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ORIGINAL PAPER

Safety climate in learning environments: a staff-centred analysis of comprehensive schools

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Abstract
Providing students with equal learning opportunities to enhance their well-being and the good learning outcomes required by the curriculum in a safe and secure learning environment is a basic task of school staff. However, staff perceptions of the safety climate (SC) in schools remain understudied. Also, previous studies on safety culture recommend schools develop their safety management and expertise as well as community-based operating models. Thus, we examine school staff's perceptions of SC, or the safety-related conceptions, attitudes and beliefs shared by the members of a community. This study answers the following research questions: (1) What is the level of SC in learning environments as perceived by comprehensive education school staff? and (2) Are there differences in the perceived SC of different comprehensive education schools? We aim to engage the scholarly community in greater discourse on SC as a perception of safety culture in schools. Our statistical analyses show that staff perceptions ($N=549$) of SC in learning environments are positive on average. There are moderate and statistically significant differences between schools, and some large and statistically very significant differences between schools regarding how the staff of a particular school evaluates their own SC. This result stands in contrast to those of earlier school safety culture studies. In the future, SC should be considered from both staff's and students' perspectives and in terms of safety.

Keywords Comprehensive education · Learning environment · NOSACQ · Safety climate · Staff

Introduction

Providing students with learning opportunities that enhance their well-being and the good learning outcomes required by the curriculum within a safe learning environment is a fundamental responsibility of school staff. Teachers are responsible for groups of students, while the principal is accountable for the safety and security of the entire school. In various countries, addressing safety matters is typically mandated by law. For example, in Finland, in which this quantitative study was executed, the Basic Education Act (628/1998) mandates that every student must have a safe and secure learning environment. Additionally,

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the Occupational Safety and Health Act (738/2002) imposes the same requirement for staff working environments. Safe schools are characterized by trust and confidence that the prerequisites for learning are met (Yilmaz, 2022). However, safety and security remain pressing concerns in schools globally and are frequently highlighted in the media. This is evident in many countries from the weekly news reports on various incidents occurring in schools, ranging from traffic safety and accidents to physical and psychological violence, including bullying, assaults and school shootings.

In typical working life environments formed by professionals, safety is viewed as the absence of accidents and injuries. Schools are vulnerable in this regard, as there are only a few professionals (about 10%), with students forming the community majority (about 90%; Lindfors et al., 2024). Furthermore, children and young people often use facilities and tools in ways that staff do not anticipate, rendering schools vulnerable to safety incidents. Some students also deliberately act in violation of norms and school rules and regulations. Students cause most safety incidents in learning environments (Leino & Lindfors, 2024; Somerkoski, 2017). Thus, enhancing the safety of learning environments requires not only reacting to incidents but also anticipating them, which is a hallmark of a proactive safety culture.

According to Teperi (2023), human activities and behaviour are at the centre of safety culture. Safety climate (SC), on the other hand, represents the collective perception the community members have of the value placed on safety and security (Summers, 2022). It reflects the shared conceptions, attitudes and beliefs regarding how safety and security are managed in a community (Bradshaw et al., 2021; Guldenmund, 2000; Summers, 2022; Tear & Reader, 2023). New knowledge of SC is required, as is considering safety culture in learning environments. SC is typically studied from the students' viewpoint (Aldridge & Blackstock, 2024; Kutsyuruba et al., 2015) and seldom from the school staff's viewpoint. The absence of the staff's perspective in research is surprising, as the staff is required to create and foster a positive climate (Capp et al., 2022). The school staff's perception of SC is very important, as the practices schools implement to advance safety and security in learning environments and the staff's willingness to commit to these practices directly influence how safe students consider their schools (Díaz-Vicario & Gairín Sallán, 2017; Fossum et al., 2023; Kitsantas et al., 2004).

Capp and others (2022) note that school staff consider the climate in learning environments to be intended to benefit students. In other words, the students' view is prioritized over the staff's. Nevertheless, a positive school culture and teacher job satisfaction have been found to be connected (Williams III et al., 2024). Furthermore, recent research considering staff's interest in school climate data has indicated that while the majority shows a willingness to use the data for school improvement, less than one-third have reportedly seen or used the survey results (Debnam et al., 2021).

Management is responsible for the safety culture of the learning environment regardless of whether the SC is positive and responsive to changing situations or passive, in which case the management does not particularly prioritize safety (Kelloway, 2006). Furthermore, for school staff, the role of the principal seems to represent the key positive or negative factor in this regard (Capp et al., 2022). Thus, it is important to examine school staff's perceptions of how the school management handles safety culture. Their models of operation and the relationship and interaction between students and staff are reflected in students' perceptions of SC and safety at school (Amsalu & Belay, 2024; Bradshaw et al., 2021; Williams et al., 2018). A positive SC is also important to staff, as they must rely on the ability of the work community to handle safety matters and positive SC reduces workload and improves recovery from work (Garrick et al., 2014).

In this paper, we aim to engage the scholarly community in greater discourse on SC as a perception of the safety culture of schools. This quantitative study will produce new knowledge about how school staff perceive SC and thus consider its role as a manifestation of the safety culture and discuss it as part of developing the safety and security of learning environments. Using survey data ($N=549$) collected from 21 comprehensive schools, we examine the SC and consider the extent to which schools may differ in their levels of SC. The study answers the following research questions: (1) What is the level of safety climate in learning environments as perceived by comprehensive school staff? and (2) Are there differences in the perceived safety climates of different comprehensive education schools?

Safety climate as perceived safety culture in learning environments

In learning environments, the level of safety culture is established through actions that either promote or detract from the safety of staff, students and conditions (Leino & Lindfors, 2024). Safety culture can be defined as a combination of the values, beliefs, attitudes, structures, routines, systems and rules that guide individual and group behaviour regarding managing safety (Geller, 2011; Guldenmund, 2000). Safety is not only attained through specific means, rules or individual improvements. It is created through a culture of trust, reporting practices, transparency and self-discipline in the community (Leape et al., 2009), which should manifest as a positive perception of SC. However, studies have long highlighted the deficiencies in school safety culture, particularly regarding anticipation and proactive operation models, and the situation does not seem to be improving (Lindfors et al., 2024; Rajan et al., 2022; Vallinkoski & Koirikivi, 2020; Waitinen, 2011). In the recent external audit, only one-fifth of schools reached the minimum level of safety culture mandated by law (Lindfors et al., 2024). Previous studies have recommended that comprehensive schools develop their safety management and expertise and instal community-based operating models (Lindfors et al., 2024; Teperi et al., 2018; Vallinkoski & Koirikivi, 2020; Waitinen, 2011), which can enhance the proactive safety culture and perceptions of a positive SC.

The SC of a school is connected to how the students and staff are accustomed to interacting (Bradshaw et al., 2021). It is conveyed through relationships between individuals, the interaction of community members, community values, attitudes, practices, mutually agreed-upon rules, communication and social cohesion (Geller, 2011; Kutsyuruba et al., 2015). A positive SC is characterized by a strong commitment to safety, open communication and shared operating models as well as the promotion of preparedness, discussions about safety and the reporting of safety observations (Teperi et al., 2018; Waitinen, 2011). For staff, SC is related to the working environment, how work is carried out, what the models of operating are and how safety matters are handled (Summers, 2022). The SC plays a crucial role in shaping safety-related behaviour, reducing accidents and promoting a safe and healthy working environment (Burns & Machin, 2013; Dahlstedt & Foultier, 2021; Luo, 2020; McIntosh et al., 2014). In schools with a positive SC, the atmosphere is one of trust and respect, interpersonal relations are positive (Díaz-Vicario & Gairín Sallán, 2017) and the teamwork of the staff increases safety and the flow of information (Benoliel, 2020). For example, the close collaboration of the management team significantly increases the safety of learning environments and reduces school violence (Benoliel, 2020). In socially unsafe environments, there are interpersonal conflicts and less solidarity between community members (Yildirim & Yenipinar, 2017).

According to Kines and colleagues (2011), when SC is studied from the perspective of safety leadership, employees should perceive the ability of management to prioritize and manage matters related to safety. This entails examining whether management professionally and actively acts on safety matters and how it views activities that endanger safety. By interacting and communicating with community members, school leaders and management should ensure that there is a shared understanding of and the necessary competence to carry out safety culture practices and operating models as well as a shared and up-to-date safety snapshot (Teperi, 2023; Teperi et al., 2018). This safety snapshot refers to a collective and current overview of safety-related conditions, risks and practices within learning environments, serving as a reference point for continuous improvement and informed decision-making. Kelloway (2006) and Luo (2020) emphasize the importance of active leadership in maintaining and developing the SC of a community, while passive leadership weakens the perception of SC and does not encourage the staff to actively care for safety matters. For example, delays in responding to safety incidents have been found to undermine confidence in the SC (Burns et al., 2006).

An individual's trust in their community to handle safety matters is founded on faith in how the professional community works towards their safety (Kines et al., 2011; Luo, 2020). This involves examining the individual's perception of how the work community promotes safety and the individual's confidence in the ability of others to manage safety. The key questions are whether the community learns to prevent incidents based on experience and whether community members' suggestions and views of safety are appreciated (Hammar Chiriac et al., 2023; Kines et al., 2011; Summers et al., 2022). A community's positive SC combined with high-quality social interaction enhances safety management (Zhou & Jiang, 2015). In a previous survey study by Teperi and colleagues (2018), individuals' trust in the ability of community members to handle safety matters was assessed as good, and they felt safe working with one another. While only a few differences were found between the communities, more differences were found within the communities. Furthermore, the SC is not static; it can vary depending on the situation, even within a community (Tear & Reader, 2023).

When information about SC is required for developing a single school, schools can be examined as cases. This allows school leaders and management to base their assessment of developmental needs on facts. Broadening the perspective beyond a single school is important because a positive SC is not only foundational for the work and well-being of school staff (Garrick et al., 2014; Occupational Safety and Health Act, 738/2002). It is the bedrock of children and adolescents' safety and well-being in schools (Díaz-Vicario & Gairín Sallán, 2017; Fossum et al., 2023; Kitsantas et al., 2004). However, Luo's argument (2020) that the perception of SC may differ from objective reality must be noted. In addition, Fisher and Katz (2000) argue that there is a social desirability bias reflecting the relative importance of values within a culture. As security is a universally identified core value guiding people's actions (Schwartz, 2006), it is a fundamental value at schools. Thus, we hypothesize that school staff's perceptions of SC may be quite positive. However, the safety culture in schools has been found to be reactive (Rajan et al., 2022; Waitinen, 2011), and the latest research results show that the same development needs persist from year to year (Lindfors et al., 2024; Vallinkoski & Koirikivi, 2020).

Data and methods

The key idea regarding measuring the SC of a community is that it serves as a perception of the current level of safety culture. Necessary developmental measures can be based on this information and then carried out (Kines et al., 2011; Summers et al., 2022). As a rule, the SC is perceived by individuals, but the overall picture is examined at the community level. Twenty-one schools were selected for the study, using discretionary sampling to collect a representative sample of primary, secondary and integrated comprehensive schools from rural, urban and city areas. Twelve schools were primary schools (grades 1–6, pupils aged 7–12 years), five were lower secondary schools (grades 7–9, pupils aged 13–16 years) and four were integrated primary and lower secondary schools. These included schools from ten municipalities in five provinces. Each school had 35 to 800 pupils and nine to 102 staff members, with the totals being 8299 pupils and 964 members of staff, most of whom were teachers. The sample represents about one per cent of Finnish schools. Twenty schools were municipal public schools, and one was a private school. This ratio is representative of schools in Finland. The study is part of a holistic school safety and security research and development project called [Anonymized].

The research was carried out in accordance with sound scientific practice. At the beginning of the project, the participating schools signed agreements outlining how the researchers and schools would collaborate. Part of this collaboration involved conducting staff surveys at the beginning and end of the project. Research permits were applied for and granted by each municipality, and the school principals confirmed their willingness to participate on behalf of the community. Taking part in the survey was voluntary. No personal register was used or created, because no direct identifiers were collected. Respondents were grouped by school, but individual respondents were not identifiable from the results.

The researchers informed school staff about the purpose of the study, the anonymity of the survey responses and the voluntary nature of participation during staff meetings, in which staff had time to answer the survey. Informed consent to participate was obtained through an information statement at the beginning of the survey, which stated that by responding, participants consented to the anonymous use of their responses for research purposes. Participants in this study were provided with links to both the privacy notice and data management plan.

The data gathering followed a data management plan designed in accordance with the General Data Protection Regulation and the ethical guidelines of the Finnish National Board on Research Integrity (TENK, 2023). The processing of data was carried out by obtaining informed consent from participants and instructing all personnel handling the data on ethics and conduct. Our institution (the University of Turku) does not require ethical approval for research involving adults. Although an ethical review was not required, this study adhered to the relevant ethical guidelines, including those of TENK.

The data ($N = 549$) were collected from the staff during the autumn of 2022. The range of school-specific samples was five to 56 respondents. Of the respondents, 111 identified as men, 417 as women, five as other and 16 did not wish to disclose their gender. The average response rate of the survey was 53.5% (response rates varied by school from 12.8 to 82.1%). The survey allowed the staff to rate the SC of their school community on a five-step Likert scale, with response options ranging from ‘completely disagree’ to ‘completely agree’ (cf. Kines et al., 2011; Summers et al., 2022).

Data were collected using the Nordic Occupational Safety Climate Questionnaire (NOSACQ) (Kines et al., 2011), which is widely used internationally (45 language versions)

for measuring SC via community members' self-perceptions (Kines et al., 2011). For this study, ten variables were selected from the following two dimensions of the original metric: management safety priority, commitment and competence, and safety communication, learning and trust in co-workers' safety competence. In this study, *management safety priority, commitment and competence* ($\alpha = .704$) refers to staff's perceptions of whether school leaders and management prioritize safety and have the competence to actively promote safety and address behaviours that detract from safety, as well as how they communicate regarding safety matters. *Safety communication, learning and trust in co-workers' safety competence* is reflected in individuals' perceptions of how the community attends to safety matters ($\alpha = .787$): how safety-oriented is the community, do individuals trust colleagues to attend to safety matters, does the community learn to prevent accidents and safety incidents through experience and what value does the community place on community members' safety-related proposals? These dimensions were selected because of the central role management plays in building a safety climate (Kelloway, 2006) along with a sense of community, in which trust in co-workers is also central (Garrick et al., 2014; see also, for example, Hammar Chiriac et al., 2023). In this study, the individual dimensions that indicate two latent characteristics were measured by five statements (i.e. 10 variables).

Data analysis

The normality of the data distributions was tested using the Kolmogorov–Smirnov test and by calculating their skewness and kurtosis from zero. The Kolmogorov–Smirnov test showed that only one of the individual variables followed the normal distribution ($p < .050$). In the case of three variables, only the coefficient of excess was normally distributed. Thus, the requirement of normally distributed variables was not fully realized. Therefore, nonparametric methods were used in the analysis. Graphically, the distributions were peaked and skewed in the direction of the positive response options.

The main results are presented as averages, frequency distributions and range indicators. The Mann–Whitney U test was used to compare two independent subsamples, and the Kruskal–Wallis H test was used to compare several independent subsamples. The results are statistically significant when $p < .050$ and statistically very significant when $p < .001$. In comparing independent groups, the effect size is also reported using Cohen's d. The effect size is considered medium when it falls within the range of .400 to .500, in which case the observed differences can be interpreted as significant. The effect size is large when Cohen's d is .800 or more. Similarly, the effect size is small when Cohen's d is .200 or less, in which case the differences are not significant.

Results

First, we examine variable-specific averages and frequency distributions. We then consider the variation between schools by variable and dimension, both among schools and within schools. Finally, the dimension-specific results are grouped by school size, location and type and compared.

Figure 1 illustrates that the estimates of staff tend to centre strongly on the positive response options ($N = 549$). The perceptions were, on average, the most positive regarding the following variables: *Management lacks the ability to deal with safety properly* and *We who work here take each other's opinions and suggestions concerning safety seriously*.

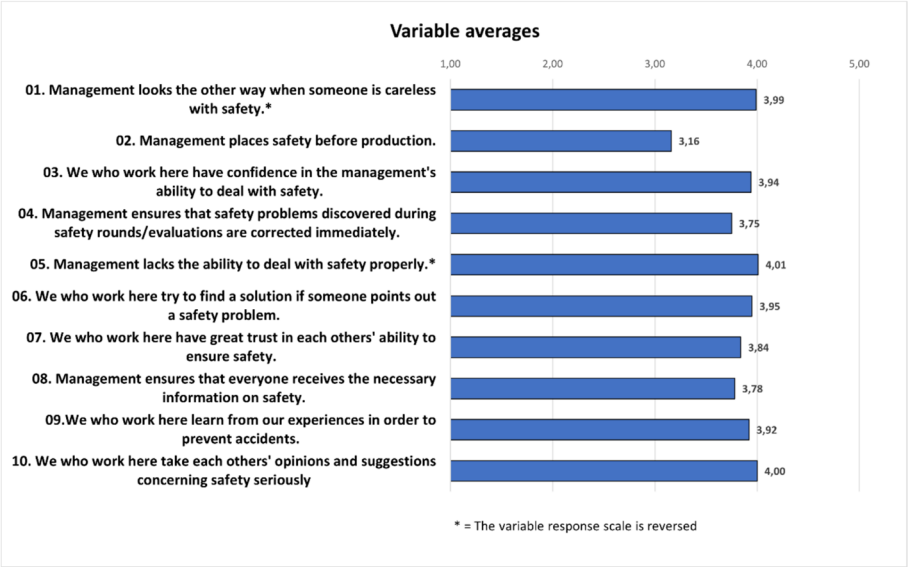

Fig. 1 Averages for safety climate variables

Respondents' perceptions were, on average, almost neutral regarding the following variables: *Management places safety before working*. Otherwise, the differences were minor, and the result reflects positive perceptions of SC.

Figure 2 illustrates that except for one variable (*Management places safety before working*), responses were concentrated on the 'Agree' option. Notably, the relative proportion of positively weighted responses was at least 80% for the following variables: *We who work here have confidence in management's ability to deal with safety* (80%), *We who work here try to find a solution if someone points out a safety problem* (82%), *We who work here learn from our experiences to prevent accidents* (84%) and *We who work here take each other's opinions and suggestions concerning safety seriously* (86%). The proportion of negatively weighted responses varied between 1 and 2%, except for the claim that *Management places*

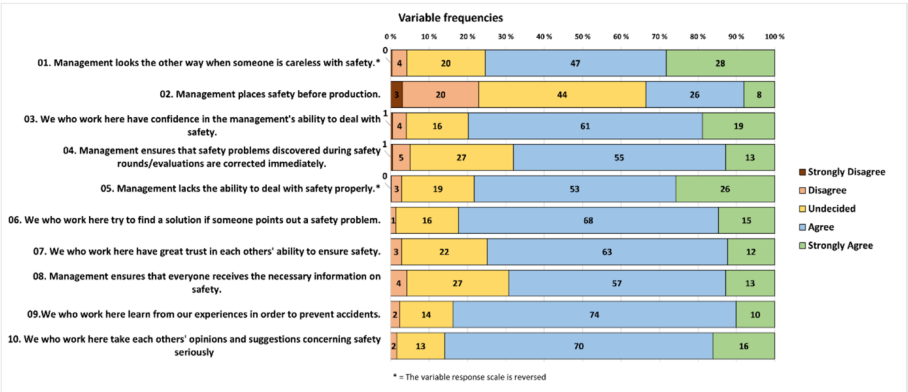

Fig. 2 Frequency distributions of variables related to safety climate

safety before working, for which the relative share of negatively weighted responses was 23%. The result shows that SC is perceived positively.

Figure 3 illustrates that the variable-specific differences between schools ranged from 0.76 to 1.22. Differences between schools were most notable for the following variables: *Management ensures that safety problems discovered during safety walk rounds/evaluations are corrected immediately* (range 1.22), *We who work here try to find a solution if someone points out a safety problem* (range 1.13) and *Management lacks the ability to deal with safety properly* (range 1.12). Differences between schools were the smallest for the variable *We who work here learn from our experiences to prevent accidents* (range 0.76). Although the differences between schools were quite moderate, they were very significant for Variables 03–08.

Figure 4 illustrates that the averages for schools for *management safety priority, commitment and competence* ranged from 3.45 to 4.33 (a range of 0.88). The differences were moderate but statistically very significant. The school-specific averages ranged from 1.00 to 3.00, with an average of 1.92. School-specific variation was 48% on average. The result shows that staff perceptions of management safety priority, commitment and competence are remarkably heterogeneous.

Figure 5 illustrates that, regarding *safety communication, learning and trust in co-worker safety competence,* school averages ranged from 3.69 to 4.44 (range of 0.75). The differences were moderate but statistically very significant. The range length for the school-specific averages ranged from 1.00 to 1.80. School-specific variation was 46% on average. The results show that there is considerable heterogeneity regarding perceived *safety communication, learning and trust in co-worker safety competence.*

Figure 6 demonstrates that school size does have a statistically significant effect on how school staff perceive *management safety priority, commitment and competence*. However, based on the moderate to large effect size, views were significantly more positive in schools with up to 100 pupils than iLeino, M., & Lindfors, E. (2024). Oppimisympäristön turvallisuudenn schools with 101—400 pupils ($d = .606$) or more than 400 pupils ($d = .597$). School size was found to have an impact on *safety communication, learning and trust in co-worker safety competence*, both statistically and based on the effect size. In schools with up to 100 pupils, attitudes were slightly more positive than

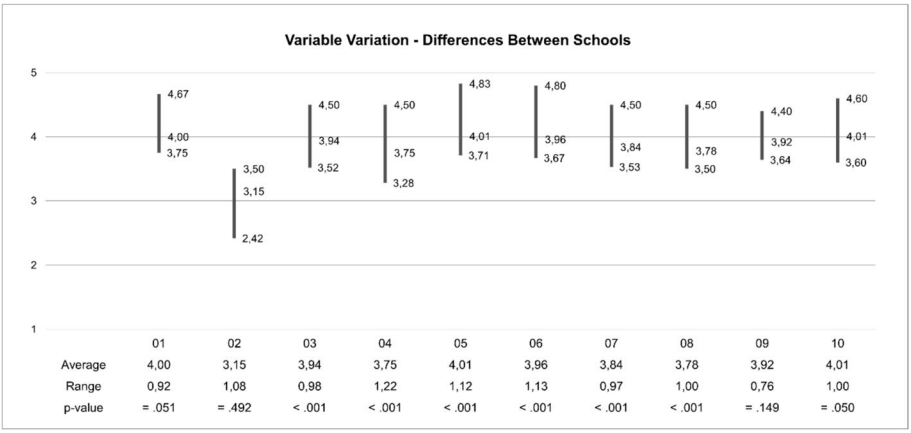

Fig. 3 Differences between schools

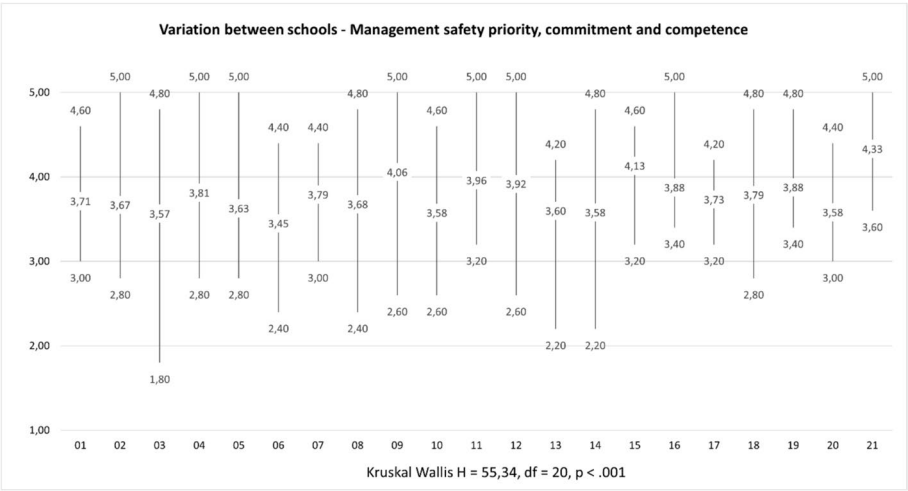

Fig. 4 School-specific differences in the dimension *management safety priority, commitment and competence.* This dimension was considered to indicate the following regarding SC: excellent ≥ 4.50, very good = 4.00–4.49, good = 3.50–3.99, fairly good = 3.00–3.49, inadequate = 2.50–2.99 and weak < 2.50

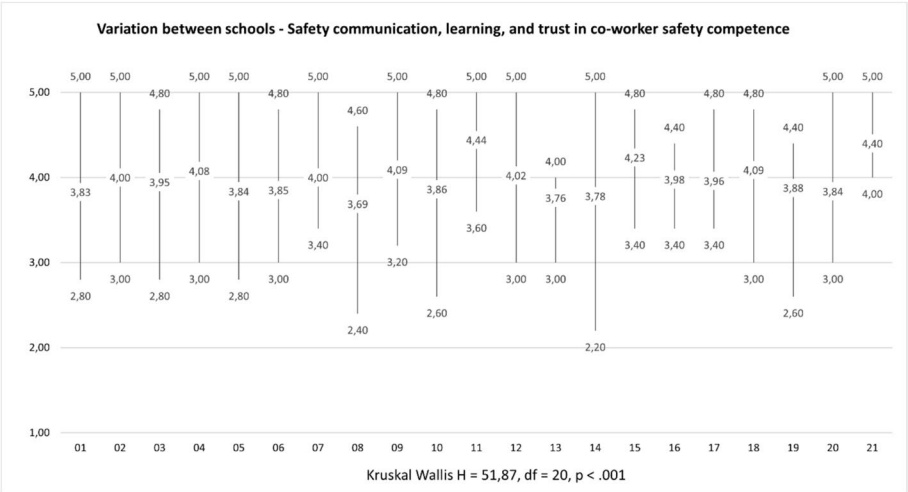

Fig. 5 Differences between schools for *safety communication, learning and trust in co-worker safety competence*

in those with 101 to 400 pupils ($p = .022$, $d = .846$) or more than 400 pupils ($p = .011$, $d = .886$). The differences were statistically significant and had a medium effect size. In small schools, *management safety priority, commitment and competence* is viewed more positively than in larger schools.

We then examined primary, secondary and integrated school staffs' views of SC in terms of its various dimensions. Figure 7 illustrates that school type has no statistical

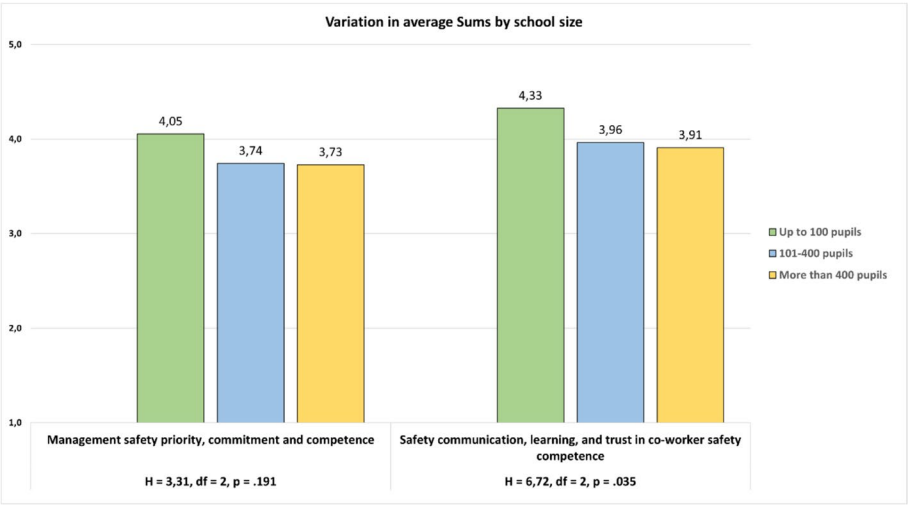

Fig. 6 Dimension-specific variation in safety climate by school size

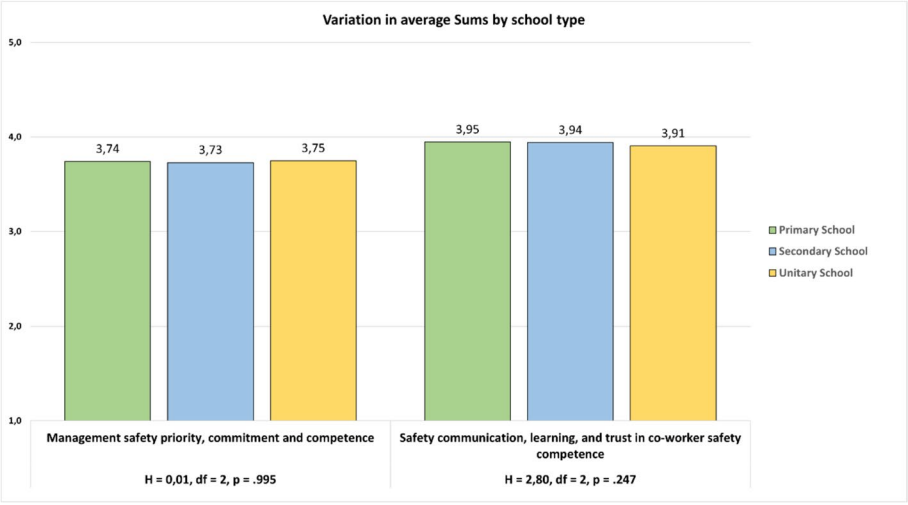

Fig. 7 Dimension-specific variation in safety climate by school type

impact on how staff evaluate *management safety priority, commitment and competence* or *safety communication, learning and trust in co-worker safety competence.* The results do not differ when the respondents are grouped by school type.

Figure 8 demonstrates that school location does not affect how staff perceive *management safety priority, commitment and competence.* The results differ only slightly among city, urban and rural schools. The differences are not statistically significant, nor are they significant regarding effect size. Furthermore, the location of the school does not appear to have a statistically significant effect on *safety communication, learning and trust in co-worker safety competence*. The differences are not statistically convincing. However, in

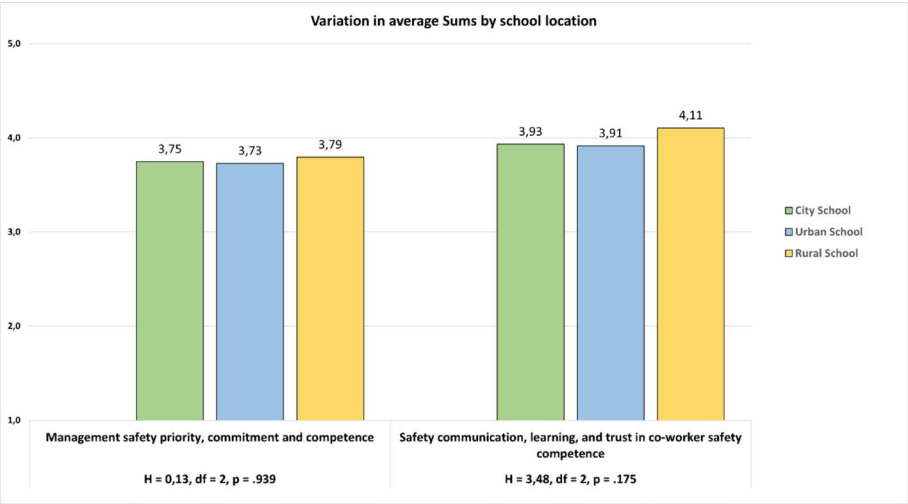

Fig. 8 Dimension-specific variation in safety climate by school location

rural schools, *safety communication, learning and trust in co-worker safety competence* was significantly more positive than in urban schools ($d = .414$) and city schools ($d = .377$) on average.

Discussion

This study explores SC in learning environments through the perceptions of staff. It was executed in 21 comprehensive schools in Finland, using two dimensions of the NOCAQC test, (Kines et al., 2011; Summers et al., 2022): *management safety priority, commitment and competence* and *safety communication, learning and trust in co-worker safety competence*, focusing on SC as perceived by staff ($N = 549$). The response rate (53.5%) was reasonable. The NOSACQ test was able to identify differences between respondents and schools, which indicates its suitability for measuring staff perceptions of SC.

As SC is considered to reflect a level of safety culture in a community (Guldenmund, 2000; Summers et al., 2022; Tear & Reader, 2023), safety culture appears significantly weaker in previous studies than the SC perceptions of school staff suggest here. Attention is drawn to the responsive way schools handle safety in learning environments, instead of planning and preparing for contingencies proactively (Lindfors et al., 2024; Rajan et al., 2022). Despite our results indicating heterogeneously positive perceptions of SC, differences are larger within than between schools. Thus, while these differences are quite moderate, they are still statistically significant regarding how the staff of a particular school perceive their SC. There is a distinct discrepancy in the results that school staff perceive SC, on average, positively, while previous studies on safety culture (Lindfors et al., 2024; Fossum et al., 2023; Rajan et al., 2022; Varjas et al., 2009; Vallinkoski & Koirikivi, 2020; Waitinen, 2011) share the view that comprehensive schools should develop safety management and community-based operating models as well as the safety competence of staff.

It may be that behind the staff's perception of SC lies a different kind of safety competence and understanding of safety culture, rather than the student view, as Capp and

others (2022) argue. As Luo states (2020), there may be differences between real and perceived SC. Perhaps, the positive perceptions of SC reflect a reactive safety culture that staff finds sufficient for its work. This would explain why the level of safety culture of schools remains reactive (Lindfors et al., 2024; Rajan et al., 2022; Waitinen, 2011), which does not produce safe learning environments.

There is no reason to believe that increasing the number of schools and respondents would have changed the results. The overall SC is positive; there are no differences between the school types and there are only small differences in favour of smaller schools and rural schools. The school system is well administered in Finland, and there are no significant differences between schools. In addition, the positive perceptions of SC may be typical of school staff in many countries because of social desirability bias (Fisher & Katz, 2000). The staff, most of whom are teachers, values safety, and they would have been unsuccessful in their work if they perceived SC negatively.

To explain positive perceptions of SC, future studies should adopt a triangulation approach. SC could be measured simultaneously for students and staff, and the external evaluation of safety culture could be included. Staff and students could be asked to describe what they understand 'safety culture in learning environments' to mean. This would allow researchers to compare the coherence of perceptions, consider the potential reasons for differences, and develop the safety culture of learning environments in a knowledge-based manner (Amsalu & Belay, 2024; Hammar Chiriac et al., 2023; van Nunen et al., 2018).

Conclusions

The staff perceived their SC positively on average (Fig. 1). Positive SC plays a significant role in learning environments (Amsalu & Belay, 2024; Voon & Ariff, 2019) because it shapes safety-related behaviour, reduces safety incidents and promotes safety and health (Burns & Machin, 2013; Dahlstedt & Foultier, 2021; Luo, 2020; McIntosh et al., 2014). Thus, SC helps create a safe learning environment (Hammar Chiriac et al., 2023).

When examining the differences between schools, attention is drawn to the fact that there are quite moderate but statistically very significant differences between schools regarding staff perceptions of SC (Fig. 3, Variables 03–08). Regarding *management safety priority, commitment and competence*, staff perceptions are remarkably heterogeneous (Fig. 4). Regarding *safety communication, learning and trust in co-worker safety competence*, staff perceptions are considerably heterogeneous (Fig. 5). School type and size did not have a statistical significance on how staff perceived SC in learning environments (Figs. 7 and 8). However, in schools with 100 pupils or fewer, the effect sizes showed that the staff assessed *safety communication, learning and trust in co-worker safety competence* significantly more positively than in larger schools, and rural staff assessed it more positively than urban and city staff (Fig. 8). In conclusion, staff perceptions of school SC are not uniform but are positive on average.

How experienced school leaders, management and the community are in managing safety seems to affect perceptions of SC among staff. This could be interpreted as indicating a proactive safety culture among schools, a safe working environment for staff (Garrick et al., 2014) in the schools sampled and a safe learning environment for students (Bradshaw et al., 2021; Díaz-Vicario & Gairín Sallán, 2017; Kitsantas et al., 2004). The result of the current study may indicate that, on average, school staff are pleased with the reactive manner of managing safety and security. Thus, future studies

must examine how safety competence explains perceptions of SC. Can staff safety competence explain differences in perceptions of SC? As the teamwork of staff increases safety and the flow of information (Benoliel, 2020), it would be interesting to compare the SC of schools with and without safety teams.

Policy and practice implications for enhancing school SC

The findings of the study emphasize the importance of embedding SC as a strategic element in educational governance and practice. First, the study's findings reveal a generally positive perception of SC among Finnish comprehensive school staff, suggesting that SC is a salient determinant of both educational quality and occupational well-being. As we know positive SC correlates with improved learning outcomes, enhanced staff and student well-being and reduced safety incidents (Burns & Machin, 2013; Díaz-Vicario & Gairín Sallán, 2017; Garrick et al., 2014). It could be institutionalized as a formal indicator within national education quality assurance and evaluation frameworks. Recognizing SC as a formal quality indicator aligns with broader educational goals of equity, well-being and inclusivity. Furthermore, embedding SC into national frameworks could enable systematic monitoring, promote accountability and support the continuous improvement of school safety practices. SC metrics could also serve as diagnostic tools for identifying systemic vulnerabilities and guiding evidence-based policy interventions.

Secondly, variability between and within schools regarding SC perceptions may indicate disparities in staff understanding and enactment of safety practices, which may reflect uneven access to professional learning and development (PLD) focused on safety competence. Strategically designed PLD initiatives could equip educators to manage complex safety challenges and foster a proactive safety culture that supports pedagogical effectiveness and psychosocial well-being.

Thirdly, disaggregated SC data should be used to design and implement tailored interventions, especially in schools with significant variability or lower aggregate SC scores. While the differences in SC perceptions seem to be moderate between the schools, the disparities are statistically significant within schools, underscoring the need for localized, data-driven approaches. Targeted interventions, such as multidisciplinary safety teams, peer-led reflective practice groups and bespoke leadership coaching, could improve communication and empower staff to co-create safe and supportive learning environments and reduce the gap between schools' safety culture and the perceptions of SC.

Finally, to understand SC as a key determinant of well-being and quality learning outcomes, it must be recognized not merely as an operational concern but as a strategic priority in educational policy and school leadership. By embedding SC into quality assurance systems, investing in educator capacity through PLD and tailoring interventions to contextual realities, education systems can advance towards equitable, safe and thriving learning environments for all.

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Declarations

Conflict of interest There is no conflict of interest or competing interest such as validity of research or financial gain regarding this article. The objectivity of this research is not affected by any financial or personal interest by the authors or the funder of the project this study was part of.

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