijom rizičnog ponašanja te promicanjem zdravlja i obrazovanja školske djece. Posebnu zadaću u kreiranju, rukovođenju i upravljanju odgojno-obrazovnog procesa imaju ravnatelji.

Cilj istraživanja je procijeniti međudnos organizacijske školske klime i profesionalnog zdravlja ravnatelja osnovnih škola. Problemi istraživanja uključuju holistički pristup istraživanju percepcije organizacijske školske klime, mjerenje razine zdravstvene pismenosti, procjenu zdravstvenog stanja i ispitivanje njihove međusobne povezanosti. Ciljevi uključuju:

1. Utvrditi razinu percepcije organizacijske školske klime, razine zdravstvene pismenosti i razinu zdravstvenog stanja u populaciji ravnatelja osnovnih škola u Republici Hrvatskoj:

1.1. Organizacijska školska klima: utvrditi razine percepcije odnosa nastavnog osoblja, odnosa prema poslu i učenicima te odnosa ravnatelja prema osoblju i školi općenito.

1.2. Zdravstvena pismenost: odrediti razine percepcije znanja, motivacije i sposobnosti za pristup, razumijevanje, procjenu i primjenu zdravstvenih informacija za donošenje prosudbi i odluka u svakodnevnom životu u vezi sa zaštitom zdravlja, prevencijom bolesti i promicanjem zdravlja.

1.3. Zdravstveno stanje: za određivanje sastava tijela (postotak tjelesne masti (PBF), masa skeletnih mišića (SMM), tjelesna voda (TBW)), lipidni profil (ukupni kolesterol, LDL kolesterol, HDL kolesterol, trigliceridi), hemoglobin (Hb) i hematokrit razine (HCT) i razine glukoze (BG).

2. Utvrditi povezanost između organizacijske školske klime, zdravstvenog stanja i mjerenja zdravstvene pismenosti u populaciji ravnatelja osnovnih škola u Republici Hrvatskoj:

2.1. Utvrditi povezanost percepcije o organizacijskoj školskoj klimi i razine zdravstvene pismenosti.

2.2. Utvrditi povezanost između percepcija o organizacijskoj školskoj klimi i mjerenja zdravstvenog statusa.

3. Razviti ciljani empirijski model obrazovanja koji se bavi specifičnim potrebama zdravstvene zaštite na radu ravnatelja osnovnih škola u Republici Hrvatskoj.

Istraživanje se provodi u jednom susretu prilikom kojega se obavljaju sva navedena mjerenja.

- Za mjerenje razine percepcije organizacijske školske klime, koristit će se validirani prilagođeni upitnik za samoprocjenu (Proroković i Slišković, 2008.) koji se sastoji od 63 čestice mjerene Likertovom skalom od 4 stupnja te procjenjuje odnos između nastavnog osoblja, odnosa prema poslu i učenicima te odnos ravnatelja prema osoblju i školi općenito.

- Za mjerenje razine percepcije zdravstvene pismenosti ispitanika koristit će se validirani upitnik zdravstvene pismenosti (Sørensen et al, 2013.), koji se sastoji od 47 čestica

mjerene Likertovom skalom od 4 stupnja povezanih sa znanjem, motivacijom i sposobnostima pristupa, razumijevanja, evaluacije i primijene informacija o zdravlju.

- Za mjerenje razine zdravstvenog statusa koristit će se uređaj za analizu bioimpedancije (TANITA ljestvica), dok će se uzorci krvi (metoda *Point-of-care*) prikupljati analizu lipidnog profila, razine hemoglobina i hematokrita te razine glukoze.

MOGUĆI RIZICI I NEUGODNOSTI

Ovo istraživanje ne uključuje nikakav rizik za ispitanike. Educirani medicinski stručnjaci prikupit će fizička mjerenja sastava tijela i uzorke krvi metodom *Point-of-care* na licu mjesta na standardiziran način, slijedeći odgovarajuće medicinske, sigurnosne i higijenske protokole. Moguća neugodnost može se očitovati prilikom vađenja uzorka krvi iz prsta, gdje je moguć kratkotrajan osjet neznatne boli prilikom plitkog uboda igle.

NOVI REZULTATI

Ukoliko se dobiju tijekom ispitivanja, ispitanik će o njima biti obaviješten, te u svakom trenutku ima pravo na uvid u analizu mjerenja sastava tijela i uzorka krvi.

POVJERLJIVOST I ZAŠTITA OSOBNIH PODATAKA

Medicinski podaci i biološki materijal (krv) ispitanika bit će analizirana na licu mjesta te po završetku analize tretirana i zbrinjena na prikladan način za zbrinjavanje biološkog otpada. Osobni podaci, povjerljivost i anonimnost sudionika bit će osigurani dodjeljivanjem jedinstvenih identifikatora svakom sudioniku, a svi podaci bit će sigurno pohranjeni i dostupni samo ovlaštenim istraživačima za potrebe studija, a sukladno zakonu o zaštiti podataka Europske unije (Direktiva o zaštiti podataka, koja je 25. svibnja 2018. zamijenjena općom uredbom o zaštiti podataka GDPR). Isti će se podaci čuvati do završetka istraživanja (Rujan 2024.). Osobni podaci i biološki materijal prikupljeni kroz sudjelovanje ispitanika, bit će korišteni samo u predloženom istraživanju.

KORIST ZA ISTRAŽIVAČA

Rezultati istraživanja biti će korišteni u svrhu izrade doktorske disertacije kroz objavu znanstvenih radova i kongresnih priopćenja, te izrade odgovarajućeg modela prevencije.

TKO JE ODOBRILO OVO ISTRAŽIVANJE

Etičko povjerenstvo Učiteljskog fakulteta odobrilo je ovo istraživanje (Odluka Etičkog povjerenstva, klasa: 621-03/24-01/03, ur. Broj: 251-378-01-24-2).

DOBROVOLJNO SUDJELOVANJE

Sudjelovanje u ovome istraživanju je u potpunosti dobrovoljno. Vaša odluka o tome da li želite ili ne želite sudjelovati u ovom istraživanju ni na koji način neće utjecati na način, postupke i tijek Vašeg sudjelovanja u istraživanju. Ukoliko se odlučite sudjelovati u istraživanju, možete u bilo kojem trenutku prekinuti svoje sudjelovanje u njemu. O Vašoj odluci obavijestit ćete istraživača u pisanom ili usmenom obliku (e-mail adresa navedena na početnoj stranici).

PITANJA O ISPITIVANJU I KONTAKT PODACI

Za dodatna pitanja o samom istraživanju možete se obratiti istraživaču te kontakt podacima navedenim na početnoj stranici ovog dokumenta.

16.5. Appendix V: Ethical Committee Forms and Approval

UČITELJSKI FAKULTET
SVEUČILIŠTA U ZAGREBU
Savska cesta 77
10000 Zagreb

OBRAZAC ZA PRIJAVU ISTRAŽIVANJA ETIČKOM POVJERENSTVU

PODACI O ISTRAŽIVAČU ili VODITELJU PROJEKTA	
Ime i prezime	Borna Nemet
Institucija	Sveučilište u Zagrebu, Učiteljski fakultet
Kontakt podaci istraživača (e-mail, telefon)	borna.nemet@ufzg.hr , +385994972719
Suradnici (ime, prezime, institucija)	-

Mentor	izv. prof. dr. sc. Nevenka Maras prof. dr. sc. Damir Sekulić
OSNOVNI PODACI O PREDLOŽENOM ISTRAŽIVANJU	
Naziv istraživanja / projekta	The Interrelation Between Occupational Health of Primary School Principals and the Organisational School Climate Međuodnos profesionalnoga zdravlja ravnatelja osnovnih škola i organizacijske školske klime
Cilj istraživanja	<p>Cilj istraživanja je procijeniti međuodnos organizacijske školske klime i profesionalnoga zdravlja ravnatelja osnovnih škola. Problemi istraživanja uključuju holistički pristup istraživanju percepcije organizacijske školske klime, mjerenje razine zdravstvene pismenosti, procjenu zdravstvenog stanja, procjenu razine stresa te ispitivanje njihove međusobne povezanosti. Glavni ciljevi su:</p> <ol style="list-style-type: none"> 1. Utvrditi razinu percepcije organizacijske školske klime, razinu zdravstvene pismenosti i razinu zdravstvenog stanja u populaciji ravnatelja osnovnih škola u Republici Hrvatskoj: <ol style="list-style-type: none"> 1.1. Organizacijska školska klima: utvrditi razinu percepcije odnosa nastavnog osoblja, odnosa prema poslu i učenicima te odnosa ravnatelja prema osoblju i školi općenito. 1.2. Zdravstvena pismenost: odrediti razinu percepcije znanja, motivacije i sposobnosti za pristup, razumijevanje, procjenu i primjenu zdravstvenih informacija za donošenje prosudbi i odluka u svakodnevnom životu u vezi sa zaštitom zdravlja, prevencijom bolesti i promicanjem zdravlja. 1.3. Zdravstveno stanje: odrediti sastav tijela (postotak tjelesne masti (PBF), masu skeletnih mišića (SMM), tjelesni postotak vode (TBW)), lipidni

	<p>profil (ukupni kolesterol, LDL kolesterol, HDL kolesterol, trigliceridi), hemoglobin (Hb) i hematokrit (HCT) te razinu glukoze (BG).</p> <p>2. Utvrditi povezanost između organizacijske školske klime, zdravstvenog stanja i mjerenja zdravstvene pismenosti na populaciji ravnatelja osnovnih škola u Republici Hrvatskoj:</p> <p>2.1. Utvrditi povezanost percepcije o organizacijskoj školskoj klimi i razine zdravstvene pismenosti.</p> <p>2.2. Utvrditi povezanost između percepcije o organizacijskoj školskoj klimi i mjerenja zdravstvenog statusa.</p> <p>3. Razviti ciljani empirijski model obrazovanja koji se bavi specifičnim potrebama zdravstvene zaštite na radu ravnatelja osnovnih škola u Republici Hrvatskoj.</p>
<p>Istraživački problemi / istraživačka pitanja</p>	<p>Slijedom ciljeva istraživanja postavljena su istraživačka pitanja:</p> <ol style="list-style-type: none"> 1. Kakve su percepcije ravnatelja osnovnih škola o organizacijskoj školskoj klimi u Hrvatskoj? 2. Na kojoj je razini zdravstvena pismenost ravnatelja osnovnih škola u Hrvatskoj? 3. Kakvo je zdravstveno stanje ravnatelja osnovnih škola u Hrvatskoj? 4. Postoji li korelacija između organizacijske školske klime i zdravstvenog stanja ravnatelja osnovnih škola u Hrvatskoj? 5. Postoji li povezanost između organizacijske školske klime i razine zdravstvene pismenosti ravnatelja osnovnih škola u Hrvatskoj? 6. Kakva je povezanost zdravstvenog stanja i zdravstvene pismenosti ravnatelja osnovnih škola u Hrvatskoj?

<p>Relevantnost istraživanja, praktična vrijednost i doprinos</p>	<p>Treba napomenuti da je ovo istraživanje novi pristup u području profesionalnoga zdravlja (OH) i školske klime u Republici Hrvatskoj te da ne postoje druga istraživanja u istom području interesa. Istražujući mišljenja i perspektive ravnatelja osnovnih škola o organizacijskoj školskoj klimi (OSC), zdravstvenoj pismenosti (HL) i zdravstvenom statusu (HS), ovaj doktorski rad ima za cilj steći dragocjene uvide u čimbenike koji pridonose profesionalnom zdravlju i dobrobiti. Istraživanje će koristiti kvantitativne metode za prikupljanje podataka, kao i opsežan pregled literature, kako bi se obuhvatilo sveukupno razumijevanje izazova, stresora i potreba s kojima se ravnatelji suočavaju u svojim radnim okruženjima, a kako bi identificirali učinkovite preventivne strategije i intervencije.</p> <p>Nedostatak istraživanja u Republici Hrvatskoj: U Hrvatskoj nema studija koje bi ispitale međusobne veze između OSC-a, HL-a i HS-a među ravnateljima. Ovo istraživanje bit će prvo takve vrste koje će pružiti vrijedan uvid u te asocijacije unutar obrazovnog konteksta.</p> <p>Razvoj obrazovnog modela: Značajan doprinos bit će razvoj ciljanoga empirijskog obrazovnog modela za integraciju specifičnih potreba za očuvanje profesionalnoga zdravlja ravnatelja osnovnih škola u Hrvatskoj te pružanje resursa za odgojno-obrazovne ustanove, voditelje odgojno-obrazovnih ustanova i dionike u razvoju tih intervencija.</p> <p>Jačanje svijesti i promicanje: Rezultati će podići svijest o važnosti OSC, HL i HS među ravnateljima osnovnih škola. Distribucijom rezultata istraživanja</p>
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	<p>sudionicima, disertacija će pridonijeti zagovaranju pozitivne organizacijske školske klime i promicanju zdravstvene pismenosti u obrazovnom okruženju.</p>
<p>Svrha provedbe istraživanja</p>	<p>Doktorska disertacija</p>
<p>Izvor financiranja</p>	<p>1000 EUR- osobno financiranje za potrebe prikupljanja i analize podataka.</p>
<p>OPIS ISTRAŽIVANJA</p>	

Istraživački pristup	Prikupljeni podaci bit će analizirani (SPSS i/ili SAS) odgovarajućim statističkim metodama koji objašnjavaju ciljeve istraživanja. Razlike između i unutar skupina (spol, veličina škole, duljina zaposlenja, itd.) testirat će se t-testom jednog uzorka (s utvrđenom sredinom kriterija koja se koristi u skladu s brojem stupnjeva na mjernim ljestvicama) i/ili analizom varijance. Povezanosti između varijabli analizirat će se različitim korelacijskim modelima (univarijantnim i multivarijantnim dizajnom). Primijenit će se relevantni modeli faktorske analize kako bi se identificirala latentna struktura primijenjenih varijabli. Ovisno o parametrijskim/neparametrijskim karakteristikama varijabli, primjenjivat će se parametrijske/neparametrijske analize. U skladu s tim, deskriptivna statistika uključivat će srednje vrijednosti i standardne devijacije i/ili frekvencije (učestalosti) i postotke.
Sudionici istraživanja	Ciljana populacija bit će ravnatelji osnovnih škola s aktualnim mandatom zaposleni na području Republike Hrvatske. Program G power 3.1.9.2. statističke snage 0,80 koristit će se za procjenu odgovarajućeg broja sudionika iz ukupne populacije (N= 927). Sudionici će biti odabrani jednostavnim nasumičnim uzorkovanjem te će biti obaviješteni o ciljevima i protokolima istraživanja. Prije početka sudjelovanja bit će obvezni pročitati i potpisati informirani pristanak. Prije početka istraživačkog dijela tražit će se odobrenje Etičkog povjerenstva.
Način odabira i kontaktiranja sudionika	Sudionicima će se pristupiti „licem u lice“ u lokalnim školama, na stručnim skupovima ravnatelja osnovnih škola te seminarima za profesionalni razvoj. Svi će sudionici biti detaljno upoznati s ciljevima i postupcima istraživanja, kao i informacijama o dobrovoljnom sudjelovanju. Informirani pristanak bit će preduvjet za sudjelovanje u istraživanju.

Postupak
provođenja
istraživanja

Disertacija će slijediti strukturirani vremenski okvir istraživanja kako bi se osigurala neometana provedba i pravovremeno dovršenje ciljeva istraživanja kako slijedi:

1. Razdoblje pripreme (1. mjesec, siječanj 2024.): Ishoditi etičko odobrenje Etičkog povjerenstva Učiteljskog fakulteta za provedbu istraživanja. Rad na temeljitom pregledu literature o OSC, HL i HS među ravnateljima osnovnih škola. Uspostaviti kontakt s osnovnim školama u Republici Hrvatskoj radi lakše regrutacije sudionika.

2. Razdoblje prikupljanja podataka (od 2. do 6. mjeseca, od veljače do lipnja 2024.): Za početak regrutacije sudionika i dobivanje informiranog pristanka od ravnatelja osnovnih škola koji ispunjavaju uvjete. Prikupljanje podataka kroz upitnike kako bi se procijenila OSC i HL, provedba mjerenja sastava tijela i uzorkovanje krvi sudionika. Osigurati povjerljivost i privatnost sudionika tijekom cijelog procesa prikupljanja podataka.

3. Razdoblje analize podataka (od 7. do 9. mjeseca, od srpnja do rujna 2024.): Organizirati i provjeriti prikupljene podatke kako bi se osigurala točnost i cjelovitost te provesti deskriptivnu statističku analizu kako bi se sažele demografske karakteristike i ključne varijable uzorka. Izračunati Spearmanove i Pearsonove koeficijente korelacije kako bi se ispitala povezanost između organizacijske školske klime, zdravstvene pismenosti i zdravstvenog statusa. Analiza višestruke regresijske analize kako bi se istražili kombinirani učinci HL na HS na OSC. Interpretirati i analizirati dobivene rezultate, vodeći računa o ciljevima i hipotezama istraživanja.

4. Faza pisanja izvješća (od 10. do 12. mjeseca, od listopada do prosinac 2024.): pripremiti sveobuhvatno izvješće o istraživanju i sažeti nalaze studije, ističući povezanost između OSC, HL i HS. Rasprava o implikacijama rezultata istraživanja i njihovom značaju u kontekstu dobrobiti ravnatelja osnovnih škola. Rad na preporukama za promicanje pozitivne školske klime i poboljšanje HL-a za stvaranje zdravijeg radnog okruženja za sve uključene dionike. Pregled i lektoriranje disertacije, osiguravajući jasnoću, koherentnost i pridržavanje standarda akademskog pisanja.

5. Faza finalizacije i diseminacije (12. mjesec, siječanj 2025.): podnošenje izvješća o istraživanju akademskom mentoru na pregled i povratne informacije. Izvršiti potrebne izmjene na temelju primljenih povratnih informacija. Priprema prezentacije i rukopisa za distribuciju. Distribucija rezultata istraživanja s uključenim školama, obrazovnim institucijama i relevantnim dionicima kako bi se potaknula svijest i potencijalna provedba preporučenih strategija.

Za OSC i HL procjene, sudionici će ispuniti upitnike za samoprocjenu u virtualnom formatu na licu mjesta. Educirani medicinski stručnjaci prikupit će fizička mjerenja sastava tijela i uzorke krvi metodom pune skrbi na licu mjesta na standardiziran način, slijedeći odgovarajuće medicinske, etičke, sigurnosne i higijenske protokole. Povjerljivost i anonimnost sudionika bit će osigurana dodjeljivanjem jedinstvenih identifikatora svakom sudioniku, a svi podaci bit će sigurno pohranjeni i dostupni samo ovlaštenim istraživačima za potrebe studija.

Mjerni instrumenti	<p>OSC: Validirani prilagođeni upitnik samoprocjene (Proroković & Slišković, 2008.) koji se sastoji od 63 čestice mjerene Likertovom skalom koristit će se za mjerenje odnosa između nastavnog osoblja, odnosa prema poslu i učenicima te odnosa ravnatelja prema osoblju i školi općenito.</p> <p>HL: Razine percepcije zdravstvene pismenosti sudionika procijenit će se korištenjem validiranoga upitnika zdravstvene pismenosti (Sørensen et al, 2013.), koji se sastoji od 47 čestica mjerenih Likertovom skalom povezanih sa znanjem, motivacijom i sposobnostima pristupa, razumijevanja, evaluacije i primijene informacija o zdravlju.</p> <p>HS: Mjerenje sastava tijela procijenit će se pomoću uređaja za analizu bioimpedancije (TANITA ljestvica), dok će se uzorci krvi (metoda <i>Point-of-care</i>) prikupljati za analizu lipidnog profila, razine hemoglobina i hematokrita te razine glukoze.</p> <p>POS: Razine percepcije stresa kod sudionika mjerit će se pomoću validirane skale percipiranog profesionalnog stresa (Marcatto, Di Blas, Luis, Festa & Ferrante, 2021.), koja se sastoji od 4 čestice mjerene Likertovom skalom povezane s</p>
	predviđanjem zdravstvenih tegoba povezanih sa stresom, te pokazatelja stresora na radnom mjestu.

Postupak traženja informiranog pristanka sudionika na sudjelovanje u istraživanju

INFORMIRANI PRISTANAK NA SUDJELOVANJE U ISTRAŽIVANJU

„Međuodnos profesionalnog zdravlja ravnatelja osnovnih škola i organizacijske školske klime“

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fakultet, Savska cesta 77, 10000 Zagreb

Poštovani,

Pozivamo Vas da u svojstvu ispitanika sudjelujete u znanstvenom istraživanju u kojem se ispituje percepcija kvalitete organizacijske školske klime, razina zdravstvene pismenosti te razina zdravstvenog statusa. Sudjelovanje u istraživanju je dobrovoljno, te se za isto ispitaniku neće isplaćivati naknada za sudjelovanje u istraživanju.

Voditelj istraživanja je mag. prim. educ. Borna Nemet (UFZG) uz mentorstvo izv. prof. dr. sc. Nevenke Maras te prof. dr. sc. Damira Sekulića (KIFST). Istraživanje se provodi na teritoriju Republike Hrvatske u vremenu od siječnja do svibnja 2024. Istraživanje se provodi u svrhu izrade doktorske disertacije. Molimo Vas pažljivo pročitajte ovaj Informirani pristanak za sudjelovanje u istraživanju u kojem se objašnjava zašto se ispitivanje provodi i koji su potencijalni rizici ukoliko pristanete sudjelovati.

U slučaju da ne razumijete bilo koji dio Informiranog pristanka molimo Vas da se za objašnjenje obratite ispitivaču u istraživanju. Vaše sudjelovanje u ovom ispitivanju je dobrovoljno i možete se u bilo kojem trenutku povući. Ukoliko odlučite sudjelovati u ovom istraživanju od Vas će se tražiti da potpišete Informirani pristanak uz naznaku datuma. Informirani pristanak potpisuje i istraživač, a potpisan preslik Informiranog pristanka dobit ćete

osobno prije početka navedenog istraživanja. Original Informiranog pristanka nalazi se kod istraživača ovog ispitivanja.

PODACI O ISTRAŽIVANJU

Danas postoje empirijski dokazi koji ukazuju na to da je školska klima značajno povezana s pozitivnim razvojem učenika, prevencijom rizičnog ponašanja te promicanjem zdravlja i obrazovanja školske djece. Posebnu zadaću u kreiranju, rukovođenju i upravljanju odgojno-obrazovnog procesa imaju ravnatelji.

Cilj istraživanja je procijeniti međuodnos organizacijske školske klime i profesionalnog zdravlja ravnatelja osnovnih škola. Problemi istraživanja uključuju holistički pristup istraživanju percepcije organizacijske školske klime,

mjerenje razine zdravstvene pismenosti, procjenu zdravstvenog stanja i ispitivanje njihove međusobne povezanosti. Ciljevi uključuju:

1. Utvrditi razinu percepcije organizacijske školske klime, razine zdravstvene pismenosti i razinu zdravstvenog stanja u populaciji ravnatelja osnovnih škola u Republici Hrvatskoj:

1.1. Organizacijska školska klima: utvrditi razine percepcije odnosa nastavnog osoblja, odnosa prema poslu i učenicima te odnosa ravnatelja prema osoblju i školi općenito.

1.2. Zdravstvena pismenost: odrediti razine percepcije znanja, motivacije i sposobnosti za pristup, razumijevanje, procjenu i primjenu zdravstvenih informacija za donošenje prosudbi i odluka u svakodnevnom životu u vezi sa zaštitom zdravlja, prevencijom bolesti i promicanjem zdravlja.

1.3. Zdravstveno stanje: za određivanje sastava tijela (postotak tjelesne masti (PBF), masa skeletnih mišića (SMM), tjelesna voda (TBW)), lipidni profil (ukupni kolesterol, LDL kolesterol, HDL kolesterol, trigliceridi), hemoglobin (Hb) i hematokrit razine (HCT) i razine glukoze (BG).

2. Utvrditi povezanost između organizacijske školske klime, zdravstvenog stanja i mjerenja zdravstvene pismenosti u populaciji ravnatelja osnovnih škola u Republici Hrvatskoj:

2.1. Utvrditi povezanost percepcije o organizacijskoj školskoj klimi i razine zdravstvene pismenosti.

2.2. Utvrditi povezanost između percepcija o organizacijskoj školskoj klimi i mjerenja zdravstvenog statusa.

3. Razviti ciljani empirijski model obrazovanja koji se bavi specifičnim potrebama zdravstvene zaštite na radu ravnatelja osnovnih škola u Republici Hrvatskoj.

Istraživanje se provodi u jednom susretu prilikom kojega se obavljaju sva navedena mjerenja.

- Za mjerenje razine percepcije organizacijske školske klime, koristit će se validirani prilagođeni upitnik za

samoprocjenu (Proroković i Slišković, 2008.) koji se sastoji od 63 čestice mjerene Likertovom skalom od 4 stupnja te procjenjuje odnos između nastavnog osoblja, odnosa prema poslu i učenicima te odnos ravnatelja prema osoblju i školi općenito.

- Za mjerenje razine percepcije zdravstvene pismenosti ispitanika koristit će se validirani upitnik zdravstvene pismenosti (Sørensen et al, 2013.), koji se sastoji od 47 čestica mjerene Likertovom skalom od 4 stupnja povezanih sa znanjem, motivacijom i sposobnostima pristupa, razumijevanja, evaluacije i primijene informacija o zdravlju.

- Za mjerenje razine zdravstvenog statusa koristit će se uređaj za analizu bioimpedancije (TANITA ljestvica), dok će se uzorci krvi (metoda *Point-of-care*) prikupljati analizu lipidnog profila, razine hemoglobina i hematokrita te razine glukoze.

- Za mjerenje razine percepcije profesionalnog stresa koristit će se validirani upitnik Percepcije razine profesionalnog stresa (Marcatto, Di

Blas, Luis, Festa i Ferrante, 2021) koji se sastoji od 4 čestice mjerene Likertovom skalom od 5 stupnjeva povezanih s predviđanjem zdravstvenih problema uzrokovanih stresom na radom mjestu.

MOGUĆI RIZICI I NEUGODNOSTI

Ovo istraživanje ne uključuje nikakav rizik za ispitanike. Educirani medicinski stručnjaci prikupit će fizička mjerenja sastava tijela i uzorke krvi metodom *Point-of-care* na licu mjesta na standardiziran način, slijedeći odgovarajuće medicinske, sigurnosne i higijenske protokole. Moguća neugodnost može se očitovati prilikom vađenja uzorka krvi iz prsta, gdje je moguć kratkotrajan osjet neznatne boli prilikom plitkog uboda igle.

NOVI REZULTATI

Ukoliko se dobiju tijekom ispitivanja, ispitanik će o njima biti obaviješten, te u svakom trenutku ima pravo na uvid u analizu mjerenja sastava tijela i uzorka krvi.

POVJERLJIVOST I ZAŠTITA OSOBNIH PODATAKA

Medicinski podaci i biološki materijal (krv) ispitanika bit će analizirana na licu mjesta te po završetku analize tretirana i zbrinjena na prikladan način za zbrinjavanje biološkog otpada. Osobni podaci, povjerljivost i anonimnost sudionika bit će osigurani dodjeljivanjem jedinstvenih identifikatora svakom sudioniku, a svi podaci bit će sigurno pohranjeni i dostupni samo ovlaštenim istraživačima za potrebe studija, a sukladno zakonu o zaštiti podataka Europske unije (Direktiva o zaštiti podataka, koja je 25. svibnja 2018. zamijenjena općom uredbom o zaštiti podataka GDPR). Isti će se podaci čuvati do završetka istraživanja (Rujan 2024.). Osobni podaci i biološki materijal prikupljeni kroz sudjelovanje ispitanika, bit će korišteni samo u predloženom istraživanju.

KORIST ZA ISTRAŽIVAČA

Rezultati istraživanja biti će korišteni u svrhu izrade doktorske disertacije kroz objavu znanstvenih radova i kongresnih priopćenja, te izrade odgovarajućeg modela prevencije.

TKO JE ODOBRILO OVO ISTRAŽIVANJE

Etičko povjerenstvo Učiteljskog fakulteta odobrilo je ovo istraživanje (Odluka Etičkog povjerenstva, klasa:, ur. broj:...)

DOBROVOLJNO SUDJELOVANJE

Sudjelovanje u ovome istraživanju je u potpunosti dobrovoljno. Vaša odluka o tome da li želite ili ne želite sudjelovati u ovom istraživanju ni na koji način neće utjecati na način, postupke i tijek Vašeg sudjelovanja u istraživanju. Ukoliko se odlučite sudjelovati u istraživanju, možete u bilo kojem trenutku prekinuti svoje sudjelovanje u njemu. O Vašoj odluci obavijestit ćete istraživača u pisanom ili usmenom obliku (e-mail adresa navedena na početnoj stranici).

PITANJA O ISPITIVANJU I KONTAKT PODACI

Za dodatna pitanja o samom istraživanju možete se obratiti istraživaču te kontakt podacima navedenim na početnoj stranici ovog dokumenta.

	<p>Svojim potpisom potvrđujem da sam informiran/a o ciljevima, prednostima i rizicima ovog istraživanja i pristajem u njemu sudjelovati.</p> <p>U, _____ (datum).</p> <p>Potpis sudionika istraživanja voditelja istraživanja</p> <p>Potpis</p> <p><i>Borna Nemet, mag. prim. educ. Sveučilište u Zagrebu, Učiteljski fakultet</i></p> <p>Ja, istraživač potvrđujem da sam usmeno pružio/pružila potrebne informacije o ovom ispitivanju i dao/dala preslik Informiranog pristanka potpisanog od strane ispitanika i istraživača.</p> <p>Potpis voditelja istraživanja</p>
<p>Način prikupljanja suglasnosti za provođenje istraživanja od nadležnih institucija</p>	<p>-</p>

<p>Način poštovanja anonimnosti i povjerljivosti podataka</p>	<p>Medicinski podaci i biološki materijal (krv) ispitanika bit će analizirani na licu mjesta te po završetku analize tretirani i zbrinjani na prikladan način za zbrinjavanje biološkog otpada. Osobni podaci, povjerljivost i anonimnost sudionika bit će osigurani dodjeljivanjem jedinstvenih identifikatora svakom sudioniku, a svi podaci bit će sigurno pohranjeni i dostupni samo ovlaštenim istraživačima za potrebe studija, a sukladno zakonu o zaštiti podataka Europske unije (Direktiva o zaštiti podataka, koja je 25. svibnja 2018. zamijenjena općom uredbom o zaštiti podataka GDPR). Isti će se podaci čuvati do završetka istraživanja (Siječanj 2025.). Osobni podaci i biološki materijal prikupljeni kroz sudjelovanje ispitanika, bit će korišteni samo u predloženom istraživanju, a svaki ispitanik ima pravo uvida u osobne podatke te analizu medicinskih podataka.</p>
<p>Potencijalni rizici za sudionike i način osiguravanja dobrobiti sudionika</p>	<p>Ovo istraživanje ne uključuje nikakav rizik za ispitanike. Educirani medicinski stručnjaci prikupit će fizička mjerenja sastava tijela i uzorke krvi metodom <i>Point-of-care</i> na licu mjesta na standardiziran način, slijedeći odgovarajuće medicinske, sigurnosne i higijenske protokole. Moguća neugodnost može se očitovati prilikom vađenja uzorka krvi iz prsta, gdje je moguć kratkotrajan osjet neznatne boli prilikom plitkog uboda igle (1 sekunda).</p> <p>Sudionici mogu uputiti pritužbe na postupak istraživanja etičkom povjerenstvu koje je odobrilo istraživanje, sukladno podacima i uputama na informiranom pristanku za sudjelovanje u istraživanju.</p>
<p>Način informiranja sudionika o dobivenim rezultatima (povratna informacija)</p>	<p>Sukladno informacijama o Informiranom pristanku, svaki sudionik istraživanja u bilo kojem trenutku može odustati od nastavka sudjelovanja. Svaki sudionik u svakom trenutku ima pravo na uvid u analizu mjerenja sastava tijela i uzorka krvi, te uvid u analizu osobnih rezultata validiranih skala procjena. Po završetku istraživanja, svaki sudionik ima puno pravo uvida u dobivene rezultate i analize podataka.</p>
<p>Nagrade sudionicima</p>	<p>-</p>
<p>Napomene</p>	<p>-</p>

SVEUČILIŠTE U ZAGREBU
UČITELJSKI FAKULTET
Etičko povjerenstvo
Savska cesta 77, HR – 10000 Zagreb

Učiteljski fakultet u Zagrebu

Primljeno: 15.02.2024.
Klas. ozn.: 641-03/24-01/03
Ur. broj: 251-378-01-24-2
Ustr. jedinica: 21
Prilozi: , Vrijednost:

Zagreb, 14. veljače 2024.

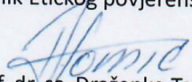
MISLENJE O USKLAĐENOSTI PRIJAVE ISTRAŽIVANJA S ETIČKIM NAČELIMA

Istraživač BORNA NEMET, doktorand, uputio je zahtjev Etičkom povjerenstvu Učiteljskoga fakulteta Sveučilišta u Zagrebu za davanje mišljenja o usklađenosti prijave istraživanja s etičkim načelima.

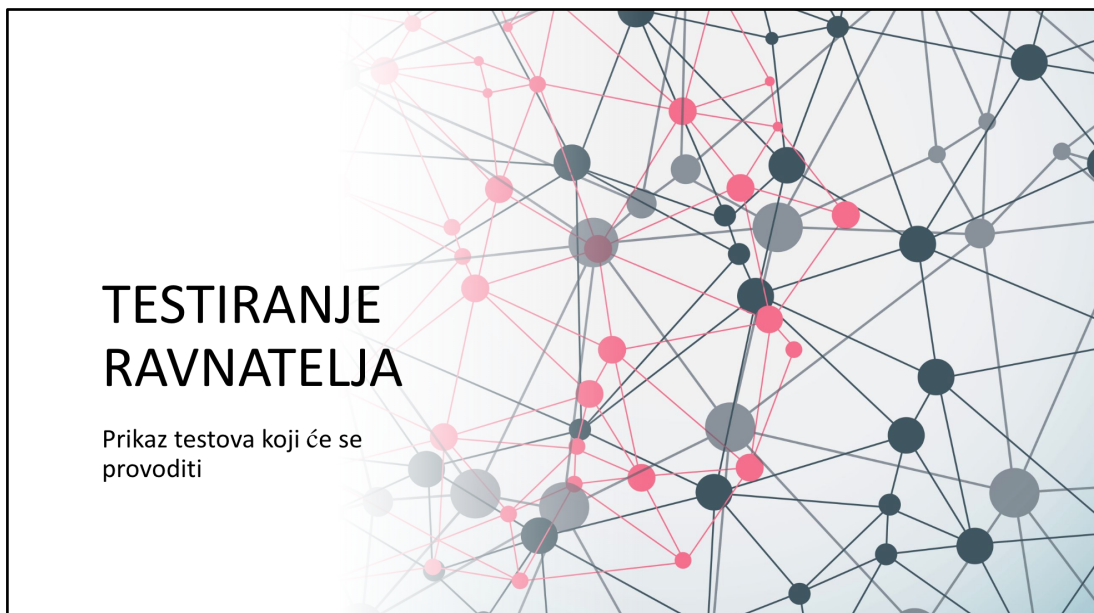
Tema istraživanja je "*Međuodnos profesionalnog zdravlja ravnatelja osnovnih škola i organizacijske školske klime*", a provest će se pod mentorstvom izv. prof. dr. Nevenke Maras i prof. dr. Damira Sekulića.

Na temelju uvida u plan provedbe istraživanja, te u sve mjerne instrumente i obrasce pristanka na sudjelovanje u istraživanju, članovi Etičkog povjerenstva na sjednici zaključenoj 14. veljače 2024. jednoglasno su donijeli zaključak da prijava istraživanja udovoljava etičkim načelima propisanim Etičkim kodeksom Sveučilišta u Zagrebu.

Predsjednik Etičkog povjerenstva

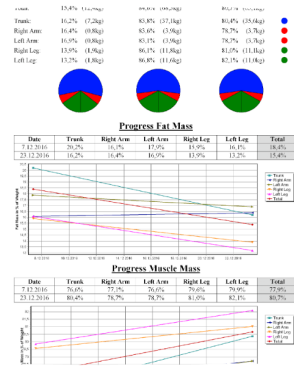
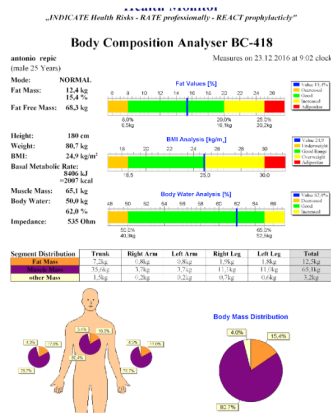

Izv. prof. dr. sc. Draženko Tomić

16.6. Appendix VI: Presentation of Testing Procedures



SASTAV TIJELA

Mjerenje pomoću TANITA vage – metoda bioimpedancije



SASTAV TIJELA

- Mjerenje pomoću TANITA vage – metoda bioimpedancije



- Uz pomoć Tanita vage, koja funkcionira po principu bioelektrične impedancije, možemo mjeriti sastav tijela, posebice **tjelesne masnoće i mišićne mase**.
- Mjeri se na način da kada osoba stane na vagu, kroz tijelo teče slaba električna struja i mjeri se napon kako bi se izračunala impedancija (otpor) tijela. Većina tjelesne vode pohranjena je u mišićima pa se na temelju određenih algoritama izračunava **odnos masti i mišića** u cijelom tijelu i pojedinačno po regijama.
- U izračunu se dobiju referentne vrijednosti za indeks tjelesne mase te postotke sastava tijela što su vrlo primjenjive informacije koje govore o **zdravstvenom statusu** pojedinca.

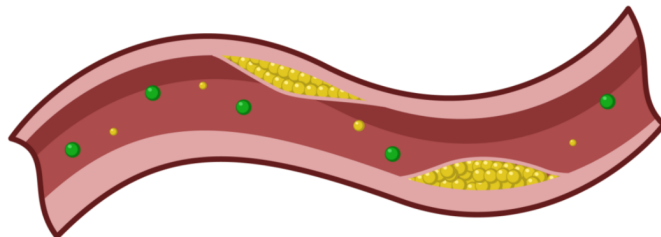
ZDRAVSTVENI STATUS – TESTOVI KRVI

- Point-of-care metoda
- Minimalno invazivni testovi iz krvi – iz kapilarne krvi (kapljica iz prsta)



LIPIDNI PROFIL

- Ukupni kolesterol
- LDL
- HDL
- Trigliceridi

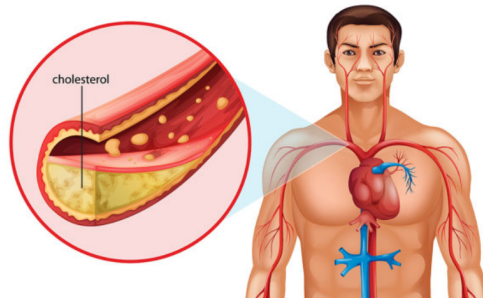


● **LDL** - loš kolesterol

● **HDL** - dobar kolesterol

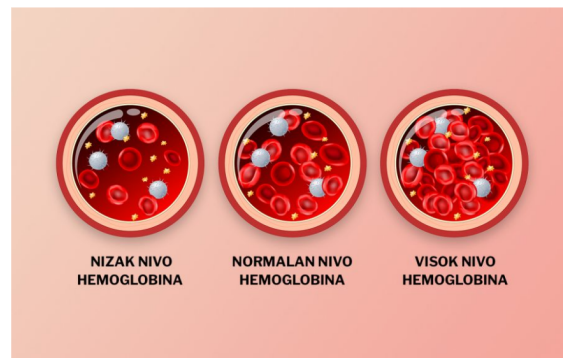
LIPIDNI PROFIL

- Poremećaj metabolizma masti (lipida) u krvi povećava rizik za nastanak ateroskleroze koja ugrožava funkciju vitalnih organa (srce, mozak, jetra, bubrezi).
- Procjenjuje se na osnovu koncentracija kolesterola i triglicerida



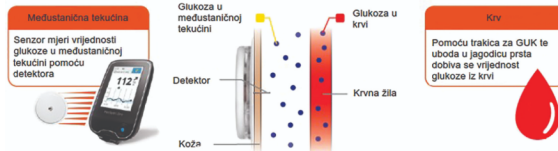
HEMOGLOBIN I HEMATOKRIT

- Hemoglobin prenosi kisik do stanica i tkiva, sadrži željezo i nalazi se u crvenim krvnim stanicama (eritrocitima).
- U slučaju da tijelo nema dovoljne količine kisika, tijelo otežano obavlja navedene funkcije, tada dolazi do anemije i cjelokupnog oslabljenja tijela.



GLUKOZA – ŠEĆER U KRVI

- Razina glukoze u krvi pokazuje fluktuacije kod svakog pojedinca koje ovise o tjelesnoj aktivnosti i vremenu proteklom od konzumiranja jela.
- Ove fluktuacije su dodatno povećane kod brojnih patoloških stanja kod kojih razina glukoze u krvi može biti povišena (hiperglikemija) ili smanjena (hipoglikemija).
- Referentne vrijednosti: 4,4 – 6,4 mmol/L



GLUKOZA – ŠEĆER U KRVI

- **Povećane vrijednosti** ukazuju na poremećaj metabolizma ugljikohidrata, posljedica koje je šećerna bolest. U tom slučaju glukoza ne može ući u stanice i tamo biti iskorištena pa ostaje u krvotoku, gdje i mjerimo povišenje njene razine.
- **Pad glukoze** u krvi na kritičnu razinu (približno 2,5 mmol/L) se manifestira kao hipoglikemija i karakterizirana je mišićnom slabošću, nedostatkom koordinacije i konfuznošću.



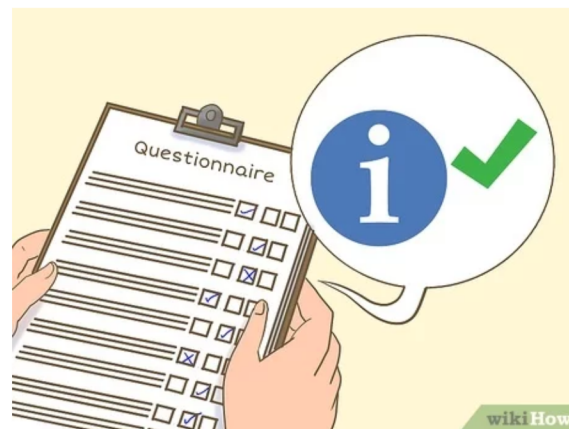
ZDRAVSTVENA PISMENOST

- HLS EU 47
- Upitnik od 47 kratkih pitanja
- Zdravstvena pismenost podrazumijeva znanje, motivaciju i sposobnosti za pristup, razumijevanje, procjenu i primjenu zdravstvenih informacije za donošenje prosudbi i odluka u svakodnevnom životu koje se tiču zdravstvene zaštite, prevencije bolesti i promicanje zdravlja radi održavanja ili poboljšanja kvalitete života



UPITNIK ORGANIZACIJSKE KLIME

- Upitnik od 63 kratkih pitanja
- Organizacijsku klimu determiniraju mnogi različiti čimbenici kao što su interakcija među članovima, faktori organizacijske strukture (strukturiranost uloga, sustav autoriteta i moći, statusne strukture) te individualne karakteristike članova organizacije (sposobnosti, stavovi, dimenzije ličnosti). Posredno, klimu određuje i organizacijski kontekst koji se odnosi na veličinu, tehnologiju, ciljeve i resurse organizacije.
- Školska klima se može definirati kao relativno trajna kvaliteta školske sredine koja utječe na ponašanje njenih članova i koja se temelji na zajedničkoj percepciji ponašanja u školi, a pod utjecajem je formalne organizacije, neformalne organizacije, ličnosti sudionika i načina upravljanja školom



17. AUTHOR CURRICULUM VITAE

Borna Nemet was born in Virovitica, Croatia, where he completed his primary and secondary education. He graduated from the Faculty of Teacher Education at the University of Zagreb, earning the academic degree of Master of Primary Education. Since 2019, he has been enrolled in the postgraduate doctoral programme Lifelong Learning and Educational Sciences at the Faculty of Teacher Education, University of Zagreb. He participated in academic research training at the University of Nevada, Las Vegas (The United States of America), where he developed interests in teacher professional identity, educational leadership, and teacher retention. He is currently teaching at the Faculty of Sciences, University of Zagreb, in the areas of didactics, communication, and curriculum theory, and the College of Education, UNLV in the area of positive psychology. His research interests include theoretical and empirical approaches to professional wellbeing, organisational behaviour, and the competencies of educational practitioners. In his research work, he applies mixed-method designs, quantitative and visual methods, and analyses focused on systemic relationships between educational structures and the professional health of school leaders. He actively participates in national and international conferences and is the author and co-author of scholarly publications in journals, conference proceedings, and edited volumes. He speaks English fluently and possesses strong digital and academic competencies.

WORK EXPERIENCE

- 09/2021 - Current *Lecturer (senior assistant), Department of Pedagogy and Didactics*
University of Zagreb, Faculty of Teacher Education
Instructor of Record:
- *Didactics 1- Curriculum Development* (College of Sciences, Department of Mathematics; Department of Geography)
 - *Didactics 2- Curriculum Development* (College of Sciences, Department of Mathematics; Department of Geography)
 - *Pedagogy in Education* (College of Sciences, Department of Mathematics; Department of Geography)
 - *Communication in Education* (College of Sciences; College of Kinesiology)
 - *Interpersonal and Intrapersonal Aspects of Communication in Education* (College of Education and Rehabilitation Sciences)

01/2020 – 09/2021 *Elementary School Teacher (K-12)*
Josip Juraj Strossmayer Elementary School, Zagreb, Croatia
Instructor of Record:
- 1st Grade- Croatian Language, Math, Science, Physical Education,
Music, Arts
- 2nd Grade- Croatian Language, Math, Science, Physical Education,
Music, Arts
- 3rd Grade- Croatian Language, Math, Science, Physical Education,
Music, Arts

PUBLICATIONS, MANUSCRIPTS, & PRESENTATIONS

Nemet, B., & Pavletic, P. (2026). *Productivity patterns of early-career researchers as a response to job insecurity in academia*. [Accepted for paper presentation at the European Conference on Ethics and Integrity in Academia].

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Maras, N., **Nemet, B.**, & Tot, D. (2024). Educator Perspectives of Professional Communication in Primary School Environments. *IATED Academy*, Valencia (pp. 1164-1173).
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- Varner, J., Atwell, N., Koerber, N., Claus, K., Jackson, M., **Nemet, B.**, & Ibrahim, M. (2023). *Toward an acceleration of educator preparation: Addressing teacher licensure through accelerated apprenticeships for paraprofessionals, school support personnel, and career switchers*. In *Critical Questions in Education Symposium*, Academy for Educational Studies, Chicago, IL.
- Jurcevic Lozancic, A., Rogulj, E., & **Nemet, B.** (Eds.). (2023). *Childhood Yesterday, Today, and Tomorrow*. University of Zagreb, Faculty of Teacher Education. ISBN 978-953-380-010-3.
- Delgado, G., **Nemet, B.**, & Varner, K. (2023). The nature of teacher quality: Searching for true definition. In *Proceedings of the Hawaii International Conference on Education* (pp. 100-129).
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- Pavletic, P., O'Connor, M., Hackett, S., & **Nemet, B.** (2022). *Students on the frontlines of academic integrity - Who are they and (why) do we need them?* In *Book of Abstracts: Ethics and integrity in the changing world* (pp 33-34). European Conference on Academic Integrity and Plagiarism, Porto, Portugal.
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Nemet, B. (2019). *Social and political participation of student teachers in teacher education programs in the Republic of Croatia*. University of Zagreb, Faculty of Teacher Education.

Pokasic, K., Cergol Kovacevic, K., & **Nemet, B.** (2017). Team Teaching in Practice. In L. Vujicic, O. Holz, M. Duh, & M. Michielsen (Eds.), *Contributions to the development of the Contemporary Paradigm of the Institutional Childhood: An Educational Perspective* (pp. 173-184). Zürich: Lit Verlag GmbH & Co. KG Wien.

RESEARCH GRANTS & FUNDING

The following research funding is substantiated by grant and award letters issued by the respective institutions.

07/2025 – 07/2029 *Educator Competencies for Contemporary Education (KOMPAS)*

Funded by the Ministry of Science and Education, Croatia
NT\$ ≈70,000

Principal Investigator: Nevenka Maras, Ph.D.

Co-Investigator: Borna Nemet (Contribution: 15%)

01/2022 – 12/2024 *Nevada Educator Preparation Institute & Collaborative (NV-EPIC)*

Funded by the Department of Education, Nevada, USA
NT\$ ≈6,100,000

Principal Investigator: Kenneth Varner, Ph.D.

Grant team member: Borna Nemet (Contribution: 10%)

01/2022 – 12/2024 *Nevada Institute on Educator Preparation, Retention & Research (NIEPRR)*

Funded by the Department of Education, Nevada, USA
NT\$ ≈2,970,000

Principal Investigator: Kenneth Varner, Ph.D.

Grant team member: Borna Nemet (Contribution: 10%)

- 01/2022 – 12/2022 *Fundamental Research in Mathematics with Applications in Educational Sciences*
 Funded by the Ministry of Science and Education, Croatia
 NT\$ ≈20,000
 Principal Investigator: Tin Perkov, Ph.D.
 Co-Principal Investigator: Borna Nemet (Contribution: 33%)
- 01/2021 – 12/2025 *Nevada Institute on Teacher & Educator Preparation (NITEP)*
 Funded by the Department of Education, Nevada, USA
 NT\$ ≈5,075,000
 Principal Investigator: Kenneth Varner, Ph.D.
 Grant team member: Borna Nemet (Contribution: 5%)
- 09/2019 – 03/2022 *Innovating Teacher and Preschool Teacher Education Programs through the Application of the Croatian Qualifications Framework (CQF)*
 Funded by the Ministry of Science and Education, Croatia
 NT\$ ≈500,000
 Principal Investigator: Visnja Rajic, Ph.D.
 Co-Investigator: Borna Nemet (Contribution: 10%)

AWARDS, FELLOWSHIPS, & HONORS

- 08/2025 – present *Graduate Teaching Assistant* Scholarship, College of Education, University of Las Vegas Nevada
- Teaching undergraduate courses in well-being literacy and positive psychology under the Department of Teaching & Learning aimed at preparing paraprofessional and accelerated route educators for successful licensure and induction into CCSD workforce.
- 05/2025 – 08/2025 *Graduate Research Assistant* Scholarship, Graduate College, Office of Director of Data Analysis, University of Las Vegas Nevada
- Supporting the Director of data analysis with data collection, data organization and cleaning, validation and statistical analysis to produce university wide reporting documentation mandated by the Graduate College.
- 08/2024 – 05/2025 *Graduate Teaching Assistant* Scholarship, College of Education, University of Las Vegas Nevada
- 05/2023 – 07/2024 *Graduate Research Assistant* Scholarship, College of Education, University of Las Vegas Nevada
- Student metrics & data organization, cleaning and report production for the Nevada Department of Education (NDE).

- 05/2023 *Graduate & Professional Student Association (GPSA)*
Research Award, University of Las Vegas Nevada
- Approved projects activities for research and conference presentation of \$1,500.
- 02/2022 – 05/2023 *Graduate Research Assistant* Scholarship, College of Education, University of Las Vegas Nevada
- Contributed to multiple core components of Nevada Forward statewide teacher workforce initiative. Research integration, large-scale data management, instructional support, and program design.
- 10/2022 *Graduate & Professional Student Association (GPSA)*
Research Award, University of Las Vegas Nevada
- Approved projects activities for research and conference presentation of \$800.
- 06/2022 *Honorary President’s Award for Academic Engagement and Research*, University of Zagreb, Croatia
- Lead of the national initiative “Me, European” to develop democratic and socially inclusive skills, understanding and promotion of youth participation for future citizen living.
- 06/2022 *Honorary President’s Award for Socially Valuable Work and Humanitarian Activities*, University of Zagreb, Croatia
- Principal lead of university-wide humanitarian initiative “Advent in Zagreb” to rise funding for children with special needs education programs. Awarded total \$20,000.
- 01/2022 – 05/2022 *Graduate Research Assistant* Scholarship, College of Education, University of Las Vegas Nevada
- 10/2019 *Honorary Dean’s Award for Exceptional Contribution to Scientific and Teaching Appointments*, Faculty of Teacher Education, University of Zagreb, Croatia
- Principal lead for organization and development of the “Student Teacher Summit”, a scientific conference aimed at all education students in the Republic of Croatia. Awarded total \$35,000.
- 06/2019 *Honorary President’s Award for Socially Valuable Work and Humanitarian Activities*, University of Zagreb, Croatia
- Principal lead for the university-wide humanitarian and first-aid initiative to provide immediate help and

assistance for the victims of Petrinja earthquake.
Awarded total \$57,000.

10/2018 *Honorary Dean's Award for Exceptional Contribution to Scientific and Teaching Appointments*, Faculty of Teacher Education, University of Zagreb, Croatia

- Principal lead of one-in-five series of professional, scientific and practicum workshops on the alternative education pedagogies (Montessori and Waldorf).

06/2018 *Honorary President's Award for Socially Valuable Work and Humanitarian Activities*, University of Zagreb, Croatia

- Principal lead on the university-wide humanitarian initiative "Humanitarko" to raise funding for children of lower socio-economic status. Awarded total \$12,000.

10/2017 *Honorary Dean's Award for Popularization of Science and Volunteer Activities*, Faculty of Teacher Education, University of Zagreb, Croatia

- Organization of talk conferences under The Croatian Association of Applied Linguistics. Organization of "Student Sports' Games", a college sporting event aimed at promoting sport spirit, equity, inclusion, and positive character development.

APPOINTMENTS (RESEARCH, TEACHING, & OTHER)

08/2024 – present *Graduate Teaching Assistant*
University of Las Vegas Nevada, USA
College of Education, Department of Teaching and Learning
Supervisor: Kenneth Varner (PI), P. G. Schrader, Ph.D. (former),
Benita Brooks, Ph.D.

2025 – 2026 Appointment:

- Spring 2026: *EDU107 (The Pursuit of Happiness: A Joyful Humanities Exploration Across the Globe)*
- Fall 2025: *EDU107 (The Pursuit of Happiness: A Joyful Humanities Exploration Across the Globe)*

2024 – 2025 Appointment:

- Fall 2024: *EDU107 (The Pursuit of Happiness: A Joyful Humanities Exploration Across the Globe)*

09/2020 – present *Lecturer (assistant)*
University of Zagreb, Croatia
Faculty of Teacher Education, Department of Pedagogy and Didactics,
Educational Studies Division
Supervisor: Nevenka Maras, Ph.D.

2025 – 2026 Appointment:

- *Didactics 1 – Curriculum Development* (College of Sciences-Mathematics Department)
- *Didactics 2 – Curriculum Development* (College of Sciences-Mathematics Department)
- *Communication in Education* (College of Sciences-Geography Department)

2024 – 2025 Appointment:

- *Pedagogy* (College of Sciences- Mathematics and Physics Department)
- *Communication in Education* (College of Sciences-Mathematics and Physics Department)

2023 – 2024 Appointment:

- *Pedagogy* (College of Sciences- Mathematics and Physics Department)
- *Didactics 1 – Curriculum Development* (College of Sciences-Mathematics and Physics Department)
- *Didactics 2 – Curriculum Development* (College of Sciences-Geography Department)
- *Communication in Education* (College of Sciences-Mathematics and Physics Department)

2022 – 2023 Appointment:

- *Communication in Education* (College of Kinesiology)
- *Pedagogy* (College of Sciences- Mathematics and Physics Department)
- *Didactics 1 – Curriculum Development* (College of Sciences-Mathematics and Physics Department)
- *Didactics 2 – Curriculum Development* (College of Sciences-Geography Department)

2021 – 2022 Appointment:

- *Interactional Communicational Aspects of Education* (College of Education and Rehabilitation Sciences)
- *Communication in Education* (College of Kinesiology)
- *Pedagogy* (College of Sciences- Mathematics and Physics Department)
- *Didactics* (College of Sciences- Mathematics and Physics Department)

2020 – 2021 Appointment:

- *Interactional Communicational Aspects of Education* (College of Education and Rehabilitation Sciences)
- *Communication in Education* (College of Kinesiology)

01/2021 – 07/2024 *Graduate Research Assistant*
University of Las Vegas Nevada, USA
College of Education, *Nevada Forward (Nevada Educator Preparation Institute & Collaborative)*
Supervisor: Kenneth Varner, Ph.D.

PROFESSIONAL & COMMUNITY SERVICE

Editorial Board

- 2026 – Current Journal Reviewer
Current Issues in Education Journal (CIE)
Research domains:
- Curriculum & instruction, Research methods, Teaching & learning, Well-being.
- 2025 – Current Journal Reviewer
European Association for Research on Learning and Instruction (EARLI)
Research domains:
- Educational policy & systems, Higher education, Social interaction in learning & instruction, Teaching & teacher education, Research methods
- 2023 – Current Editorial Board Member
Center for Research on Early and Preschool Education
Faculty of Teacher Education, University of Zagreb
- Center publishes scientific, practice, peer-reviewed, open-access monographies annually with the focus on early-childhood education and practice under the Faculty of Teacher Education, University of Zagreb.
- 2016 – 2021 Editorial board Member
Nova Prisučnost
- *Nova Prisučnost* is a scientific, peer-reviewed, open-access journal published under the Faculty of Teacher Education, University of Zagreb and indexed by CSA, DOAJ, ERIH, ESCI-WOS, HRCAK, SCOPUS.
- Conference Chair
- 05/2022 *2nd International Scientific and Art Conference “Contemporary Themes in Education - STOO2*, in cooperation with the National Institute for Science and Research, University of Zagreb and Faculty of Teacher Education.

Program & Organizing Committees

- 2025 Member of the Program and Organizing Committee Scientific and professional conference *Educator Competencies: Challenges, Practices and Perspectives*, University of Zagreb, Faculty of Teacher Education.
- 2024 Member of the Program and Organizing Committee Scientific and professional conference *Child & Play – Theory, Research and Practice*, University of Zagreb, Faculty of Teacher Education.
- 2023 Member of the Program and Organizing Committee Scientific and professional conference *Childhood Yesterday, Today, and Tomorrow*, University of Zagreb, Faculty of Teacher Education.
- 2017 – Current State Commission - National Experts Pool Member for Gifted Children School of Creativity *Novigradsko proljece*, Ministry of Science and Education and Teacher Training Agency, Zagreb, Croatia.
- 2021 – 2022 Member of the Program and Organizing Committee *2nd International Scientific and Art Conference “Contemporary Themes in Education - STOO2*, in cooperation with the National Institute for Science and Research, University of Zagreb and Faculty of Teacher Education.
- 2019 Member of the Organizing Committee *100 years of the Faculty of Teacher Education Symposium*, University of Zagreb, Faculty of Teacher Education.
- 2017 Member of the Program and Organizing Committee *10th International Conference on Current Trends in Higher Education in Europe - Institutional Childhood, Contemporary Educational Challenges*, University of Zagreb, Faculty of Teacher Education.
- 2017 Member of the Program and Organizing Committee *Professional scientific conference of methodologists, theorists and practitioners, mentors in training*, University of Zagreb, Faculty of Teacher Education.
- 2017 Member of the Organizing Committee Croatian Applied Linguistics Society, 4th one in the series talks by Zagreb branch of the Croatian Applied Linguistics Society, Zagreb, Croatia.
- 2016 Member of the Organizing Committee *1st Symposium of the Department of Early Language Learning - Mother tongue and foreign language in preschool age*, University of Zagreb, Faculty of Teacher Education, Croatia.

University/School/Department (Invited)

2026 – current	Reaccreditation Committee, University of Zagreb, Faculty of Teacher Education, Preparation of self-analysis within the process of the third cycle of reaccreditation of higher education institutions.
2022 – 2024	Global Education & Mental Health Initiatives Working Group, University of Las Vegas Nevada, College of Education.
2018 – 2019	Human Rights and Solidarity Coordinator, European Students' Union (Co-funded by the European Commission), Student Representative for international relations and educational policy at the EU level.
2018	International Officer, Croatians' Student Council, Student Representative for all students in the Republic of Croatia at the EU level.
2018 – 2019	Academic Support Officer, Office of the Vice-Dean for Students and Teaching, Faculty of Teacher Education, University of Zagreb
2018 – 2019	Vice-President, University of Zagreb Students' Council
2017 – 2019	President, Faculty of Teacher Education Students' Council
2017 – 2018	Academic Support Officer, Office of the Vice-Dean for Science, Arts and International Cooperation, Faculty of Teacher Education, University of Zagreb
2016 – 2019	Quality Assurance Committee Member, Faculty of Teacher Education, University of Zagreb

Conferences

1. The American Educational Research Association (AERA) Annual Meeting, Los Angeles - 2026 (paper presentation)
2. INTED2023, Valencia (poster presentation) - 2024
3. Hawaii International Conference on Education, Honolulu (paper presentation) - 2023
4. 6th International Academic Conference, University of Oxford (paper presentation) - 2023
5. Contemporary Topics in Education, Zagreb (paper presentation) - 2022
6. Current Trends in Higher Education in Europe, Rijeka (paper presentation) - 2017