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Robust children: exploring engagement with academic subjects, well-being and psychological safety in schoolchildren aged 6–9 years in Norway

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ABSTRACT

The study aimed to survey primary schoolchildren's perception of well-being and safety. A total of 1,620 Norwegian children in 1st–4th grade answered, including 777 girls and 817 boys, while 26 did not report gender. Two scales with 14 question were used: one on well-being and safety at school (6 items) and one on perceived competence and enjoyment/likeability related to reading, maths, science and physical education (8 items). Overall, children reported high levels of well-being and safety. Girls and younger children reported greater well-being and a greater liking of their class than boys and older students. Happiness at school was linked to having more friends. Boys scored significantly lower in self-perceived reading and science competence. Girls reported higher enjoyment than boys in reading and science, although the opposite was true for enjoyment in physical education. The boys scored significantly higher than girls in self-perceived competence in maths. There was no significant gender difference in enjoyment of maths and self-perceived competence in physical education. The study provided insights into the well-being and safety of young students in Norwegian schools. Future research should build on these findings by exploring longitudinal changes and evaluating interventions, such as the integration of physical activity and passion-driven projects, to optimize well-being and academic engagement for all children.

KEYWORDS

Children; gender; well-being; safety; robustness; perceived competence; enjoyment/likeability; academic engagement

Introduction

There is growing concern about the declining mental health of young people, which includes reduced well-being, increased distress, and loneliness (Collishaw 2015; Kauhanen et al. 2023; Twenge et al. 2021). The mental health and well-being of schoolchildren

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is a critical aspect of their overall development and academic success (Kaya and Erdem 2021; Maechel et al. 2023; Ng, Huebner, and Hills 2015; Vujčić, Brajša-Žganec, and Franc 2019). As children navigate the complexities of growing up, they face various challenges, including academic pressures, social dynamics, and family issues, all of which can significantly impact their emotional and psychological health. Promoting mental well-being in schools is essential, as it not only fosters a supportive learning environment but also equips children with the resilience and coping skills necessary to face life's challenges (Cefai, Simões, and Caravita 2023; Frazier and Doyle Fosco 2024). A growing recognition of the impact of school experiences on mental health underscores the importance of fostering a safe and positive school environment that prioritizes positive experiences in school, ultimately leading to healthier, happier, and more resourceful individuals (WHO 2020).

Well-being in elementary school

Well-being can be defined as a 'dynamic state related to students' personal and social goals, encompassing multiple dimensions, including cognitive, psychological, physical, social, and material aspects' (Borgonovi and Pál 2016, 8). Children's well-being in primary school is crucial for fostering a positive learning environment where they can thrive academically, socially, and emotionally. A supportive school climate that emphasizes caring and affiliative relationships, along with a sense of belonging, enhances students' motivation and academic achievement while promoting well-being and mental health (Cefai, Simões, and Caravita 2021; Maratos et al. 2022). Furthermore, integrating well-being into the curriculum through social and emotional education helps students to develop the skills necessary to manage their emotions, set goals, and enhance positive relationships that are essential for lifelong success (Cefai, Simões, and Caravita 2021). Although research has reported associations between well-being and academic achievement, it has also produced ambiguous results (Amholt et al. 2020). A strong relationship between well-being and perceived competence in school subjects has been found in primary schoolchildren aged 6–15 years (Sigmundsson, Ingebrigtsen, and Dybendal 2023), and a positive reciprocal causal association has been reported between students' subjective well-being and their actual grades (Ng, Huebner, and Hills 2015).

Research consistently shows that girls tend to have a more positive attitude towards school than boys (Gunnes et al. 2024; Løhre, Lydersen, and Vatten 2010; Samdal et al. 1998). For instance, Gunnes et al. (2024, 8) found that 'Norwegian boys reported liking school less than girls, having poorer relationships with their teachers and peers, and perceiving school as more unfair than girls do'. Interestingly, findings based on self-determination theory (SDT) suggest that boys report higher levels of intrinsic motivation and perceive greater teacher autonomy support (Shen 2015). This apparent contradiction indicates that while boys may be internally motivated, they could still experience challenges in the social and relational aspects of school life. These findings imply that boys may benefit from targeted support aimed at enhancing their overall school experience.

School safety

The emotions and perspectives generated by a school's environment are commonly referred to as school climate (Loukas 2007). This concept is closely related to the

notion of safety or a safe learning environment, and the two terms are frequently used interchangeably in the literature (Kutsyuruba, Klinger, and Hussain 2015). Morrison, Furlong, and Morrison (1994) define school safety as a school climate in which students and staff can engage in learning activities within a space that is physically, cognitively, and emotionally secure. Our study focuses on psychological safety, which involves shielding children from harmful behaviours such as bullying and harassment that cause emotional harm rather than physical injury (Cornell, Mayer, and Sulkowski 2020, 147). School safety and childrens well-being are closely intertwined in a significant and multifaceted relationship (Aldridge and McChesney 2018; Kutsyuruba, Klinger, and Hussain 2015; Mori et al. 2021). A safe school environment is crucial for fostering students' emotional, social, and academic development. Lack of perceived school safety is related to, for example, decreased school engagement (Cote-Lussier and Fitzpatrick 2016). A systematic review by Mori et al. (2021) suggests that safety in schools is a significant factor for student's mental health, and having a safe and secure school environment is key to children's overall well-being (Cefai, Simões, and Caravita 2023; Samdal et al. 1998; Tandika Basil et al. 2024). Ensuring a safe learning environment allows students to focus on academic tasks without the interference of fear or anxiety, and research suggest that students in safe schools tend to achieve higher levels of academic performance (Ruiz, McMahon, and Jason 2018). On the other hand, not feeling safe at school is associated with victimization and mental health difficulties (Mori et al. 2021; Östberg, Modin, and Låftman 2018). Conversely, a safe school environment can help to mitigate these risks and promote better mental health outcomes (Aldridge and McChesney 2018; Mori et al. 2021). Gilbert (2024) makes a distinction between safety (being free from physical harm, the absence of danger – linked to the deactivation of the threat system) and safeness (feeling socially, emotionally, and cognitively safe in a social environment and connected with others – linked to the activation of the soothing affiliative system).

Research indicates that the prevalence of students in the United States who report feeling unsafe at school ranges from 15% to 25% (Jacobson et al. 2011; Williams et al. 2018; Yang, Lin, and Stomski 2021). Yang, Lin, and Stomski (2021) highlight the inconsistent findings regarding gender differences in children's perceptions of school safety. Whilst some studies report that boys are more likely to perceive lower levels of safety at school compared to girls (Gini et al. 2020; Maffini 2016; Vieno et al. 2015), other research has found the opposite (Williams et al. 2018).

Robust children – a programme for the promotion of mental health and well-being in school

'Robust Children' is a teaching programme focusing on mental health and life skills for grades 1–10 in 17 primary schools in a municipality in Norway. The programme has been implemented in grades 8, 9, and 10 for the past five years, and in 2023, it was also integrated into grades 1–4. The term 'robust children' typically refers to children who demonstrate resilience, strength, and adaptability in various aspects of their lives. The programme aims to enhance students' social-emotional competence, sense of safety, and sense of community within the school environment. Additionally, it emphasizes the importance of fostering resilience and well-being in children, enabling them to thrive in diverse settings and face life's challenges with confidence. Schools allocate three hours each month for this programme. During the first four years, children engage with a range of important themes, including:

feeling safe at school, building friendships, navigating the online world, healthy sleep habits, understanding emotions and thoughts, family life, body awareness, physical activity, diversity, and sensitive topics such as violence, abuse, and alcohol in the home. Each theme is supported by a comprehensive teaching plan that includes a variety of resources, such as PowerPoint presentations, educational videos, play-based activities, reflection questions, and group assignments, to encourage active learning and meaningful discussions. Each year introduces age-appropriate content designed to support children's growth across emotional, social, and physical domains. The teaching approach is playful, promoting students' well-being and sense of belonging. Through structured exercises, pupils build relationships while simultaneously developing their social-emotional skills. This development includes fostering inner awareness, learning to understand their own and others' feelings and needs, taking responsibility for others, recognizing their place within a larger context, and comprehending the complexity of society. As a result, children become better acquainted with one another, contributing to a more inclusive and safer classroom environment. The programme is grounded in positive psychology and cognitive–behavioural psychology. It has been developed in a municipality in Norway with funding from the Directorate of Education. 'Robust Children' aligns with 'Robust Youth', which is used in secondary schools.

This study

A significant gap exists in the research literature regarding well-being and safety in school settings within the Scandinavian context, especially in relation to younger children (6–9 years) and gender differences. As a part of the evaluation of the programme, this baseline study aims to investigate the associations between well-being, perceived safety, and perceived competence among the participating children, as well as exploring gender differences in relation to well-being and safety in school for children aged 6–9 years.

Research questions:

Research question 1. Do students' responses related to well-being and safety at school differ by gender?

Research question 2. Do students' responses related to well-being and safety at school vary by grade level across the entire sample?

Research question 3. Are there gender-based differences in students' perceived competence in and enjoyment of reading, mathematics, science, and physical education?

Research question 4. What are the correlations among well-being and safety-related items across the entire sample?

Research question 5. What is the relationship between students' self-reported competence ('How are you doing in … ') and their enjoyment ('How do you like … ') across the subjects of reading, mathematics, science, and physical education?

Method

Participants

The study was conducted with a sample of 1,620 pupils from grades 1–4, aged between 6 and 9 years ($M = 7.50$, $SD = 1.15$). The children were enlisted from the 17 participating

schools in the school year 2023/2024. The female participants ($N = 777$) had a mean age of 7.49 ($SD = 1.12$) and the male participants ($N = 817$) had a mean age of 7.54 ($SD = 1.12$). Twenty-six children did not report their gender. The entire sample reflected the population of children attending schools in the region and included children with a wide range of socio-economic backgrounds. The children were attending their first to fourth year in school. The schools varied in size and location (from urban to suburban). All the children in 1–4 grade answered the six items in the 'Well-being and perceived safety at school scale' ($N = 1620$) and children in second to fourth grade answered the eight items in 'Perceived competence and enjoyment/likeability scale' ($N = 1241$).

Measures

Well-being and perceived safety at school scale

Well-being and perceived safety at school were measured using six questions, three addressing well-being: 'How are you feeling at school?', ´Do you have friends at school?´, ´How much do you like your class?´ and threefocusing on safety in school: 'Do you feel safe in school?', 'Do you feel safe in class?', and 'Do you feel safe at recess?' (see Table 1). Students answered using a pictorial emoji-based Likert-scale, ranging from 1 to 5, where 1 corresponds to a very sad face, 5 corresponds to a very happy face, and 3 represents a neutral face. As part of the scale development, a pilot study was conducted to assess its reliability and feasibility. Based on pilot results , minor wording revisions were made to several items. The final version of the six-item scale good internal consistency, with a Cronbach's alpha of .81. The six questions were capturing essential aspects important for the Robust children project (see description of the program) (Sigmundsson 2025, p.3).

Perceived competence and enjoyment/likeability scale

Respondents in the second, third and fourth grades responded to eight questions assessing their perceived competence in subjects such as maths, science, reading, and physical education, specifically asking: 'How are you doing in maths, science, etc.?' In addition they answered four questions about their enjoyment/liking of these subjects, such as, 'How do you like reading, maths, science, and physical education? (see Table 2). The students responded to the questions using emojis on a Likert-scale ranging from 1 to 5, where 1 corresponds to a very sad face and 5 corresponds to a very happy face, with 3 representing a neutral face (Sigmundsson, Ingebrigtsen, and Dybendal 2023). Test-retest reliability was strong, with intraclass correlation coefficients (ICCs) ranging from .87 to 1.00 between the initial test and retest scores. The perceived competence items were developed based on Harter's (1978, 1982) theory and methodology. In the present study, the eight-item scale demonstrated good internal consistency, with a Cronbach's alpha of .73 (Sigmundsson 2025, p. 3).

Table 1. The six well-being and safety questions related to the school.

1. How are you feeling at school?
2. Do you feel safe in school?
3. Do you have friends at school?
4. How much do you like your class?
5. Do you feel safe in class?
6. Do you feel safe at recess?

Table 2. The eight perceived competence and enjoyment questions related to school subjects (for grades 2–4).

1. How do you like reading?
2. How are you doing in reading?
3. How do you like maths?
4. How are you doing in maths?
5. How do you like science?
6. How are you doing in science?
7. How do you like physical education?
8. How are you doing in physical education?

Procedure

The children were tested in autumn 2023. The ethical aspects for this research were thoroughly evaluated in accordance with the Norwegian guidelines for research ethics and data protection. The project was conducted under the legal basis of 'public interest', as specified by the Norwegian Agency for Shared Services in Education and Research's (https://sikt.no/en/home) research guidelines. Data collection followed principles ensuring privacy for the participants, using only indirect identifiers such as age, grade, and gender- and the absence of direct contact with the participants. The children completed the assessment as part of their regular educational programme (school curriculum). Surveys were administered by teachers in groups on school campus during normal school hours. Researchers received only anonymized data from the project in the municipality. Prior to the assessment, information about the nature of the assessment was given in verbal form to the children by the teachers. The children could withdraw from answering the questionnaires without providing any reasons (Consent to Participate).

Results

The descriptive data are presented in Tables 3 and 4, both for the overall sample and for females and males.

Research question 1. Do students' responses related to well-being and safety at school differ by gender?

The results indicated a significant difference between genders, with girls scoring higher than boys on the question 'How are you feeling at school?' (t (1592) = −2.119; p = .017), and on the question 'How much do you like your class?' (t (1592) = −1.768; p = .039), reporting liking

Table 3. The six well-being and safety questions related to the school, mean and SD for the total sample, female and male.

	Total sample (N = 1620) Mean (SD)	Female (n = 777) Mean (SD)	Male (n = 817) Mean (SD)	p-value[a]
1. How are you feeling at school?	4.31 (1.00)	4.36 (1.04)	4.25 (1.04)	.017
2. Do you feel safe in school?	4.41 (.99)	4.43 (.96)	4.39 (1.02)	.222
3. Do you have friends at school?	4.65 (.78)	4.64 (.78)	4.66 (.78)	.292
4. How much do you like your class?	4.35 (.95)	4.39 (.91)	4.30 (.97)	.039
5. Do you feel safe in class?	4.50 (.92)	4.48 (.95)	4.52 (.90)	.185
6. Do you feel safe at recess?	4.23 (1.14)	4.20 (1.12)	4.27 (1.16)	.128

[a]t-test (one-tailed).

Table 4. The eight perceived competence and enjoyment questions related to school subjects, mean and SD for the total sample, female and male (for grades 2–4).

	Total sample ($N = 1241$)	Female ($n = 583$)	Male ($n = 646$)	p-value[a]
1. How do you like reading?	3.77 (SD 1.28)	3.93 (SD 1.20)	3.62 (SD 1.31)	.001
2. How are you doing in reading?	4.20 (SD 1.00)	4.25 (SD .96)	4.16 (SD 1.03)	.049
3. How do you like maths?	4.10 (SD 1.18)	4.05 (SD 1.13)	4.15 (SD 1.21)	.064
4. How are you doing in maths?	4.16 (SD .99)	4.06 (SD 1.09)	4.24 (SD .98)	<.001
5. How do you like science?	3.95 (SD 1.17)	4.04 (SD 1.09)	3.87 (SD 1.23)	.007
6. How are you doing in science?	4.05 (SD 1.05)	4.16 (SD .97)	3.96 (SD 1.11)	.001
7. How do you like physical education?	4.71 (SD .78)	4.65 (SD .81)	4.78 (SD .71)	<.001
8. How are you doing in physical education?	4.70 (SD .66)	4.68 (SD .65)	4.72 (SD .68)	.162

[a]t-test (one-tailed).

their class more than boys. Table 3 presents the means, standard deviations, and independent samples t-tests for questions related to well-being and safety in school.

Research question 2. Do students' responses related to well-being and safety at school vary by grade level across the entire sample?

One-way ANOVA indicates significant difference for question 1: 'How are you feeling at school?' ($F(3, 1616) = 4.931$, $p = .002$) and question 4: 'How much do you like your class?' ($F(3, 1616) = 5.581$, $p < .001$) – i.e. younger children score higher than the older ones.

Research question 3. Are there gender-based differences in students' perceived competence in and enjoyment of Reading, mathematics, science, and physical education?

The study investigated whether there are gender differences in students' responses to questions related to their perceived competence in and enjoyment/liking of reading, maths, science, and physical education. Significant differences between genders were observed in several areas (see Table 4). Specifically, females reported significantly higher ratings in response to the question 'How do you like reading?' ($t(1227) = -4.323$, $p < .001$) and 'How are you doing in reading?' ($t(1227) = -1.653$, $p = .049$). Additionally, females reported higher scores for 'How do you like science?' ($t(1227) = -2.470$, $p = .007$) and 'How are you doing in science?' ($t(1227) = -3.412$, $p < .001$). Conversely, males reported higher scores in response to the question 'How are you doing in maths?' ($t(1227) = 3.193$, $p < .001$). Moreover, males reported significantly higher scores in response to 'How do you like physical education?' ($t(1227) = 3.101$, $p < .001$).

Research question 4. What are the correlations among the six well-being and safety-related items across the entire sample?

Table 5 presents Pearson product-moment correlation coefficients between scores in each of the six questions for the whole sample. As seen in Table 5, the correlation varies from .35 (between question 1 'How are you feeling at school?' and question 3 'Do you have friends at school?') to .57 (between question 2 'Are you safe at school?' and question 6 'Are you safe at recess?').

Table 5. Correlations between the six well-being and safety questions related to the school ($N = 1620$).

	1	2	3	4	5	6
1. How are you feeling at school?	1	.41	.35	.47	.45	.43
2. Do you feel safe in school?		1	.36	.40	.55	.57
3. Do you have friends at school?			1	.29	.37	.37
4. How much do you like your class?				1	.42	.36
5. Do you feel safe in class?					1	.49
6. Do you feel safe at recess?						1

All correlations are significant at $p = .01$ level (2-tailed).

Research question 5. What is the relationship between students' self-reported competence ('how are you doing in … ') and their enjoyment ('how do you like … ') across the subjects of Reading, mathematics, science, and physical education?

As seen in Table 6, the correlation goes from .11 (between question 1 'How do you like reading?' and question 7 'How do you like physical education?') to .56 (between question 3 'How do you like maths?' and question 4 'How are you doing in maths?', and between question 5 'How do you like science?' and question 6 'How are you doing in science?'). All the correlations were significant at .01 level (Pearson correlations).

Discussion

The article presents findings from a baseline study that was designed to assess the initial status of the sample (N = 1620). This study aimed to explore the children's perceptions of well-being and safety within their school environment, as well as perceived competence in and enjoyment/liking of subjects. The study serves as a preliminary measure, providing a reference point for the evaluation of changes over time. The objective is to conduct a longitudinal follow-up assessment after three academic years, allowing for a comparative analysis of the project's impact on the children's well-being and sense of safety at a later point. The findings of the current study reveal that the schoolchildren in the sample reported scores exceeding four on the well-being and safety scale (the highest score is 5). However, when responding to questions related to their experience with academic subjects such as ´How do you like reading and How do you like science children in grades 2–4 scored below four on average. This difference indicates that some subjects may elicit feelings of boredom or anxiety, which could underline this result

Table 6. Correlation between the eight perceived competence and enjoyment questions related to school subjects (for grades 2–4) ($N = 1241$).

	1	2	3	4	5	6	7	8
1. How do you like reading?	1	.47**	.24**	.18**	.35**	.28**	.11**	.13**
2. How are you doing in reading?		1	.21**	.30**	.22**	.32**	.16**	.26**
3. How do you like maths?			1	.56**	.18**	.20**	.20**	.20**
4. How are you doing in maths?				1	.16**	.25**	.16**	.26**
5. How do you like science?					1	.56**	.13**	.14**
6. How are you doing in science?						1	.16**	.26**
7. How do you like physical education?							1	.51**
8. How are you doing in physical education?								1

**Correlation is significant at the 0.01 level (2-tailed).

(Csikszentmihalyi 1975). According to flow theory, this may occur because the perceived challenges are not in tune with the perceived skills in question (Elnes and Sigmundsson 2023). For instance, if a maths task is too difficult, a child might feel overwhelmed and anxious; conversely, if the task is too easy, they might feel bored. The difficulty of maintaining this balance of mastery could be more pronounced in these subjects due to their structured and cumulative nature, where new concepts often build on previous knowledge (Sigmundsson 2024).

When comparing physical education to academic subjects such as reading, maths, and science through the lens of flow theory, several factors make physical education less prone to eliciting anxiety and boredom (Kawabata 2018; Stormoen et al. 2015). For instance, physical education could offer more direct and instant feedback, set clearer and more attainable goals, encourage stronger physical involvement, and give students a greater sense of control over their results. These elements better supports experience of flow, making physical education a more engaging and less stressful subject for children. In contrast, more abstract and cumulative subjects, as well as the sedentary nature of academic subjects, can create a mismatch between a student's perceived challenges and their current skill level, thereby increasing the likelihood of anxiety and boredom. A greater understanding of these aspects can help educators to design learning environments that better support flow across all subjects, potentially incorporating elements such as immediate feedback and clearer and more achievable goals into academic learning to reduce children's anxiety and boredom in school.

Research question 1

The results revealed a significant gender difference, favouring females, in responses to questions about how they feel at school and how much they like their class. These findings align with earlier research, which consistently shows that girls tend to feel better about school than boys (Gunnes et al. 2024; Løhre, Lydersen, and Vatten 2010; Samdal et al. 1998). Additionally, Gunnes et al. (2024, 8) pointed out that 'Norwegian boys reported liking school less than girls, having poorer relations with their teachers and fellow schoolchildren, and perceiving school as more unfair than girls do'. The gender difference in grades 1–4 could be explained by boys having poor relationships in school, leading to a difficult environment in which to flourish. According to the findings by Cairney and colleagues (2012), boys like physical education significantly more than girls. Previous findings using a self-determination theory (SDT) framework suggest that boys have higher intrinsic motivation and teacher autonomy support (Shen 2015). Thus, the gender difference could perhaps be explained by boys' greater needs for autonomy, competence, and relatedness, which could be more effectively met in physical education compared to other school subjects (Manzano-Sánchez 2023). As physical education in school is limited, this could be more unfavourable to boys than girls. Although gender differences are consistently apparent concerning physical education, Løhre, Lydersen, and Vatten (2010) point out that gender differences may also significantly vary by age, and interpretation may change depending on the stage of development.

The implication of these findings suggests that boys may need additional support to enhance their school experience. Interventions could focus on improving social

relationships and creating a more engaging and supportive classroom environment for boys. The 'Ignition project' in Iceland is an example of this, and has three goals: increasing well-being, increasing motivation, and improving results in basic skills. The above-mentioned project builds on the theories of Ericsson's deliberate practice (Ericsson and Pool 2016) and Csikszentmihalyi's flow theory (1975). The project includes physical activity every morning to increase well-being and integrates a 'passion hour' (i.e. a school lesson in which students are free to choose a practical-aesthetic activity, such as singing, music, chess, or dance) every day in school to increase autonomy (Sigmundsson 2024).

The students who participated in the study indicated a high degree of feeling safe while at school, during both class and recess. This is a positive and important finding, as a sense of safety is widely recognized as a foundational element for learning and healthy development. According to Mori et al. (2021), school safety plays a crucial role in supporting students' mental health, and a secure and supportive school environment is essential for children's overall well-being (Cefai, Simões, and Caravita 2023; Samdal et al. 1998; Tandika Basil et al. 2024). When students feel safe, they are better able to concentrate on their learning without being distracted by fear or anxiety. Research further suggests that students who attend safe schools are more likely to achieve stronger academic outcomes (Ruiz, McMahon, and Jason 2018). No gender differences related to perception of safety at school were found in the sample.

Research question 2

The results indicated a significant difference related to grade for question 1: 'How are you feeling at school?' and question 4: 'How much do you like your class?', with the scores decreasing from grade 1 to grade 4. These findings may highlight the need for continuous support and adaptive strategies to maintain or improve students' well-being as they progress through school. A growing body of scientific literature has documented a consistent decline in subjective well-being, assessed by a variety of instruments, during adolescence across various countries. Subjective well-being generally increases between the ages of 8 and 10, with some exceptions, but then begins a downward trend at around age 10 in most countries (Casas and González-Carrasco 2019). According to Goldbeck et al. (2007), this decline from age 10 onwards appears to be a typical developmental pattern, influenced by both micro-level factors (e.g. family and school) and macro-level factors (e.g. national, and cultural contexts).

Research question 3

We found significant difference between genders (see Table 4), with females scoring higher in both questions ('How do you like?' and 'How are you doing?') related to reading and science. The findings are similar to those in a study of Icelandic children in grades 1–9 (Sigmundsson, Ingebrigtsen, and Dybendal 2023). Lyytinen, Grigorenko, and Sigmundsson (2024) argue that boys seem to be less interested in using their time for leisure reading. Studies have also indicated a clear gender difference related to letter-sound knowledge (i.e. the basis of reading skill) together with reading comprehension, in favour of girls (Sigmundsson et al. 2017).

The difference in engagement and performance between genders suggests that tailored pedagogical approaches might be beneficial. For instance, integrating more hands-on, practical applications in reading and science could increase the engagement of boys, while promoting collaborative and inclusive practices in maths and PE could improve girls' participation and enjoyment/liking. Programmes that enhance children's interests and passions, by giving them more opportunities to delve into optional themes and subjects, such as 'passion hour', could perhaps motivate the students to engage more in school activities (see, for example, Sigmundsson 2024, 16–18). Males scored higher in the 'How are you doing?' question related to maths and in the 'How do you like?' question related to physical education. The Icelandic study did not find significant differences in any of the questions related to maths; however, it did find a significant gender difference in the question related to 'How do you like?' physical education, with the males scoring higher than females (Sigmundsson, Ingebrigtsen, and Dybendal 2023). It is therefore important to increase interest in physical education among females. Research has shown that movement, exercise, and physical activity play a vital role in fundamental brain mechanisms, as well as in the development and functioning of both grey and white matter. Additionally, physical activity is closely linked to overall well-being (Sigmundsson, Dybendal, and Grassini 2022) and psychological health (Haug et al. 2021).

Research question 4

The results show that the correlation ranges from moderate (.29) (between the question 'Do you have friends at school?' and the question 'How much do you like your class?') to strong (.57) (between the question 'Are you safe at school?' and the question 'Are you safe at recess?'). Of note are the significant correlations between all six questions, which suggests that the degree to which children feel safe at school, in their class, and at recess is important for their feeling at school. It is also relevant for how they feel at school that they like their class and have friends at school. It is therefore possible to argue that there is a close relationship between well-being and safety (Aldridge and McChesney 2018; Kutsyuruba, Klinger, and Hussain 2015; Mori et al. 2021). Gilbert (2024) argues that 'safeness' (i.e. feeling socially, emotionally, and cognitively safe in a social environment and connected with others) is linked to the activation of the soothing affiliative system.

Research question 5

In this study, the correlation coefficients range from weak (between the question 'How do you like reading?' and the question 'How do you like physical education?') to strong (between the question 'How do you like maths?' and the question 'How are you doing in maths?', and between the question 'How do you like science?' and the question 'How are you doing in science?'). The weak correlation between the degree to which the children like reading and the degree to which they like physical activity is interesting and may indicate that there are different sets of children who like reading and who like PE.

It is also of interest to see that the correlations between 'How do you like?' and 'How are you doing?' were .47, .56, .56, and .51 for reading, maths, science, and PE, respectively. It is therefore possible to argue that if a child likes a subject, they will also tend to feel that they are doing well in that subject, and vice versa. This seems to be in line

with the notion that well-being at school and a sense of perceived competence are linked (Ng, Huebner, and Hills 2015; Sigmundsson, Ingebrigtsen, and Dybendal 2023).

Limitations and future research

A limitation of the current study is its cross-sectional and correlational design, which prevents drawing causal conclusions from the findings. Future research should employ a longitudinal approach to track children over time, enabling the examination of prospective relationships between well-being, safety, and perceptions of likeability and competence in academic subjects. The exploratory nature of the study, particularly regarding gender differences, also limits its ability to draw definitive conclusions. Additionally, the homogeneity of the sample – comprising children in grades 1–4, aged 6–9 – limits the generalizability of the results to broader or older populations. Additionally, there is currently no universally agreed-upon definition of school climate and school safety, which affects how these concepts are measured. Our data is based on students' perceptions ('I feel safe'); however, it can be argued that meaningful assessments of school climate should incorporate both behavioural (e.g. 'I have been bullied') and perceptual indicators to better capture the complexity of the phenomenon. According to O'Brennan and Bradshaw (2017), integrating both types of indicators can offer deeper insight into the dynamic interactions between students' prior experiences and their school environment. Additionally, the behaviour of peers and school staff significantly influences individual perceptions, emphasizing the collective and interactive nature of school climate. To gain a more comprehensive understanding of this multifaceted construct, it could be important to triangulate data from multiple sources – including teachers, school leaders, and parents – and, where possible, combine quantitative measures with qualitative data (Bradshaw et al. 2021). Another limitation is the reliance on self-reported data from young children, which introduces the potential for response bias, as children may struggle to fully understand or accurately interpret the questions. Although the pictorial Likert-scale was chosen for its age-appropriateness, it may oversimplify complex constructs such as well-being, safety, and competence. Children may select emojis based on familiarity rather than as a true reflection of their feelings. Future studies should incorporate additional measures, validated through established psychometric methods. Lastly, the use of teachers as survey administrators could have introduced social desirability bias or authority pressure, and group administration in a school setting may have led to distractions or peer influences, potentially affecting the reliability of responses. These procedural biases could be mitigated by employing neutral administrators instead of teachers.

This study offers valuable insights with implications for early childhood education and care (ECEC) policy and practice. By prioritizing children's well-being and safety, implementing gender-sensitive strategies, promoting physical activity, and encouraging passion-driven learning projects, we can foster more inclusive, engaging, and developmentally appropriate learning environments, ultimately helping to reduce dropout rates and support better mental health outcomes. These approaches are grounded in the assumption that a positive school climate is linked to increased safety and other beneficial student outcomes, while being inversely related to problem behaviours and negative experiences. Future research would benefit from adopting a longitudinal research

approach in order to deepen our understanding of these aspects in early childhood development and to support the creation of evidence-based policies. In this context, the present study integrates multiple theoretical frameworks and has the potential to inform future longitudinal research, thereby further enhancing its contribution to the field.

Conclusion

In conclusion, this baseline study provides critical insights into children's perceptions of well-being, safety, and engagement with academic subjects, revealing key differences across gender, grade level, and subjects. Overall, participants in grades 1–4 in the sample reported high levels of well-being and safety in school, although their perceived enjoyment/liking of and competence in academic subjects varied significantly. Gender differences were evident, with girls reporting greater well-being and higher enjoyment/liking of reading and science, while boys showed a preference for physical education and higher confidence in maths. These findings highlight the importance of tailoring educational strategies to address gender-specific needs, such as fostering boys' social relationships and enhancing girls' interest in physical education. Additionally, the decrease in well-being scores from grades 1–4 underscores the need for sustained support to maintain positive experiences as students progress through school.

Future research should build on these findings by exploring longitudinal changes and evaluating interventions, such as the integration of physical activity and passion-driven projects, to optimize well-being and academic engagement for all children. Ultimately, this study emphasizes the need for holistic, adaptable educational approaches that foster a balance between emotional well-being and academic growth in early education settings.

Disclosure statement

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

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