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EDITED BY
Maryam Ikram,
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Sérgio Gaitas,
ISPA – University Institute of Psychological, Social and Life Sciences, Portugal
Maram Jaradat,
Al Ain University, United Arab Emirates

*CORRESPONDENCE
Jolita Dudaitė
jolitad@mruni.eu

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The profile of a student's sense of (un)safety at school: social, emotional, and academic dimensions

Jolita Dudaitė[1]*, Jolanta Urbanovič[2] and Romas Prakapas[1]

[1]Institute of Educational Sciences and Social Work, Mykolas Romeris University, Vilnius, Lithuania, [2]Institute of Public Administration, Mykolas Romeris University, Vilnius, Lithuania

This study explores the profiles of students who feel safe versus unsafe at school, examining how social, emotional, and academic factors are associated with students' perceptions of safety. Drawing on data from the OECD PISA 2022 international assessment of 613,744 fifteen-year-old students across 80 countries, the analysis employs K-means clustering to identify groups of students based on their responses to four safety-related items. Students were classified into "safe" and "unsafe" clusters and compared across multiple domains, including academic behaviors, emotional well-being, social relationships, perceptions of the school environment, and socio-economic background. Findings reveal that students who feel safe at school are more likely to engage academically, report higher life satisfaction, experience stronger teacher-student and peer relationships, and come from more advantaged socio-economic backgrounds. In contrast, unsafe students tend to show academic disengagement, emotional distress, weaker social connections, and are more likely to experience bullying and attend schools perceived as less supportive or secure. These results underscore the relevance of school safety as a multidimensional phenomenon associated with relational, emotional, and equity-related aspects of students' school experiences. The study contributes to a more holistic understanding of school safety as a multidimensional construct closely linked to students' educational experience and well-being.

KEYWORDS
academic engagement, emotional health, PISA 2022, school safety, social relationships, socio-economic and cultural status, student well-being

1 Introduction

Students' sense of safety at school is a fundamental component of their emotional well-being, psychological health, academic motivation, and overall learning experience. In this study, students' sense of safety is conceptualized as a subjective perception of physical, emotional, and social security within the school environment, as reflected in students' self-reports collected in PISA. While physical security has traditionally been emphasized in educational policy, growing research indicates that emotional and psychological safety are equally critical, exerting long-term effects on students' engagement, social adaptation, and academic achievement (Cornell and Mayer, 2010; Fisher et al., 2016). For instance, students who experience bullying or a constant sense of threat are more likely to skip classes, feel socially excluded, and eventually disengage from school altogether (Juvonen et al., 2003).

Research further shows that students' sense of safety emerges from a complex interplay of individual, familial, school-based, and broader sociocultural factors (Bronfenbrenner, 1979; Yablon and Addington, 2018). These dynamics go beyond objective threats or physical infrastructure – students may feel unsafe even in well-secured schools if they lack supportive teacher relationships, feel disconnected from peers, or experience emotional isolation (Fisher et al., 2016; Williams et al., 2018). It is thus essential to conceptualize school safety as a multidimensional psychosocial construct shaped by contextual, relational, and emotional processes.

Modern schools often operate under intense pressure to deliver academic results, frequently overlooking the critical role that a safe and nurturing environment plays in student success (Aldridge and McChesney, 2018). At the same time, many countries lack comprehensive, comparative data on what drives students' safety perceptions or how these perceptions intersect with emotional, social, and academic outcomes. The OECD's PISA 2022 survey provides a unique opportunity to examine these relationships on a global scale among 15-year-old students from diverse educational and cultural contexts.

This study, grounded in Bronfenbrenner's ecological systems theory as well as psychological safety and social capital frameworks, aims to identify and compare the profiles of students who feel safe versus unsafe at school. Within this integrated framework, ecological theory explains how safety is shaped across interacting environmental levels, psychological safety highlights students' emotional and intrapersonal experiences, and social capital emphasizes relational trust, belonging, and support, jointly informing the domains examined in this study. Using PISA 2022 data, the analysis explores academic behaviors, emotional well-being, social relationships, perceptions of the school environment, and socioeconomic background. The goal is to uncover how these interconnected domains shape students' safety perceptions and to provide insights into which factors most strongly distinguish students with high versus low feelings of school safety.

While previous research has examined the relationship between school safety and individual aspects of the educational environment – most commonly academic performance – there is a lack of an integrated approach that simultaneously considers a broad range of factors. Moreover, most existing studies are conducted within the context of a single country. Moreover, much of the existing literature relies on single-country samples and variable-centered regression approaches, limiting cross-cultural generalizability and the ability to capture holistic student experience patterns. This study addresses these gaps by offering a comprehensive analysis of student safety perceptions based on data from all countries participating in the OECD PISA assessment, enabling the identification of distinct profiles of students who feel safe versus unsafe at school across diverse educational systems.

A key contribution of the present study is the use of a person-centered clustering approach, which enables the identification of empirically derived student safety profiles. Unlike traditional regression analyses that estimate average relationships between variables, clustering reveals co-occurring configurations of social, emotional, and contextual characteristics, providing a more holistic understanding of how students experience safety.

The findings of this study are expected to inform not only education researchers, but also policymakers and school communities striving to build more inclusive, psychologically secure, and supportive learning environments for all students.

2 Theoretical assumptions of the study

As has already been mentioned, the sense of safety of students in school is a multifaceted phenomenon that encompasses both the physical and emotional, academic and psychological aspects. It is not only an objective assessment of the state of safety (e.g., the presence of protective equipment), but also the subjective perception of students how they feel in their learning environment is closely related to students' personal experiences, values, and general school climate (Perumean-Chaney and Sutton, 2013; Fisher et al., 2016). A sense of safety can be understood as a subjective state that is determined by a variety of factors, including the level of bullying experienced or observed, the school climate, and the order and structure of the school (Yablon and Addington, 2018). Accordingly, this study focuses on students' self-reported and experienced safety, aligning the theory with the person-centered empirical approach. Not only direct violence or bullying, but also indirect factors, such as rumors of unsafe situations or teacher-student conflicts, can reduce the sense of safety (Steinberg et al., 2011). Research shows that direct and indirect bullying can significantly reduce students' sense of safety at school (Dietrich et al., 2023). In addition, some students may feel unsafe due to their personal tendencies to fears or because of past traumas, even if there are no objective threats in their environment (Fisher and all, 2016). The scientific literature explores and analyzes various factors that help to understand the contextuality of student safety in school.

To provide a coherent conceptual foundation, this study integrates three complementary theoretical perspectives. Ecological systems theory explains how students' perceived safety is shaped across interacting environmental levels, from family and peer relationships to school structures and broader sociocultural contexts. Psychological safety theory emphasizes the subjective emotional and experiential dimension of feeling secure, including stress regulation, emotional control, and well-being. Social capital theory highlights the role of relational trust, belonging, and supportive social connections in shaping students' safety perceptions. Together, these perspectives form an integrated conceptual model that guides the selection of domains analyzed in the present study.

Therefore, the theoretical basis of this study is based on Bronfenbrenner's theory of ecological development, which provides an opportunity to holistically analyze students' sense of safety in a variety of interrelated contexts, from individual characteristics to family, school, and wider social environment. In addition, theories of psychological safety and social capital are additionally relied upon, which contribute to a deeper understanding of emotional and social factors.

Bronfenbrenner's theory of ecological development is suitable for analyzing students' sense of safety because it allows us to investigate how various factors, such as family support (microsystem), teacher-peer relationships (mesosystem), school policy or regional context (exosystem), and cultural norms (macrosystem), shape subjective perceptions of safety. For example, in countries with a high level of social trust, students are more likely to feel safe even in objectively inferior conditions. In addition, this theory also allows for the study of the effects of the "chronosystem" – the perspective of time – i.e. how long-term experiences (e.g., pandemic or migration) can affect a sense of safety.

According to Bronfenbrenner's Ecological Theory of Development (1979), micro- and mesosystems of schools have a fundamental influence on the quality and behavior of a student's

education. Students who feel unsafe at school are more likely to miss classes, demonstrate less involvement in the educational process, and may experience negative consequences in the long run, such as academic lag or withdrawal from the education system (Halidu and Kotera, 2024). Additionally, Lian et al. (2021) have shown that students who repeat a class or face grades with failure are more likely to experience bullying, which further diminishes their sense of safety. Meanwhile, a study by Rathmann et al. (2020) suggests that students with clearer plans for the future are more engaged and have a sense of safety.

From this ecological perspective, safer students are expected to show more adaptive academic participation and orientation toward the future:

> *H1*: Students who feel safe at school (a) demonstrate higher academic engagement, (b) have clearer future plans, and (c) receive fewer disciplinary actions than those who feel unsafe.

According to the theory of social capital (Putnam, 2000), strong interpersonal connections and trust create a safe and supportive environment. A study by Lenzi et al. (2017) found that positive teacher-student relationships increase students' sense of safety. Zacharia and Yablon (2022) emphasize that even in the case of bullying, a positive school climate can counteract its negative impact. Williams et al. (2018) argue that a sense of belonging to a school community is closely related to emotional safety and social stability.

From the perspective of social capital theory, supportive interpersonal relationships and a strong sense of belonging function as key mechanisms through which safety is experienced in school settings. Therefore, students who feel safe are expected to report stronger relational support across school and family contexts, leading to the following hypothesis:

> *H2*: Students who feel safe at school (a) experience greater teacher support, (b) stronger family support, and (c) a stronger sense of community spirit than those who feel unsafe.

Psychological safety theory (Sheketera et al., 2014; Van Ryzin et al., 2009) argue that a safe psychological environment allows students to express their thoughts freely, reducing the fear of being rejected or bullied. Gagani et al. (2021) indicates that the ability to manage stress is associated with emotional stability and a sense of safety. Rathmann et al. (2020) show that greater life satisfaction correlates with higher psychological safety. Students who experience less bullying and are able to manage stress have a better chance of feeling safe in a school environment.

Thus, perceived safety should be associated with stronger emotional resilience and well-being.

> *H3*: Students who feel safe at school (a) demonstrate stronger emotional resilience and (b) higher levels of life satisfaction than those who feel unsafe.

Mayer et al. (2021) and Borum et al. (2010) note that the physical environment of the school, its quality and safety measures affect the psychological well-being of students. Research shows that a tidy, clean, well-groomed environment is associated with higher emotional comfort in students (Williams et al., 2018). In addition, by combining a strict but empathetic system of school order (Gregory et al., 2010), students feel in a more structured, predictable environment, which strengthens their sense of safety.

Integrating ecological and psychological perspectives further suggests that students' perceptions of the physical and social school environment contribute directly to their experienced sense of safety. This reasoning leads to the following hypothesis:

> *H4*: Students who feel safe at school perceive the school's physical and social environment as more structured, orderly, and supportive than those who feel unsafe.

Ecological theory (Bronfenbrenner, 1979) emphasizes that the development of the student also depends on the exosystem – such structural factors as the socio-economic situation of the family. A study by Rolfe (2022) found that students from lower socioeconomic backgrounds experience less support, more stress, and feelings of unsafety. Horanicova et al. (2022) revealed that such students are more likely to face challenges related to learning resources and less emotional support. Together, these factors increase the likelihood that students will not feel safe at school.

Finally, ecological theory highlights the role of structural and socioeconomic contexts in shaping students' developmental experiences and perceived security. Consequently, the following hypothesis is formulated:

> *H5:* Students who feel safe at school are more likely to come from families with higher socio-economic status than those who feel unsafe.

In conclusion, this study is based on three main theoretical approaches – ecological, psychological safety and social capital – which allow for a systematic and comprehensive analysis of the multifaceted nature of students' sense of safety (see Figure 1).

The chosen Bronfenbrenner model of ecological development provides an opportunity to assess how students' sense of safety is formed in the interaction of different levels of the environment, from personal and family to school and societal factors. Theories of psychological safety and social capital contribute to a deeper understanding of the importance of the emotional and interpersonal environment, and an integrated theoretical approach underpins the formulation of hypotheses and the design of the study. This theoretical structure makes it possible to reveal the main factors of students' sense of safety: academic experience, social connections, emotional health, school environment and economic status. Importantly, across all domains, school safety is conceptualized as a subjective and relationally embedded experience, consistent with the person-centered analytical strategy adopted in this study.

3 Methodology

The analysis in this study is based on data from the OECD PISA 2022 international assessment of fifteen-year-olds. The study examines combined data from all participating countries. In total, 613,744 fifteen-year-old students from 80 countries participated in the 2022 PISA cycle. In each country, the sample was selected probabilistically to ensure representativeness of fifteen-year-olds from various geographic regions, different types of localities, and diverse school types.

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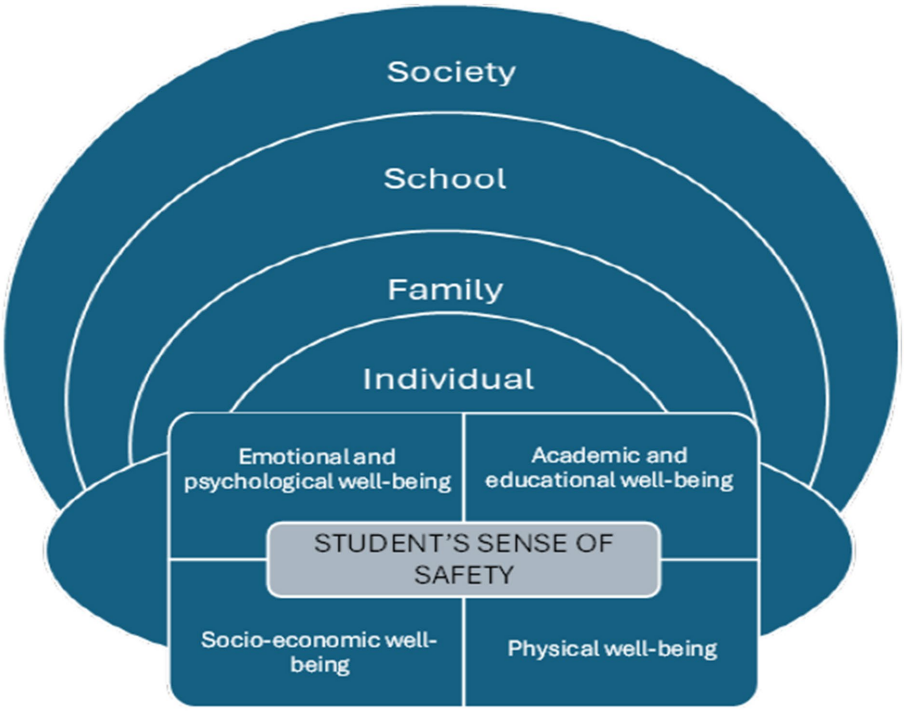


FIGURE 1
Theoretical model of students' sense of safety.

Given the complex sampling design of PISA, all analyses were conducted using student-level sampling weights provided by the OECD in order to ensure population-representative estimates across participating countries. These weights account for the stratified two-stage sampling procedure, in which schools are sampled first and students are sampled within schools. Standard errors were estimated using conventional procedures appropriate for large-scale survey data. Although students are nested within schools and countries, the primary aim of the study was descriptive and comparative rather than causal or multilevel modeling. Therefore, clustering at the school or country level was not explicitly modeled, and results should be interpreted as indicative of overall patterns rather than precise population parameters at specific hierarchical levels.

The aim of the study is to identify which social, emotional, and academic factors characterize the profile of a safe and an unsafe student and how these profiles differ from each other. In this study, profiles describe the distinct patterns of social, emotional, and academic characteristics that differentiate students who feel safe at school from those who feel unsafe. The analysis is based on PISA survey questions regarding the sense of safety and the calculated overall safety index. Four survey questions asked students whether they agree ("strongly disagree," "disagree," "agree," "strongly agree") that they feel safe on their way to school, on their way home from school, in classrooms and at other places at school. Answers to the four statements were used to build the index of feeling safe at school with an average value of zero and a standard deviation of one across OECD countries. Positive values in the index indicate that students reported feeling safer at and around school than did students on average across OECD countries.

Students were clustered into three groups based on the safety perception index using the K-means clustering method. This method was chosen because it is one of the most widely used and robust approaches for identifying homogeneous subgroups within large datasets, allowing for clear differentiation between students with distinct levels of perceived safety. K-means was particularly appropriate in this study due to its ability to efficiently handle large samples, its interpretability, and its suitability for continuous variables such as the safety perception index. Compared to hierarchical or density-based methods, K-means provides a straightforward partitioning solution that aligns well with the study's objective of distinguishing student groups based on their safety perceptions. The three-cluster solution was selected based on the distribution of the safety perception index and the interpretability of the clusters. The mean index score within the first cluster (safe) was 0.8654, within the second cluster (moderately unsafe) −0.7334, and within the third cluster (unsafe) −1.6693. The inclusion of a moderate cluster allowed for a more accurate identification of the two extreme groups (safe and unsafe students) while avoiding potential overlap between borderline cases. For subsequent analyses, only the safe and unsafe clusters were compared to ensure a clear distinction between students with consistently positive versus consistently negative perceptions of school safety. This decision was made to strengthen the contrast between the two profiles and to enhance the interpretive clarity of the findings. Although clustering was performed on a single standardized safety perception index, a person-centered approach was used to empirically distinguish students with clearly different subjective experiences of school safety. Retaining this middle cluster during the clustering stage reduced overlap between extreme groups and strengthened the contrast between the two profiles of interest. Only the safe and unsafe clusters were included in subsequent analyses, as the aim of the study was to compare clearly differentiated student profiles rather than students with mixed or borderline perceptions of safety. Clustering was preferred over percentile-based cutoffs because it allowed group boundaries to be determined empirically rather than imposed arbitrarily. While alternative model-based approaches could provide additional insights, the chosen clustering

strategy was considered appropriate given the study's comparative focus and the use of a single indicator to define group membership. To determine the profiles, various factors were analyzed and compared between students in the safe and unsafe clusters. Independent-samples t-tests were used to compare safe and unsafe student groups across individual social, emotional, academic, and contextual factors, as the primary objective was to examine mean differences between clearly defined profiles. Given the large sample size, statistical significance was interpreted cautiously, and greater emphasis was placed on effect sizes (Cohen's d) to assess the substantive relevance of observed differences rather than statistical significance alone.

Although multiple comparisons were conducted, formal correction procedures were not applied, as the analyses were theory-driven and exploratory in nature, focusing on consistent patterns of differences across domains rather than isolated statistically significant results. The interpretation of findings therefore prioritizes the magnitude and coherence of effects across related indicators.

The selection of explanatory variables was guided by a theoretical framework that conceptualizes students' sense of school safety as a multidimensional construct encompassing social relationships, emotional well-being, academic experiences, and contextual factors. Variables were chosen to represent these theoretically relevant domains while being constrained by the availability and operationalization of indicators in the PISA 2022 dataset. As a result, the analysis relies on proxy measures that best approximate key constructs within the limits of secondary data, rather than on exhaustive or fully theory-specific instruments. To determine the profiles of safe and unsafe students, such factors were examined: academic experience (grade repetition, missing school for more than 3 months, skipping classes or days of school, arriving late to school, highest expected educational level, expected occupation status, clear idea about future job), social connections (quality of student-teacher relationships, sense of belonging, family support), emotional well-being (stress resistance, emotional control, students' life satisfaction, being bullied), school environment (school safety risks, school quality), and the student's index of socio-economic and cultural status (ESCS).

The most complex construct is the student's socio-economic and cultural status (ESCS) index. This index is a composite measure based on indicators related to family background, including parents' highest level of education (in years), parents' highest occupational status, and household possessions. The parents' highest level of education was converted into an estimated number of years of education. This conversion was based on the cumulative years of education associated with the highest level of parental education across countries, according to ISCED levels. The occupational status of both parents was derived from responses to open-ended questions about their occupations (father's occupational status, mother's occupational status, as well as the highest occupational status of either parent). These responses were coded into four-digit ISCO (2007) classifications and then mapped to the international socio-economic index of occupational status. Household possessions served as a proxy for family wealth. Students reported the availability of various items at home, including the number of books and country-specific household items that are considered relevant indicators of family wealth in the national context. The home possessions index summarizes these reported household and possession items.

To compute the socio-economic and cultural status (ESCS) index, missing values for one of the three components were imputed. However, if data were missing for more than one component, the SEC index was not calculated, and a missing value was assigned. The final SEC index was computed by giving equal weight to all three components. It was then standardized, with a mean of 0 representing the average score of an OECD student and a standard deviation of 1 across OECD countries with approximately equal weighting. For further details on the construction of the ESCS index, see OECD, 2023; OECD, 2024. The ESCS index used in this study was constructed following the standard OECD PISA procedures, including the imputation of missing values when information was available for at least one of the three ESCS components. Imputation was performed by the OECD using internationally standardized methods to ensure cross-country comparability (OECD, 2023). Cases with missing information on more than one component were excluded from the ESCS calculation. Although no additional sensitivity analyses were conducted, ESCS was used as a background indicator, and results were interpreted cautiously with an emphasis on overall patterns rather than isolated effects.

Other analyzed social, emotional, and academic factors were constructed in a way that positive values indicate a stronger expression of the respective student trait or a higher level of student agreement (for a more detailed explanation of these variable constructions, see OECD, 2023).

4 Findings

To determine whether the profiles of students who feel safe and unsafe at school differ, independent samples t-tests were conducted to analyze differences in various educational factors between these two comparison groups. Given the very large sample size, statistical significance was expected even for small differences between groups. Therefore, the interpretation of findings primarily focuses on effect sizes (Cohen's d) as indicators of substantive relevance, rather than on statistical significance alone. Differences with small effect sizes are interpreted as statistically detectable but substantively modest, whereas medium to large effects are highlighted as representing meaningful contrasts between the profiles of safe and unsafe students. All findings are interpreted as associations rather than causal effects, given the cross-sectional and observational nature of the data. The results for academic experience indicators are presented first (see Table 1).

The table shows while several differences were statistically significant ($p < 0.001$), the effect sizes were generally small, indicating limited practical significance.

Students who felt unsafe at school were more likely to have repeated a grade ($\bar{X} = 0.14$, SD = 0.346) compared to those who felt safe ($\bar{X} = 0.08$, SD = 0.275), $t(85408.6) = -38.49$, $p < 0.001$, $d = -0.20$. They were also more likely to have missed school for more than three months ($\bar{X} = 0.16$ vs. 0.08), $t(80856.6) = -50.57$, $p < 0.001$, $d = -0.27$, and to have skipped classes or days of school ($\bar{X} = 0.42$ vs. 0.32), $t(93832.4) = -47.87$, $p < 0.001$, $d = -0.22$. Similarly, they reported being late more often ($\bar{X} = 0.75$ vs. 0.58), $t(91913.8) = -47.77$, $p < 0.001$, $d = -0.22$.

No significant difference was found in the highest expected level of education ($t(68411.3) = 0.43$, $p = 0.664$, $d = 0.00$). A statistically significant but negligible difference was observed in expected occupational status ($t(58457.2) = 2.90$, $p = 0.004$, $d = 0.02$). Finally, no meaningful difference was found in having a clear idea about a future job,

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TABLE 1 Differences in academic experience factors between students who feel safe and unsafe at school.

Factors	Safe/Unsafe	*N*	$\bar{X}$	SD	t	df	*p*	Cohen's d
Grade repetition	Safe	243514	0.08	0.275	−38.492	85408.6	0.000	−0.196
	Unsafe	63468	0.14	0.346				
Missing school for more than 3 months	Safe	231935	0.08	0.271	−50.570	80856.6	0.000	−0.271
	Unsafe	61895	0.16	0.366				
Skipping classes or days of school	Safe	245567	0.32	0.466	−47.869	93832.4	0.000	−0.221
	Unsafe	63006	0.42	0.494				
Arriving late for school	Safe	243904	0.58	0.732	−47.767	91913.8	0.000	−0.223
	Unsafe	62326	0.75	0.785				
Highest expected educational level	Safe	194272	6.91	2.073	0.434	68411.3	0.664	0.002
	Unsafe	46676	6.91	2.179				
Expected occupation status	Safe	160047	66.9	19.505	2.898	58457.2	0.004	0.017
	Unsafe	39115	66.5	20.088				
Clear idea about future job	Safe	190318	0.84	0.366	−44.014	306980.0	0.000	−0.009
	Unsafe	46336	0.84	0.363				

despite the very large sample size (t (306980) = −44.01, $p < 0.001$, d = −0.01).

Although most differences in academic experience between safe and unsafe students reached statistical significance, the associated effect sizes were small, indicating that these differences reflect modest substantive distinctions rather than pronounced profile contrasts.

In contrast to academic indicators, several social and emotional factors exhibited medium to large effect sizes, suggesting that these domains constitute core dimensions differentiating the profiles of students who feel safe and unsafe at school. The results of the t–test for the social connection factors of students who feel safe and unsafe at school are presented in Table 2.

The results of the analysis revealed significant differences in social connection factors between students who feel safe and unsafe at school. In terms of the quality of student-teacher relationships, students who reported feeling safe at school had a higher mean score ($\bar{X}$ = 0.24, SD = 1.129) compared to their peers who felt unsafe ($\bar{X}$ = − 0.30, SD = 1.083). The t-test indicated a statistically significant difference (t (87426.9) = 102.54, $p < 0.001$), with a moderate effect size (Cohen's d = 0.48), suggesting that students who feel safe perceive their relationships with teachers to be of better quality.

A similar pattern was observed with the sense of belonging to school. Students who felt safe at school showed a stronger sense of belonging ($\bar{X}$ = 0.18, SD = 1.041) compared to those who felt unsafe ($\bar{X}$ = − 0.58, SD = 0.865). This difference was highly significant (t (113533.3) = 185.95, $p < 0.001$), with a large effect size (Cohen's d = 0.75), indicating that students who perceive their school as a safe environment are more likely to feel a sense of belonging.

Lastly, the analysis of family support also revealed a significant difference between the two groups. Students who felt safe reported slightly higher family support ($\bar{X}$ = 0.10, SD = 1.068) than those who felt unsafe ($\bar{X}$ = − 0.25, SD = 1.115). The t-test demonstrated a significant difference (t (254551) = 66.65, $p < 0.001$), with a moderate effect size (Cohen's d = 0.33), suggesting that safe students generally perceive more support from their families.

These findings highlight that students who feel safe at school tend to report more positive social connections, particularly in terms of their relationships with teachers, sense of belonging, and family support.

The profiles of students who feel safe and unsafe at school were further analyzed with respect to emotional health indicators. The difference in emotional health indicators between students who feel safe and unsafe is presented in Table 3.

The analysis of emotional health factors between students who feel safe and unsafe at school reveals significant differences across all indicators. Students who feel safe at school demonstrated higher levels of stress resistance ($\bar{X}$ = 0.13, SD = 1.019) compared to those who feel unsafe ($\bar{X}$ = − 0.40, SD = 1.134). The difference was statistically significant (t (34004.0) = 69.479, $p < 0.001$) with a moderate effect size (Cohen's d = 0.51), suggesting an association between a sense of safety and higher stress resilience. A similar pattern was observed for emotional control, with students feeling safe showing higher emotional control ($\bar{X}$ = 0.13, SD = 1.032) than those who feel unsafe ($\bar{X}$ = − 0.31, SD = 1.065). This difference was also statistically significant (t (66654.0) = 78.285, $p < 0.001$) and of moderate effect size (Cohen's d = 0.42), indicating that school safety is associated with higher levels of students' ability to manage their emotions effectively.

In terms of life satisfaction, students who felt safe at school reported greater satisfaction ($\bar{X}$ = 7.46, SD = 2.418) compared to their unsafe peers ($\bar{X}$ = 5.99, SD = 3.042), with the difference again being statistically significant (t (78893.6) = 107.027, $p < 0.001$) and a moderate effect size (Cohen's d = 0.57). This suggests that students' overall sense of well-being is positively influenced by their perception of safety at school, and this effect is on par with the improvements in emotional control and stress resistance. In contrast, experiences of being bullied were notably higher among students who felt unsafe, with unsafe students reporting a mean score of 0.26 (SD = 1.246) compared to −0.39 (SD = 0.969) for safe students. The difference was highly significant (t (84336.9) = −121.970, $p < 0.001$) with a large effect size (Cohen's d = −0.63), indicating that a feeling of safety at school is strongly associated with a lower likelihood of being bullied.

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TABLE 2 Differences in social connections factors between students who feel safe and unsafe at school.

Factors	Safe/Unsafe	*N*	$\bar{X}$	SD	t	df	*p*	Cohen's d
Quality of student-teacher relationships	Safe	214170	0.24	1.129	102.538	87426.9	0.000	0.479
	Unsafe	54635	−0.30	1.083				
Sense of belonging (to School)	Safe	242747	0.18	1.041	185.946	113533.3	0.000	0.749
	Unsafe	62451	−0.58	0.865				
Family support	Safe	204076	0.10	1.068	66.645	254551.0	0.000	0.331
	Unsafe	50477	−0.25	1.115				

TABLE 3 Differences in emotional health factors between students who feel safe and unsafe at school.

Factors	Safe/Unsafe	*N*	$\bar{X}$	SD	t	df	*p*	Cohen's d
Stress resistance	Safe	128420	0.13	1.019	69.479	34004.0	0.000	0.512
	Unsafe	25411	−0.40	1.134				
Emotional control	Safe	182986	0.13	1.032	78.285	66654.0	0.000	0.421
	Unsafe	44678	−0.31	1.065				
Life Satisfaction	Safe	213070	7.46	2.418	107.027	78893.6	0.000	0.571
	Unsafe	57926	5.99	3.042				
Being bullied	Safe	246706	−0.39	0.969	−121.970	84336.9	0.000	−0.628
	Unsafe	63528	0.26	1.246				

These results collectively demonstrate that students who feel safe at school report more positive emotional health outcomes, such as better stress resistance, emotional control, and life satisfaction. Conversely, students who feel unsafe at school experience higher levels of bullying and poorer emotional health. The findings underscore the importance of fostering a safe school environment to support the emotional well-being of students.

Taken together, social and emotional indicators show substantially larger effect sizes than academic indicators, suggesting that students' sense of safety is more strongly embedded in relational and affective experiences than in formal educational trajectories.

Next, in order to compare the profiles of students who feel safe and unsafe at school, several school environment factors were analyzed. The results are presented in Table 4.

The analysis of school environment factors revealed statistically significant differences between students who feel safe and those who feel unsafe at school. Two key indicators – school safety risks and perceived school quality – were examined, both showing notable disparities between the two groups.

With regard to school safety risks, students who reported feeling safe at school perceived significantly fewer risks ($\bar{X} = -0.04$, SD = 0.973) compared to those who felt unsafe ($\bar{X} = 0.35$, SD = 1.175). The difference was highly significant (t (80864.3) = −74.933, $p < 0.001$) and reflected a small-to-moderate effect size (Cohen's d = −0.39). These results indicate that perceptions of school safety are closely aligned with how students assess the presence of threats or unsafe conditions within their school environment.

In terms of school quality, students who feel safe evaluated their school environment more positively ($\bar{X} = 0.15$, SD = 1.014) than students who feel unsafe ($\bar{X} = -0.04$, SD = 1.031). Although the effect size was small (Cohen's d = 0.19), the difference was statistically significant (t (50955.0) = 17.225, $p < 0.001$), indicating that perceived safety at school is associated with more favorable assessments of overall school quality.

Taken together, these findings demonstrate that students who feel safe not only perceive fewer safety risks but also rate the general quality of their school environment more positively than their peers who feel unsafe. These differences reinforce the idea that students' sense of safety is intricately linked to their broader evaluations of the school context.

The final factor analyzed to compare the profiles of students who feel safe and unsafe at school was the students' home socio-economic and cultural environment. This is a composite index reflecting the social, economic, and cultural status of students' family background. The results are presented in Table 5.

The analysis of students' home socio-economic-cultural background revealed statistically significant differences between students who feel safe and those who feel unsafe at school. Specifically, the index of socio-economic and cultural Status (ESCS) was significantly higher among students who reported feeling safe.

Students who felt safe at school had a higher mean ESCS score ($\bar{X} = -0.18$, SD = 1.105) compared to students who felt unsafe ($\bar{X} = -0.56$, SD = 1.172). The difference was statistically significant (t (93965.1) = 74.227, $p < 0.001$) and represented a small-to-moderate effect size (Cohen's d = 0.34). These results show that students from more advantaged socio-economic and cultural backgrounds are more likely to feel safe at school.

This finding indicates a clear association between students' home environments and their perceptions of safety at school. Students with higher socio-economic and cultural capital may benefit from more stable living conditions, greater parental support, and access to educational resources, all of which could contribute to a greater sense of safety in the school setting. Conversely, students from less advantaged backgrounds may experience more challenges – both at home and in

TABLE 4 Differences in school environment factors between students who feel safe and unsafe at school.

Factors	Safe/Unsafe	*N*	$\bar{X}$	SD	t	df	*p*	Cohen's d
School safety risks	Safe	219865	−0.04	0.973	−74.933	80864.3	0.000	−0.389
	Unsafe	58363	0.35	1.175				
School quality	Safe	40901	0.15	1.014	17.225	50955.0	0.000	0.192
	Unsafe	10056	−0.04	1.031				

TABLE 5 Differences in socio-economic and cultural status between students who feel safe and unsafe at school.

Factors	Safe/Unsafe	*N*	$\bar{X}$	SD	t	df	*p*	Cohen's d
Index of socio-economic and cultural status (ESCS)	Safe	245068	−0.18	1.105	74.227	93965.1	0.000	0.343
	Unsafe	63077	−0,56	1,172				

school – that could negatively influence their perceptions of safety. Overall, these results highlight the importance of considering socio-economic and cultural context when examining students' feelings of safety at school.

Taken together, the results point to coherent and differentiated profiles of students who feel safe and unsafe at school rather than isolated group differences. Students who feel safe are consistently characterized by more positive social relationships (stronger sense of belonging, higher-quality student-teacher relationships, and greater family support), better emotional functioning (higher stress resistance, emotional control, and life satisfaction, alongside lower exposure to bullying), and more favorable perceptions of the school environment. In contrast, unsafe students display a cumulative pattern of social disconnection, emotional vulnerability, and heightened exposure to risk within the school context, accompanied by less supportive environmental and socio-economic conditions.

It should also be noted that the focus on extreme groups (students who consistently felt safe versus consistently felt unsafe) was a deliberate analytical choice aimed at clarifying profile distinctions. This approach likely amplified differences in domains closely related to subjective school experiences, particularly social and emotional factors, and should be considered when interpreting the magnitude of observed effect sizes.

Overall, the findings indicate that while many differences between safe and unsafe students are statistically detectable due to the large sample size, the most meaningful profile distinctions are concentrated in social, emotional, and relational domains, where effect sizes suggest substantively relevant contrasts, whereas academic experience indicators reflect comparatively modest differences.

5 Discussion

This study examined the relationship between students' perceived safety at school and various academic, social, emotional, environmental, and socio-economic factors. The findings reveal distinct profiles for students who feel safe compared to those who do not, underscoring the multifaceted nature of school safety and its impact on student experiences. Given the cross-sectional and observational nature of the data, all interpretations in this section are framed in terms of associations rather than causal effects. Moreover, the observed relationships may be bidirectional, with students' perceptions of safety both influencing and being influenced by their social, emotional, and academic experiences.

Because the analyses rely on bivariate comparisons between extreme groups, the observed differences should be interpreted with caution. The associations described in this study may partly reflect unobserved confounding factors at the school or country level, as well as shared variance among related constructs, rather than distinct underlying mechanisms.

Throughout the Discussion, hypotheses are considered supported when the observed patterns of association align with theoretical expectations, rather than being interpreted as definitively confirmed.

5.1 Academic engagement and behavior

While statistically significant differences were observed between students who felt safe and those who did not, the effect sizes were generally small (Cohen's d ranging from −0.20 to −0.27), indicating limited practical significance. Although the statistical differences are small, these data allow us to explore plausible explanatory associations between feelings of unsafety and poorer academic engagement.

One of the main mechanisms that can explain these relationships is the impact of feelings of unsafety on emotional well-being and student motivation. As shown by Lian et al. (2021), repeating a grade is often associated with an increased risk of bullying, which increases social anxiety, reduces the sense of belonging to the school community, and causes emotional withdrawal from academic activities (Lian et al., 2021). Thus, repeating a grade is associated with social and emotional stress that may disrupt student's ability to engage in lessons, encouraging absenteeism, tardiness, or lack of activity.

Rathmann et al. (2020) further note that repeating a grade affects not only social but also personal psychological factors – for example, it lowers self-esteem, causes shame, and weakens belief in one's academic abilities (Rathmann et al., 2020). As a result, students may consciously distance themselves from learning, even if their abilities allow them to achieve good results. This pattern may reflect a reinforcing cycle in which feelings of unsafety co-occur with behavioral problems (e.g., tardiness, truancy), and these behavioral issues further reduce academic success, which can lead to grade repetition.

This study showed that students who felt unsafe did not have lower academic expectations or clarity about their future careers compared to students who felt secure. This suggests that while long-term goals remain intact, short-term factors related to daily behavior at school are vulnerable. In other words, a student may want to pursue higher education or a good career, but feeling unsafe in the school environment (perhaps related to bullying or stigmatization due to repeating a grade) creates barriers to everyday academic behavior, such as avoidance, passivity, or disengagement from learning activities.

In summary, the statistically significant relationships between feelings of unsafety at school and academic behavior identified in this study are consistent with theoretically expected associations between these factors. Repeating a grade and experiencing bullying can lead to emotional and motivational problems, which directly result in reduced student engagement in the learning process. Although associations between these factors on long-term goals (such as future education or career aspirations) appears limited, their relationship with daily academic behaviors is modest and variable, and should be interpreted cautiously. Taken together, the academic experience results indicate that perceived school safety is linked to consistent but modest differences in academic behaviors, suggesting that academic engagement is part of the broader safety-related profile, but not its most distinctive dimension.

The results of the study suggest that hypothesis H_1 – students who feel safe at school (a) demonstrate higher academic engagement, (b) have clearer future plans, and (c) receive fewer disciplinary actions than those who feel unsafe – was partially supported. Sub-hypotheses a and c were confirmed, whereas b was not. The data show that students who feel safe are less likely to repeat a grade, skip school, be late or absent from class, which indicates higher academic engagement. These differences are statistically significant ($p < 0.001$), and the effect sizes (Cohen's d from −0.20 to −0.27) indicate a consistent, albeit moderate, association between feelings of safety and academic behavior. However, no significant differences between the groups were found in terms of planned highest level of education, clarity of career expectations, or expected employment status, suggesting that students' long-term educational goals remain similar regardless of their sense of safety at school. In summary, the sense of safety at school is associated with students' daily academic behavior, but less of an impact on the clarity of their future plans.

5.2 Social connections and school climate

The findings of this study suggest that students who feel safe at school report more positive social connections across key factors such as student-teacher relationships, sense of belonging, and family support. These results align with previous research, which indicates that a safe school environment is strongly associated with enhanced social and emotional outcomes for students (Thapa et al., 2013; Zins et al., 2004).

In terms of student-teacher relationships, the current study found that students who feel safe report higher quality relationships with their teachers. This is consistent with research by Kutsyuruba et al. (2015), who demonstrated that students' sense of safety in school is positively correlated with more supportive and engaging teacher-student interactions. A positive student-teacher relationship, in turn, has been linked to improved academic outcomes and overall well-being (Cornelius-White, 2007). The moderate effect size observed in the current study (Cohen's d = 0.48) further supports the importance of fostering a safe and supportive school climate to enhance these relationships.

The sense of belonging to school was another area where significant differences were observed between students who feel safe and those who do not. Safe students reported a stronger sense of belonging, which is consistent with research by Osterman (2000), who found that a sense of belonging in school is a critical factor influencing students' engagement, motivation, and academic achievement. Furthermore, the large effect size (Cohen's d = 0.75) suggests that the sense of belonging is a particularly salient outcome of feeling safe at school, reinforcing the notion that a positive school climate fosters greater student engagement.

Family support, although more related to the after-school context, is also an important aspect of the sense of safety. The study found that students who feel safe are more likely to experience stronger family support. This can be explained by the fact that a safe school environment reduces stress, thus facilitating emotional connection with the family. On the other hand, it can be assumed that students who have family support are more likely to build trust-based relationships with the school community. This mutual interaction is also reflected in the theoretical insights of Steinberg (2003) and the study by Williams et al. (2018), which showed that students' sense of safety is determined not only by the level of bullying, but also by their relationships with adults and the school's attitude toward helping and responding to problems.

The results of this study contribute to the growing body of literature emphasizing the importance of a safe school environment in promoting positive social and emotional outcomes for students. Future research could further explore the causal relationships between school safety and social connection factors, as well as investigate potential mediating variables, such as emotional regulation and coping strategies. Additionally, longitudinal studies could provide insights into how these factors evolve over time and influence long-term academic and psychological outcomes.

The observed associations are consistent with hypothesis H_2, which states that students who feel safe at school (a) experience greater teacher support, (b) stronger family support, and (c) a stronger sense of community spirit than those who feel unsafe. This is supported both by the results of the study and by conceptually consistent logic. The data clearly showed that these three factors are significantly associated with a greater sense of safety among students. Teacher support is associated with greater confidence and emotional resilience and co-occurs with lower reported feelings of unsafety, as students feel noticed and valued. A sense of belonging to a community helps to shape social identity and creates a psychological basis for safety, as students feel that they are an important part of the community. Family support acts as additional emotional support, which strengthens the ability to adapt to the school environment and at the same time reduces stress levels, making it easier for students to feel safe. The consistent co-occurrence of these factors suggests a shared relational and emotional context in which higher levels of perceived safety are reported.

5.3 Emotional health and well-being

The findings of this study suggest that students who feel safe at school exhibit significantly better emotional health outcomes

compared to those who feel unsafe. These results are consistent with existing literature on the role of school safety in shaping students' emotional well-being. Specifically, safe students showed higher levels of stress resistance, emotional control, and life satisfaction, while also reporting lower experiences of bullying. These results align with studies emphasizing the critical role of a positive school climate in fostering emotional resilience and well-being among students (Zins et al., 2004; Thapa et al., 2013).

The finding that students who feel safe demonstrate higher stress resistance is supported by research highlighting the importance of a supportive school environment for reducing stress and enhancing coping mechanisms. For example, a study by Juvonen et al. (2003) found that students who perceive their school environment as supportive are better able to manage stress. Similarly, the current study's moderate effect size (Cohen's d = 0.51) underscores the close association between perceived school safety and stress resilience. This suggests that students who report feeling safe also tend to report more adaptive stress responses, which may, in turn, contribute to better academic and social outcomes.

In terms of emotional control, the results of this study are consistent with findings from Eisenberg et al. (2010), who demonstrated that emotional regulation is enhanced in environments where students feel secure. The moderate effect size observed in this study (Cohen's d = 0.42) further supports the idea that a safe school environment provides the foundation for students to better manage their emotions, a crucial skill for both academic success and interpersonal relationships. These results align with the notion that emotional safety within schools promotes emotional regulation, as indicated by previous research (Zins et al., 2004).

The observed difference in life satisfaction is also in line with earlier studies showing that students' perceptions of safety are positively correlated with higher life satisfaction. Durlak et al. (2011) found that students in schools with supportive climates reported higher levels of life satisfaction, similar to the findings in this study. The moderate effect size (Cohen's d = 0.57) suggests that school safety has a meaningful impact on students' overall well-being, which is consistent with prior research indicating that a positive school environment fosters not only academic but also personal growth and satisfaction (Eisenberg et al., 2010).

Finally, the finding that bullying was more prevalent among students who feel unsafe is consistent with the well-documented link between school safety and bullying experiences. Juvonen et al. (2003) found that students who feel unsafe are more likely to report being bullied, and the large effect size in this study (Cohen's d = −0.63) indicates a strong relationship between feelings of safety and the likelihood of bullying. This result emphasizes the detrimental effects of an unsafe school environment, not only on students' emotional health but also on their overall sense of safety and well-being. It should also be noted that perceived safety and experiences of bullying are conceptually and empirically closely related constructs in student self-reports. This proximity may partly inflate the observed associations, as students who report being bullied are also more likely to report feeling unsafe.

In conclusion, the results of this study reinforce the importance of creating and maintaining safe school environments to support students' emotional health. The findings are consistent with previous research that has highlighted the critical role of school safety in promoting emotional regulation, stress resistance, life satisfaction, and reducing bullying. Future research should explore longitudinal data to examine the long-term effects of school safety on emotional health and academic success, as well as the potential mediating factors such as teacher-student relationships and peer support.

The results of the study support hypothesis H_3, which states that students who feel safe at school (a) demonstrate stronger emotional resilience and (b) higher levels of life satisfaction than those who feel unsafe. The study found that students who feel safe are generally better able to cope with stress and emotional difficulties, which indicates their higher emotional resilience. In addition, these students have greater emotional self-control, i.e., the ability to regulate their emotions appropriately in difficult situations. They also feel greater life satisfaction, which reflects their overall well-being and positive outlook on life. Conversely, students who feel unsafe are more likely to experience bullying, which negatively affects their emotional well-being and overall school experience. These data show that a sense of safety at school is closely related to a positive emotional state and a sense of quality of life. Taken together, emotional resilience and life satisfaction appear closely associated with students' perceptions of safety at school.

5.4 School environment and perceptions

The study data revealed significant differences between students who feel safe and those who feel unsafe at school. Unsafe students were more likely to report experiencing various risks and lower school quality ratings. These results reflect the scientific view that a sense of safety is one of the key components shaping students' attitudes toward the school environment and their daily experiences.

One of the most striking findings of the study is the significantly higher level of perceived risks among students who feel unsafe. The moderate effect (Cohen's d = −0.39) shows that feelings of unsafety are closely related to experiences of threats such as violence, social exclusion, or emotional stress. Zacharia and Yablon (2022) emphasize that bullying is one of the main factors that reduce students' sense of safety, but this effect is significantly modified by the school climate – a supportive environment with clear norms can mitigate the damage caused by bullying and strengthen the overall sense of safety.

On the other hand, students who feel safe have a more positive view of the quality of their school. Although the effect is weaker (Cohen's d = 0.19), it is still statistically significant and shows that the physical and psychological environment at school influences students' satisfaction and learning experience. This correlation is confirmed by Finell et al. (2023), who highlighted that even the condition of school buildings affects students' anxiety levels, while Maxwell and Schechtman (2012) found that the assessment of environmental quality is related to academic performance.

In addition, research shows that community spirit – student involvement in school life, closeness with peers and teachers – is an important protective factor. Lenzi et al. (2017) highlighted that a strong sense of school community and teacher support are directly linked to a higher perception of safety. Such a social structure not only reduces the perception of threats but also increases students' ability to overcome them.

The results of the study, together with relevant scientific literature, lend support to hypothesis H_4, which states that students who feel safe at school perceive the school's physical and social environment as

more structured, orderly, and supportive than those who feel unsafe. The data show that both physical (quality and order of school buildings) and social (clear rules of conduct, supportive atmosphere, community spirit) factors contribute significantly to students' experience of safety. Students who perceive their environment as structured and supportive experience less of a sense of threat, trust school institutions more, and more often report higher levels of safety. The social and physical context of the school act as interacting elements that shape a positive emotional climate in which students can feel stable and protected.

5.5 Social, economic, and cultural status (ESCS)

The observed association between students' perceptions of safety at school and their home social, economic, and cultural status (ESCS) is consistent with recent research emphasizing the impact of socio-economic background on students' school experiences. Students from higher ESCS backgrounds tend to report feeling safer at school, which may be explained by multiple interrelated factors.

However, the association between ESCS and students' sense of safety may also reflect broader contextual differences between countries and schools, including structural inequalities, variations in school climate, and cross-national differences in reporting norms. Given the absence of multilevel controls, these contextual factors cannot be disentangled from individual-level associations.

One contributing factor is that families with higher socio-economic status typically provide more stable and resource-rich environments that support a child's sense of safety and psychological well-being. Such families are also more likely to live in safer neighborhoods and have access to better-funded schools, thereby enhancing students' perceptions of safety in the educational environment. In contrast, students from lower ESCS backgrounds often face economic hardship, reduced access to learning materials, and increased exposure to environmental and community stressors, all of which can negatively influence their feelings of safety at school (Bosakova et al., 2022). Rolfe (2022) supports this by highlighting that socioeconomic inequalities in Sweden and comparable contexts directly shape educational access, emotional wellbeing, and academic success, thereby influencing perceptions of safety and inclusion in schools.

Moreover, Bosakova et al. (2022) found that a lack of schoolwork-related support – both at school and at home – is more prevalent among students from disadvantaged socio-economic backgrounds. This lack of support may contribute to a sense of alienation from the school environment, diminished academic self-concept, and an overall perception that school is unwelcoming or unsafe (Horanicova et al., 2022). Students in these circumstances may also perceive school rules and expectations as misaligned with their lived experiences, further deepening feelings of exclusion and unsafety. Horanicova et al. (2022) emphasized that students from socio-economically disadvantaged families often report a lack of emotional and academic support, contributing to disengagement and a perception that school is a place of stress rather than support. Rolfe (2022) further illustrates how educational policies may inadvertently perpetuate these disparities by failing to address structural inequalities within the schooling system. These dynamics reinforce the need for schools to implement inclusive practices that account for socio-economic disparities and actively work to create safe, equitable learning environments for all students.

In addition to socio-economic factors, the school climate in terms of violence and bullying significantly impacts perceived safety. Mooij (2011) identifies that students' roles as victims, perpetrators, or witnesses of school violence vary with individual characteristics and socio-emotional factors, which are often shaped by socio-economic background. His findings underscore the importance of recognizing the broader context of student behavior and vulnerability, particularly for those from disadvantaged backgrounds.

Overall, the results underscore the interconnectedness of students' socio-economic backgrounds and their perceptions of safety, highlighting the need for comprehensive strategies that address both environmental and structural inequalities within education systems. Future research should further explore how targeted support measures – such as mentorship programs, family outreach, and resource provision – can mitigate the negative effects of socio-economic disadvantage on students' sense of safety and well-being in schools.

In summary, this study reveals that students who feel safe at school differ meaningfully from those who do not across academic engagement, social relationships, emotional health, school environment perceptions, and social, economic, and cultural background. The clearest distinctions appeared in emotional and social dimensions, particularly bullying, belonging, and teacher relationships. Addressing school safety, therefore, requires comprehensive and systemic approaches that integrate socio-emotional learning, physical school improvements, and socio-economic support mechanisms. The evidence presented by Mooij (2011) suggests that anti-violence policies should be tailored to diverse student needs, and Rolfe (2022) advocates for inclusive policy reform that reduces educational inequity, both of which are critical for creating safe educational spaces. Future research should explore longitudinal outcomes and the potential for targeted interventions to bridge these disparities and create inclusive, safe educational spaces for all learners.

The results of the study support hypothesis H_5, which states that students who feel safe at school are more likely to come from families with higher socio-economic status than those who feel unsafe. This correlation is determined by the fact that such families usually provide a more stable living environment, more often live in safer neighborhoods, their children attend better-funded schools, have more learning resources, and receive more emotional and academic support. As a result, these students feel more supported, trust the school community, and experience less stress, so they naturally feel safer. Meanwhile, students from families with lower socioeconomic status are more likely to experience violence, emotional isolation, and distrust of institutions, which reduces their sense of safety. In summary, it can be said that students' social and economic status systematically associated with their reported level of safety at school, therefore hypothesis H_5 is supported by the findings.

In summary, the interaction between emotional, social, academic, environmental, and structural components shows that students' sense of safety at school is shaped by a complex network of interrelated factors. Emotional well-being – such as stress management, emotional control, and life satisfaction – is strongly influenced by the social environment: teacher support, community belonging, and family support. These social connections reduce anxiety, strengthen confidence, and create a safe space where students can become more engaged in the learning process. Meanwhile, academic behavior – class attendance, tardiness, grade repetition – often reflects internal emotional states and social experiences: students who feel insecure or rejected are more

likely to passively or consciously distance themselves from academic activities. Environmental factors, such as the physical order of the school, security measures, and clear rules, act as a foundation that allows social and emotional mechanisms to function – without a stable structure and supportive environment, even good relationships with teachers may not be enough to develop a sense of safety. Finally, structural factors – especially socioeconomic ones – determine access to all of the previous elements: social capital, emotional support, academic opportunities, and environmental quality. As a result, students with lower social status often experience a complex combination of unfavourable factors that reinforce their sense of unsafety. This multilayered interaction shows that in order to effectively strengthen student safety among students experiencing low perceived safety, a holistic strategy is needed that encompasses not only emotional support or physical infrastructure, but also the strengthening of social relationships, structural conditions, and the school climate as a unified whole.

Taken together, the findings point to a coherent profile of students who feel unsafe at school, characterized not by isolated deficits but by a constellation of interconnected social, emotional, and contextual vulnerabilities. Compared to their safe peers, unsafe students consistently report a weaker sense of belonging, poorer student-teacher relationships, substantially higher exposure to bullying, lower life satisfaction, and higher perceived safety risks within the school environment. These domains, particularly social connectedness, emotional well-being, and experiences of bullying, show the largest effect sizes and thus constitute the most distinctive features of the unsafe student profile. In contrast, differences in academic behaviors and aspirations, as well as in perceived school quality, are statistically detectable but substantively modest, suggesting that academic engagement plays a more peripheral role in distinguishing safe and unsafe profiles than social and emotional experiences. Viewed collectively, these patterns support the interpretation of school safety as a multidimensional phenomenon, in which social belonging and relational climate are more central to students' sense of safety than academic behaviors alone.

6 Limitations

This study has several limitations that should be considered when interpreting the findings. First, the analysis is based on cross-sectional data from PISA 2022, which precludes causal inference. All observed relationships should therefore be interpreted as associations, and the directionality of these associations may be bidirectional.

Second, the student profiles were derived from comparisons between students at the extremes of the safety perception distribution. Because the intermediate group with moderate safety perceptions was excluded, the findings describe contrasts between clearly differentiated groups rather than the full spectrum of student experiences. As a result, some observed differences may appear larger than would be expected in analyses including all students, and generalizations should be interpreted as applying primarily to students with consistently high or low perceptions of school safety.

Third, the study relies on self-reported measures, which may be subject to reporting bias and shared method variance, particularly for conceptually related constructs such as perceived safety, bullying experiences, and emotional well-being. In addition, the use of bivariate comparisons without multilevel controls means that potential confounding factors at the school or country level cannot be fully accounted for.

Despite these limitations, the large and diverse international sample provides a robust basis for identifying consistent patterns of association that contribute to understanding student safety profiles across educational contexts.

7 Conclusion

This study identified systematic differences between students who report feeling safe at school and those who report feeling unsafe, highlighting contrasting patterns across academic, social, emotional, environmental, and socio-economic domains. Based on comparisons between students at the extremes of perceived school safety, students who feel safe tend to report more positive academic behaviors, stronger social connections, better emotional well-being, and more favorable perceptions of their school environment. They are also more likely to come from higher socio-economic and cultural backgrounds. In contrast, students who feel unsafe more often report disengagement from everyday academic activities, weaker relationships with teachers and peers, higher levels of stress and bullying, and more negative perceptions of school safety and quality, and they are disproportionately represented among students from lower ESCS backgrounds.

Taken together, these findings indicate that students' perceptions of safety at school are closely associated with a broad constellation of academic, social, emotional, and contextual experiences. Rather than acting as a single causal factor, perceived school safety appears to function as a central correlate and marker of students' overall school experience, reflecting the interplay of relational, emotional, environmental, and structural conditions.

The implications of this study for educational practice should therefore be interpreted with caution. While the observed associations suggest that efforts to improve students' sense of safety may benefit from approaches that strengthen social relationships, support emotional well-being, and address socio-economic inequalities, the present findings do not allow conclusions about the effectiveness of specific interventions. Future research using longitudinal or experimental designs is needed to clarify causal pathways and to evaluate which strategies are most effective in promoting safe and inclusive school environments.

Finally, it is important to note that these conclusions primarily reflect contrasts between students with consistently high versus consistently low perceptions of school safety. As such, the findings should not be generalized to all students, but rather understood as characterizing patterns associated with extreme experiences of safety and unsafety within school contexts.

Data availability statement

Publicly available datasets were analyzed in this study. This data can be found at: https://www.oecd.org/en/data/datasets/pisa-2022-database.html.

Ethics statement

Ethical approval was not required for the study involving humans in accordance with the local legislation and institutional requirements. Written informed consent to participate in this study was not required from the participants or the participants' legal guardians/next of kin in accordance with the national legislation and the institutional requirements.

Author contributions

JD: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Supervision, Writing – original draft, Writing – review & editing. JU: Conceptualization, Formal analysis, Visualization, Writing – original draft, Writing – review & editing. RP: Conceptualization, Funding acquisition, Resources, Supervision, Writing – review & editing.

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Conflict of interest

The author(s) declared that this work was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declared that Generative AI was used in the creation of this manuscript. The authors declare that Gen AI (ChatGPT 5) was used in the translation of this manuscript from Lithuanian to English. No AI tools were used for data analysis, statistical procedures, interpretation of results, or substantive content generation. All analyses, interpretations, and conclusions were conducted and verified by the authors.

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