frontiers | Frontiers in Computer Science

TYPE Original Research
PUBLISHED 10 September 2025
DOI 10.3389/fcomp.2025.1506046

Check for updates

OPEN ACCESS

EDITED BY
Laurence Habib,
Oslo Metropolitan University, Norway

REVIEWED BY
Hamid Mukhlis,
STKIP AL Islam Tunas Bangsa, Indonesia
Osama Mohamed Elsayed Ramadan,
Jouf University, Saudi Arabia
Leonidas Gavrilas,
University of Ioannina, Greece
Matang Matang,
Universitas Pendidikan Indonesia Sekolah Pascasarjana, Indonesia

*CORRESPONDENCE
Luís Coutinho
✉ id9862@alunos.uminho.pt;
✉ luisfcoutinho@gmail.com

RECEIVED 04 October 2024
ACCEPTED 13 August 2025
PUBLISHED 10 September 2025
CORRECTED 26 September 2025

CITATION
Coutinho L, Lencastre JA and Tomás AM (2025) Cyberbullying: a comparative analysis between the results of a scoping study and a questionnaire applied to students.
Front. Comput. Sci. 7:1506046.
doi: 10.3389/fcomp.2025.1506046

COPYRIGHT
© 2025 Coutinho, Lencastre and Tomás. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.

Cyberbullying: a comparative analysis between the results of a scoping study and a questionnaire applied to students

Luís Coutinho[1]*, José Alberto Lencastre[2] and Ana Maria Tomás[3]

[1]Research Centre on Education, Institute of Education, University of Minho, Braga, Portugal, [2]Department of Curricular Studies and Educational Technology, Institute of Education, University of Minho, Braga, Portugal, [3]Department of Educational Psychology and Special Education, Institute of Education, University of Minho, Braga, Portugal

This article presents a scoping study using the Scopus Database to analyze literature on cyberbullying and students' perceptions. Using the keywords 'cyberbullying', 'students', and 'perceptions', we narrowed down 6,271 initial articles to 14 that met our inclusion criteria. Additionally, we conducted a questionnaire survey with 193 Portuguese students aged between 10 and 19 to understand their perceptions of cyberbullying. Our analysis revealed cyberbullying as a growing concern with significant negative impacts on students' mental and emotional wellbeing. The correlation between our questionnaire results and the scoping study findings emphasizes the urgent need for comprehensive intervention strategies. Our research indicates that effective cyberbullying prevention requires a multi-faceted approach including: development of social and emotional skills among students; promotion of appropriate technology use beyond technical literacy; targeted teacher training programs; establishment of clear intervention protocols within schools; empowerment of cyber-observers as active prevention agents; and recognition that cyberbullying often functions as an extension of face-to-face aggression rather than anonymous attacks. This study brings into focus the critical importance of fostering digital citizenship within educational settings, with teachers and school administrators playing pivotal roles in creating safe digital environments. The findings underscore how properly structured educational interventions can significantly increase reporting rates and decrease cyberbullying incidents, thereby promoting students' overall wellbeing in the digital age.

KEYWORDS

cyberbullying, students' perspectives, scoping study, comparative analysis, Digital Citizenship education

1 Introduction

The growing pervasiveness of digital technology in everyday life has brought undeniable benefits, but it has also introduced new challenges, particularly for adolescents (Jones, 2024). Among these, cyberbullying stands out as a highly prevalent and psychologically damaging phenomenon, capable of affecting students' academic performance, emotional wellbeing, and sense of safety in both digital and physical environments (Kowalski et al., 2023; Fekih-Romdhane et al., 2024). Cyberbullying has emerged as a significant concern in the digital era, affecting individuals across various age groups and demographics. It encompasses a range of aggressive behaviors executed through digital platforms, including harassment, denigration,

impersonation, and exclusion. These actions are facilitated by the pervasive use of social media, messaging apps, and other online communication tools, making it easier for perpetrators to target victims beyond physical boundaries (González-Cabrera et al., 2021). Studies by Smith et al. (2021) and Kowalski et al. (2023) underscore the severe psychological toll on victims of cyberbullying, including anxiety, depression, and suicidal ideation. Jones et al. (2024) emphasizes enduring post-traumatic stress disorder symptoms, while Galán et al. (2021) and Fekih-Romdhane et al. (2024) emphasize its disproportionate impact on marginalized groups and individuals with mental health issues, necessitating targeted interventions. A cyber-victim is an individual who is subjected to harmful actions via digital platforms. These actions can include receiving threatening messages, having personal information shared without consent, or being the subject of online rumors. The consequences for cyber-victims often include psychological distress, anxiety, depression, and social withdrawal. A study by Lloret-Irles et al. (2022) highlights that victims of cyberbullying may experience significant emotional and psychological challenges, impacting their overall wellbeing. As for the cyber-aggressor, or cyber-perpetrator, is the individual who engages in harmful behaviors toward others through electronic means. Motivations for such behavior can vary, including the desire for power, retaliation, or entertainment. Cyber-aggressors may engage in activities such as sending malicious messages, spreading false information, or deliberately excluding individuals from online communities. Research indicates that certain personality traits and environmental factors can contribute to an individual's propensity to become a cyber-aggressor (González-Cabrera et al., 2021). It is mandatory to now focus on the cyber-observers, also known as bystanders, that are individuals who witness cyberbullying incidents without being directly involved as victims or aggressors. Within the scope of this issue, the role currently attributed to this cyber actor is increasingly important as their reactions can significantly influence the dynamics of cyberbullying. Passive observers may inadvertently reinforce the aggressor's behavior by not intervening, while active cyber-observers can deter bullying by supporting the victim or reporting the incident. The role of cyber-observers is critical, as their actions or inactions can either perpetuate or mitigate the occurrence of cyberbullying. Lloret-Irles et al. (2022) emphasize that understanding the predictors of bystanding behavior is essential for developing comprehensive anti-cyberbullying strategies. Albiero et al. (2019) shed light on cyber-observers apathy, emphasizing the importance of raising awareness about the harmful effects of cyberbullying to break the cycle of silence and inaction. It is relevant to state that the roles of cyber-victim, cyber-aggressor, and cyber-observer are not always mutually exclusive. Individuals may occupy multiple roles over time or even simultaneously. For instance, a victim of cyberbullying might retaliate and become a cyber-aggressor, or a cyber-observers might intervene and subsequently be targeted. Understanding these fluid dynamics is essential for developing comprehensive strategies to address cyberbullying. González-Cabrera et al. (2021) noted that the overlap of these roles can complicate the identification and intervention processes, necessitating a nuanced approach to prevention and support. The surge in cyberbullying, exacerbated by widespread online engagement and worsened by the COVID-19 pandemic (Hinduja and Patchin, 2021), exposes a critical modern-day challenge that left society unprepared. Moreover, Oliveira et al. (2024) draw attention the positive impact of intervention projects in reducing cyberbullying incidence. Tao et al. (2024) studies highlight the efficacy of education on cyberbullying and online safety in empowering adolescents to report incidents and seek support. Henares-Montiel et al. (2023) advocate for multidisciplinary approaches involving stakeholders beyond educational institutions. Torgal et al.'s (2023) underscores the need for consensus on effective prevention strategies, emphasizing collaboration between schools, communities, and the technology industry. Despite extensive research, perspectives of cyberbullying victims, often overlooked, are crucial for developing effective prevention programs (Patchin and Hinduja, 2022). Mishna et al. (2020) advocate giving students a platform to express their experiences. Ybarra et al. (2015) emphasize students' role in disseminating information and raising awareness. While numerous intervention strategies have emerged, there is growing consensus in the literature that punitive or reactive measures alone are insufficient. Increasingly, scholars and educators alike point to the necessity of systemic, preventive, and educational responses grounded in digital ethics and social responsibility. This is where the concept of Digital Citizenship becomes central as the pedagogical and ethical foundation for addressing cyberbullying in school contexts (Fredrick et al., 2023; Macharia and Dunaway, 2025). Digital Citizenship refers to the responsible, ethical, and active participation of individuals in digital environments. It encompasses not only technical competence, but also values such as empathy, respect, online safety, privacy awareness, and constructive engagement (Jones et al., 2024; Yang et al., 2021). This broader framework aligns with the increasing recognition that cyberbullying is not simply an isolated behavioral issue, but a symptom of a lack of digital socialization and ethical digital literacy within formal education. From this perspective, schools have a crucial role—not only as environments where cyberbullying incidents may occur, but as educational spaces where Digital Citizenship must be intentionally cultivated. This includes curriculum integration, whole-school policies, and most importantly, teacher training programs capable of empowering educators to guide students in navigating digital challenges (Cortés-Pascual et al., 2020; Fiorentini et al., 2022). Indeed, as our scoping study later shows, teacher training is often cited in the literature as a missing or underdeveloped element in prevention frameworks. Moreover, positioning Digital Citizenship at the center of cyberbullying prevention allows us to move beyond the binary logic of victim/aggressor, and instead promote a proactive model that includes bystanders as active agents, encourages positive peer relationships, and strengthens students' social–emotional competencies—all factors explored in our Results and Discussion sections. These are not isolated actions, but interdependent pillars of an educational ecosystem that values safe, inclusive, and participatory digital cultures. The present article aims to explore and reinforce this connection. To that end, we conducted a scoping review of scientific literature on students' perceptions of cyberbullying and complemented it with a questionnaire applied to 193 students in the Portuguese school system. Our objective is twofold: (1) to identify how students themselves perceive the phenomenon of cyberbullying, and (2) to analyze how these perceptions reflect or diverge from the strategies emphasized in the literature—particularly those involving Digital Citizenship as a preventive and formative approach. By triangulating findings from both sources, we aim to contribute to a deeper understanding of how Digital Citizenship can act not as a peripheral concept, but as a transformative axis in the design of anti-cyberbullying strategies and educational policy at large.

2 Methods

2.1 Scoping study

The decision to conduct a scoping study rather than a systematic review was guided by both the purpose and the nature of the existing literature. Scoping studies are particularly suitable for examining emerging and complex fields where definitions, concepts, and methodologies may vary considerably. Given the exploratory intent of this research—to map the breadth of literature on students' perceptions of cyberbullying and to identify conceptual patterns and research gaps—the flexible yet rigorous framework proposed by Arksey and O'Malley (2005) was deemed more appropriate. The scoping study methodology, therefore, aligned more effectively with the overarching aim of synthesizing heterogeneous evidence to support a comparative empirical analysis, as referred by Arksey and O'Malley (2005), that state that a scoping study aims to quickly map out the key concepts that underpin a research area and the main sources and types of evidence available. This definition draws attention to the need for comprehensive coverage of the available literature regarding the amount of data taken and analyzed, referring to the fact that there may be different degrees of depth in different types of scoping study, as this depends on the purpose of the review itself. A scoping study can be carried out as a standalone project, especially when an area is complex or has not been comprehensively researched. Note that the process should be documented in sufficient detail to enable the study to be replicated by others. According to the authors, it is possible to identify at least four reasons why a scoping study can be carried out: 1. Examine the extent, scope, and nature of the research activity; 2. To determine the value of conducting a complete systematic review; 3. To summarize and disseminate the results of the research; 4. To identify research gaps in the existing literature (Figure 1 and Tables 1–7).

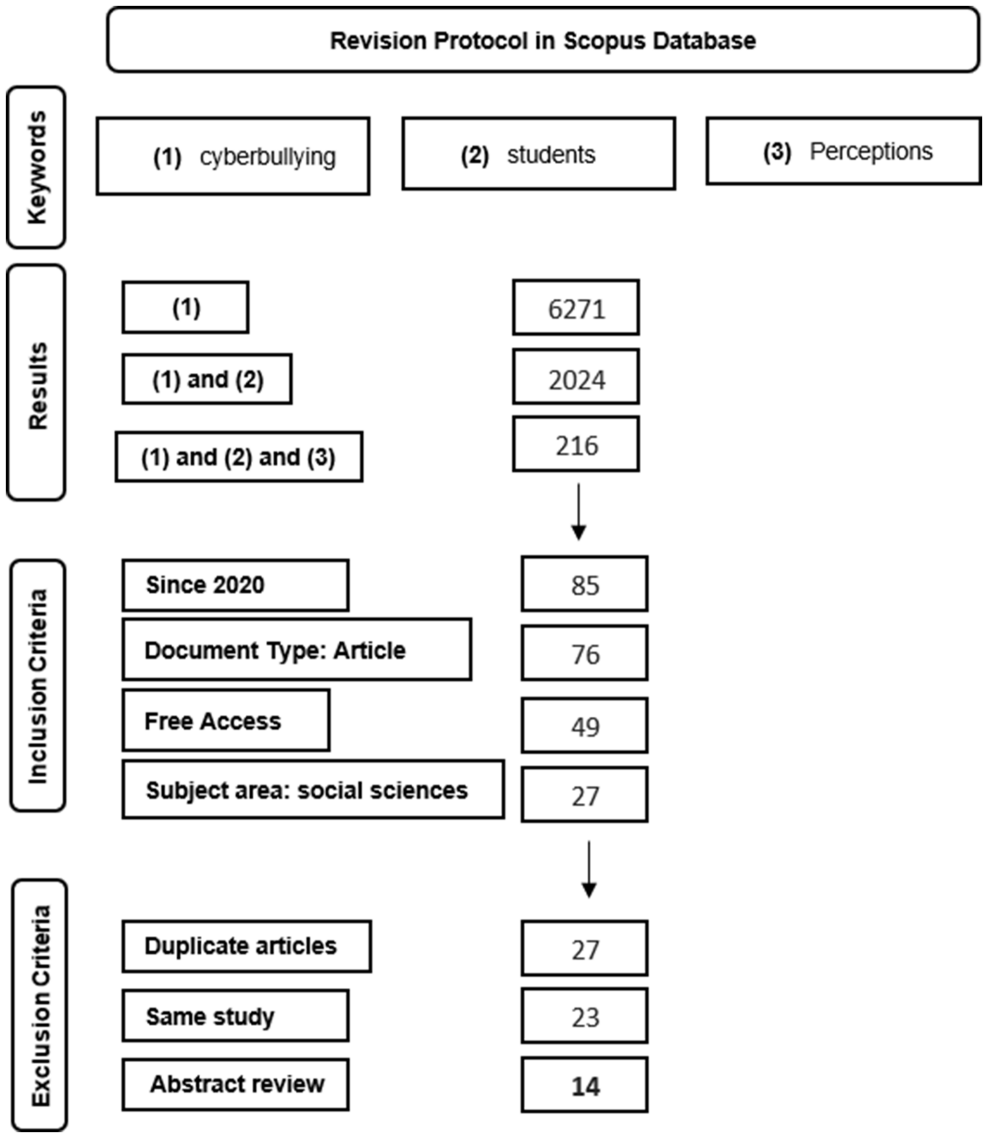

FIGURE 1
Review protocol (adapted from Moher et al., 2009 [The PRISMA Group]).

TABLE 1 Search results in the scopus database.

Keywords	(1)	(1) and (2)	(1) and (2) and (3)
Scopus database articles	6,271	2024	216

TABLE 2 Application of the inclusion and exclusion criteria.

Inclusion criteria	*n*	Exclusion Criteria	*n*
Since 2020	85	Exclude duplicate articles	27
Document type: article	76	Exclude articles referring to the same study	23
Free access	49	Exclude articles after review of abstracts	14
Subject area: social sciences	27		

Arksey and O'Malley (2005) also define that a scoping study should consist of five stages: Stage 1: identifying the research question; Stage 2: identifying relevant studies; Stage 3: study selection Stage 4: charting the data; Stage 5: collating, summarizing, and reporting the results.

Thus, in stage 1, we defined our review question, to analyze, synthesize, and present some data contained in the existing literature on the state of the art referring to student's perceptions of cyberbullying.

Regarding stage 2, we define that, in our research, we will consider articles with quantitative and qualitative approaches because, according to McMillan and Schumacher (2001), educational research is disciplined research using quantitative and qualitative approaches. After our preliminary research, we finally decided on our keywords: (1) cyberbullying, (2) students, and (3) perceptions and reached the following results. This selection of the keywords was based on an iterative search strategy aimed at balancing comprehensiveness and relevance while avoiding an unmanageable volume of data. (1) cyberbullying: This term was chosen over broader synonyms like "online harassment" or "digital aggression" because it specifically refers to harmful behaviors among young individuals in digital spaces (Smith et al., 2021). Using broader terms would have significantly increased the number of irrelevant studies beyond the scope of student experiences in educational settings. (2) Students: The term "students" was selected instead of alternatives like "youth," "adolescents," or "children" because it directly targets individuals in formal educational contexts, which aligns with the study's focus on school-based interventions (González-Cabrera et al., 2021). Including broader demographic terms would have resulted in studies that discuss cyberbullying among working adults, social media users in general, or younger children outside structured learning environments, which are not central to this research. (3) Perceptions: This term was preferred over "attitudes," "experiences," or "opinions" as it encompasses both subjective interpretations and cognitive evaluations of cyberbullying incidents (Mishna et al., 2020). The word "experiences" was found to retrieve studies focused more on victimization reports rather than students' broader understanding of the phenomenon, while "attitudes" tended to yield research related to moral or ethical perspectives rather than practical insights into cyberbullying. By refining the search strategy iteratively and assessing the impact of different keyword combinations, this selection ensures a focused and manageable dataset for analysis, in line with scoping study methodologies (Booth et al., 2016). The selection process adhered to the methodological framework proposed by Arksey and O'Malley (2005) for scoping studies, ensuring a systematic and transparent approach to identifying the most relevant literature. The initial search was conducted in the Scopus database using a predefined set of keywords to maximize coverage while maintaining thematic focus, with the following strategy: The keyword "cyberbullying" yielded 6,271 results, encompassing a broad spectrum of studies related to online harassment and digital aggression. To narrow the focus to student populations, the search was refined by incorporating the additional keyword "students," reducing the dataset to 2,024 articles. Finally, to specifically target research addressing students' perspectives, the keyword "perceptions" was added, further refining the selection to 216 articles.

We then started stage 3 and we have set out the following inclusion and exclusion criteria.

To refine the dataset, multiple filtering stages were applied. First, studies published before 2020 were excluded ($n = 85$), ensuring that only recent research reflecting contemporary cyberbullying trends was considered. Next, duplicate studies were removed ($n = 27$) to avoid redundancy in the analysis. To enhance methodological consistency, only peer-reviewed journal articles classified under the Social Sciences domain and available in open access were retained ($n = 49$). Further refinement involved eliminating studies that were derivatives of previously reviewed research ($n = 23$) and discarding those deemed irrelevant upon abstract review ($n = 14$). This rigorous selection process ensured that the final set of 14 articles directly addressed students' perceptions of cyberbullying while maintaining a balance between comprehensiveness and manageability (Booth et al., 2016). By systematically narrowing the scope, we ensured that our analysis was grounded in empirical evidence and aligned with the study's research objectives.

We present the flow diagram that systematizes the review protocol.

As defined in stage 4, we charted the data. All data collected were organized so that data extraction was facilitated and their reading, and subsequent reference, were feasible, as reported by Fleeman and Dundar (2014). We organize the descriptive data according to the order number resulting from our research, referring to the name of the articles, their year of publication, and authors.

Arksey and O'Malley (2005) say stage 5 of a scoping study involves collating, summarizing, and reporting the results. Consequently, we then established our categories and subcategories of analysis.

2.1.1 Results: categories and subcategories of analysis

2.1.1.1 Students' perspectives

The study carried out by Jensen et al. (2022) shows that cybervictimization was reported more frequently in fifth grade, decreasing progressively as the grade increased. It is also mentioned that the most reported type of cybervictimization was "receiving insulting or mocking messages over the internet or by cell phone" and that boys reported more cybervictimization than girls.

TABLE 3 Descriptive data (order number, name of articles, year of publication, and authors).

N.°	Name of the article	References
1	"Positive relationships for the prevention of bullying and cyberbullying: a study in Aragón (Spain)"	Cortés-Pascual et al. (2020)
2	"Will i like myself if you hurt me? Experiences of violence and adolescents' self-esteem"	Jankowiak et al. (2021)
6	"The Role of Personal and Perceived Peer Norms in Bullying and Sexual Harassment Perpetration"	Nickerson et al. (2022)
7	"How the education community perceives cyberbullying: A comparison of students, teachers and families"	Alcaine and Sánchez (2020)
8	"Cybervictimization in Chilean Schools: An Intersectional Multilevel Study"	Jensen et al. (2022)
9	"Competencias clave para la mejora de la ciberconvivencia escolar: El programa "Alumnos ayudantes TIC""	Giménez Gualdo et al. (2021)
11	"The effectiveness of safe surfing, an anti-cyberbullying intervention program in reducing online and offline bullying and improving perceived popularity and self-esteem"	Aizenkot and Kashy-Rosenbaum (2020)
14	"What roles matter? An explorative study on bullying and cyberbullying by using the eye-tracker"	Menabò et al. (2023).
17	"[Ciberbullying desde la perspectiva del estudiantado: "Lo que vivimos, vemos y hacemos"]"	Chaves-Álvarez et al. (2020)
18	"ICTs Opportunities and Risks: Effectiveness of a Nationwide Intervention"	Fiorentini et al. (2022)
19	"#aquiproubullying Intervention Program in Compulsory Secondary Education. Results of a Preliminary Study"	Rovira et al., (2022)
21	"Pedagogical conception of ICT conflicts in schools in the province of Malaga (Spain): A commitment to mediation"	González Sodis et al. (2022)
22	"Exploring Cyberbullying and its Implications on Psychosocial Health of Students in Accra, Ghana: A Thematic Analysis"	Otchere et al. (2021)
27	"School-wide social emotional learning and cyberbullying victimization among middle and high school students: Moderating role of school climate."	Yang et al. (2021)

TABLE 4 Perceptions related to the degree of satisfaction (adapted from the Multidimensional Students' Life Satisfaction Scale).

	Very dissatisfied	Unsatisfied	Neutral	Satisfied	Very satisfied
(1)	8 (4.1%)	7 (3.6%)	29 (15%)	56 (26.9%)	97 (50.3%)
(2)	3 (1.6%)	7 (3.6%)	33 (17.1%)	66 (34.2%)	84 (43.5%)
(3)	4 (2.1%)	16 (8.3%)	48 (24.9%)	75 (38.9%)	50 (25.9%)
(4)	2 (1%)	3 (1.6%)	22 (11.4%)	57 (29.5%)	109 (56.5%)
(5)	3 (1.6%)	10 (5.2%)	34 (17.6%)	84 (43.5%)	62 (21.1%)

Questions: (1) "How satisfied are you with the relationship between your parents?" (2) "How satisfied are you with the relationship with your colleagues?" (3) "How satisfied are you with your grades last year?" (4) "How satisfied are you with your relationship with your friends?" (5) "How satisfied are you with your relationship with your teachers?"

Data from the study conducted by Chaves-Álvarez et al. (2020) shows that students report that the most frequent technology in the context of cyberbullying is Facebook, SMS, and phone calls. This study also refers that the majority of families did not take any action either to counteract or to prevent cases of cyberbullying." The families that took some action focused on prohibiting/restricting the use of technological means or speaking to the people involved. Of particular note is that a very high number of respondents to this study (32.4%) report that their school did not take any action concerning the reported cases. In this study, conducted by Chaves-Álvarez et al. (2020), it is also addressed that a significant number of students report knowing that others are victims of cyberbullying but prefer not to take any action regarding it. The vast majority of students state that they have never been involved in cyberbullying, but a significant percentage of respondents (approximately 10%) report the opposite. Regarding this group of cyber attackers, this study reveals that the majority say they do it just for fun and that they are unaware and/or underestimate the negative impact that their actions have on others and, in some cases, a lack of empathy for their peers.

In the study by Otchere et al. (2021) the majority of respondents believed that females were most vulnerable and that the results regarding the gender of the aggressor tend to show inconsistent findings. The authors contribute to this discussion by stating that some students describe that cyberbullies want to cause pain to others because they are also feeling pain, so they conclude that this transfer of negative emotions will be one of the causes of cyberbullying, also highlighting others, namely: fun, revenge, insecurities, jealousy, and power-play. Regarding the victims, it is mentioned that they tend to suffer from depression, anxiety, low self-esteem, emotional distress, mental distress, and poor academic performance and that the most frequent responses were emotional, rational, and revenge, with a perpetuation of the cycle of aggression. We consider it relevant to highpoint that this study, by Otchere et al. (2021), is in line with other previous studies, stating that young people consider it possible or likely that they could be victims of either bullying or cyberbullying, thus resulting in normalization and even desensitization of the phenomenon.

2.1.1.2 Prevention and intervention approaches

The need to create structured plans that focus on preventing and acting on behaviors related to cyberbullying is a central aspect in all the articles analyzed. Cortés-Pascual et al. (2020) state that preventive action must be initiated at the beginning of the educational process to prevent anti-social behavior, in a policy of zero tolerance toward

TABLE 5 Perceptions of cyberbullying.

(a)	Yes	No		
	14 (7.3%)	179 (92.7%)		
(b)	The Boys	The Girls		
	71 (36.8%)	122 (63.2%)		
(c)	Yes	No		
	57 (29.5%)	136 (70.5%)		
(d)	Yes	No	I've never seen	
	42 (21.8%)	25 (13%)	126 (65.3%)	
(e)	A boy	A girl	A boy or a girl, alike	
	47 (24.4%)	13 (6.7%)	133 (68.9%)	
(f)	Never	Sometimes	Often	Frequently
	185 (95.9%)	7 (3.6%)	1 (0.5%)	0
(g)	Never	Sometimes	Often	Frequently
	157 (81.3%)	31 (16.1%)	4 (2.1%)	1 (0.5%)

Questions: (a) "Do you have peers who cyberbully other classmates?" (b) "Who are the most frequent victims of cyberbullying?" (c) "Have you ever seen other children being bullied online?" (d) "Have you informed an adult when you saw a child being cyberbullied at school? (e) "In your opinion, the person who most often cyberbullies the other is:" (f) "Have you ever cyberbullied?" (g) "Have you ever been cyberbullied.

TABLE 6 Cyber Victimization Questionnaire (CYVIC).

	Never	Rarely	Often	Always
(1)	170 (88.1%)	17 (8.8%)	5 (2.6%)	1 (0.5%)
(2)	184 (95.3%)	5 (2.6%)	4 (2.1%)	0
(3)	174 (90.2%)	16 (8.3%)	3 (1.6%)	0
(4)	156 (80.8%)	26 (13.5%)	10 (5.2%)	1 (0.5%)
(5)	118 (61.1%)	58 (30.1%)	14 (7.3%)	3 (1.6%)
(6)	181 (93.8%)	9 (4.7%)	3 (1.6%)	0
(7)	162 (83.9%)	25 (13%)	6 (3.1%)	0
(8)	156 (80.8%)	25 (13%)	10 (5.2%)	2 (1%)
(9)	187 (96.9%)	4 (2.1%)	2 (1%)	0
(10)	188 (97.4%)	4 (2.1%)	1 (0.5%)	0
(11)	148 (76.7%)	32 (16.6%)	11 (5.7%)	2 (1%)
(12)	187 (96.9%)	4 (2.1%)	1 (0.5%)	1 (0.5%)
(13)	174 (90.2%)	12 (6.2%)	6 (3.1%)	1 (0.5%)
(14)	178 (92.2%)	11 (5.7%)	3 (1.6%)	1 (0.5%)
(15)	184 (95.3%)	8 (4.1%)	0	1 (0.5%)
(16)	137 (71%)	41 (21.2%)	13 (6.7%)	2 (1%)
(17)	177 (91.7%)	11 (5.7%)	5 (2.6%)	0
(18)	179 (92.7%)	9 (4.7%)	5 (2.6%)	0
(19)	165 (85.5%)	19 (9.8%)	9 (4.7%)	0

Questions: (1) "Someone impersonated me on the Internet, posting comments on my behalf." (2) "Someone has taken photos or videos of me with sexual or suggestive content without my consent and have them posted on their mobile phone or the Internet." (3) "Someone posted (modified) pictures of me on the Internet to hurt me or laugh at me." (4) "I've been kicked out or not accepted on a chat list, social media contact list, or messaging group without having done anything, just because it's me." (5) "I have received calls on my mobile phone that are not answered, to annoy me." (6) "Someone posted compromising photos/videos of me, without permission, to hurt me or make fun of me (7) "I received calls insulting me or making fun of me." (8) Someone made fun of me with offensive or insulting comments on social media." (9) "Someone disseminated without my permission, via my mobile phone or the Internet, compromising images or videos of me (of a sexual, suggestive or insinuating nature) that I had taken." (10) "I was beaten, and others recorded it and then released it." (11) "I have received insults through short text messages (SMS) or instant messaging programs (e.g., WhatsApp)" (12) "I have been impersonated on a social network through the creation of a fake profile." (Photo, personal details,) with which I have been insulted or ridiculed." (13) "Someone made false complaints about me on a forum, on a social network, or in an online game, which caused me to be expelled." (14) "I have been pressured to do things I did not want to do (and finally agreed to do them), and now I am threatened with the disclosure of these intimate conversations or images." (15) "Some people forced me to do something humiliating, recorded it, and then disseminated it to ridicule me." (16) "Some people agreed to ignore me on social media." (17) "I received anonymous phone calls to threaten or intimidate me." (18) "Someone got hold of my password and sent annoying messages to people I know, as if it were me, to get me into trouble." (19) "There have been false rumors about me on a social network."

aggressive behavior. These authors state that it is necessary to update school Plans and Regulations to promote the development of healthy relationships in the school environment and not focus solely on punitive measures. Jensen et al. (2022) point out that school plans and projects must consider the diversity of students' backgrounds and value respect for difference as one of the main axes on which any educational project must be based, as this is the only way to promote the creation of an inclusive environment, leading to all students having an education free from violence, based on digital citizenship. The study conducted by Aizenkot and Kashy-Rosenbaum (2020) states that it will be a significant added value for the school to produce anti-cyberbullying plans as the results produced will have a consequent and noticeable effect on other forms of bullying. The results found by Fiorentini et al. (2022) emphasizes the relevance of schools promoting activities that raise awareness of the risks and opportunities of digital technologies, and that both students and teachers must be made clear about the school's policies and procedures regarding online safety and positive use of digital technologies. González Sodis et al. (2022) also highlight that direct action from school leaders is necessary, as only then can effective measures be implemented, creating awareness, and ensuring social media responsibility (Otchere et al., 2021) in the school curriculum.

2.1.1.2.1 Teachers' training. It would only be logical or feasible to design and promote prevention and action plans, whatever the topic, by considering teachers' training. Consider the enormous technological evolution and the structure needed to develop citizenship and digital literacy. Preparing teachers to promote appropriate social, physical, and digital behaviors becomes even more crucial. Cortés-Pascual et al. (2020) draw attention to the need to improve teacher training with methodologies that enhance the need to establish healthy relationships that foster students' autonomy. Also, Alcaine and Sánchez (2020) highlight the importance of promoting training programs to increase teacher knowledge in the prevention and action against cyberbullying and simultaneously train them in suitable coping strategies. It is referred by González Sodis et al. (2022) that the training of school actors, namely teachers, on this topic will allow a current and concrete vision and action with an emerging problem in today's school society.

2.1.1.2.2 Positive relationships between school peers. According to our research, several authors bring to focus the need to establish and promote lasting and healthy relationships, based on compression and respect, within the school ecosystem, and that must be addressed by any type of intervention approach to cyberbullying. Cortés-Pascual et al. (2020) reinforce the need to establish positive relationships as a way of preventing bullying, whether in person or online. They clarify

10.3389/fcomp.2025.1506046

TABLE 7 The Cyber Aggression Scale (CYB-AGS).

	Never	1 or 2 times	Some times (>3 and <5)	Many times (>6 and <10)	Several times (>10)
(a)	174 (90.2%)	15 (7.8%)	3 (1.6%)	0	1 (0.5%)
(b)	168 (87%)	20 (10.4%)	4 (2.1%)	0	1 (0.5%)
(c)	191 (99%)	2 (1%)	0	0	0
(d)	171 (81.6%)	20 (10.4%)	0	0	2 (1%)
(e)	188 (97.4%)	3 (1.6%)	2 (1%)	0	0
(f)	168 (87%)	19 (9.8%)	5 (2.6%)	0	1 (0.5%)
(g)	185 (95.9%)	7 (3.6%)	1 (0.5%)	0	0
(h)	190 (98.4%)	1 (0.5%)	1 (0.5%)	0	1 (0.5%)
(i)	190 (98.4%)	2 (1%)	1 (0.5%)	0	0
(j)	186 (96.4%)	5 (2.6%)	2 (1%)	0	0
(k)	169 (87.6%)	12 (6.2%)	8 (4.1%)	2 (1%)	2 (1%)
(l)	187 (96.9%)	6 (3.1%)	0	0	0
(m)	158 (81.9%)	28 (14.5%)	6 (3.1%)	0	1 (0.5%)
(n)	178 (92.2%)	10 (5.2%)	3 (1.6%)	2 (1%)	0
(o)	187 (96.9%)	4 (2.1%)	2 (1%)	0	0
(p)	179 (92.7%)	12 (6.2%)	2 (1%)	0	0
(q)	188 (97.4%)	4 (2.1%)	1 (0.5%)	0	0
(r)	176 (91.2%)	13 (6.7%)	2 (1%)	1 (0.5%)	1 (0.5%)

Questions: (a) "I insulted or ridiculed someone on social media or groups like WhatsApp to annoy them" (b) "I called someone's cell phone and hung up to annoy or scare them." (c) "I have threatened someone to make them do things on the Internet or smartphone (like video recording, giving me money, doing bad things)." (d) "I have told someone's secrets or revealed personal things about them on social media or groups (WhatsApp, etc.)" (e) "To make fun of someone, I made or manipulated videos or photographs and uploaded/distributed them on social media or smartphone." (f) "I've logged into someone's profile or accounts." (g) "I pretended to be someone else so that I could say or do bad things on the Internet." (h) "I purposely created a web page, a forum, or a group just to make fun of someone and criticize them." (i) "I put someone's cell phone number on the Internet and said bad or untrue things to get people to call you and get you in trouble." (j) "I took someone's smartphone and used it to send bad photos, videos, or messages to get them in trouble" (k) "I criticized someone or made fun of comments, photos, or videos that someone made for social media or groups" (l) "I created a fake profile on the Internet with someone's personal data to impersonate them saying or doing bad things." (m) "I ignored and did not respond to someone's messages or things they shared in groups/social media, just to make them feel bad." (n) "I provoked someone on social media or groups by insulting them to annoy them and cause a big argument." (o) "I deleted or blocked someone in a group to make them friendless." (p) "I have stolen photographs, videos, or private conversations and sent them to others." (q) "I changed someone's password for social media so I could not access them." (r) "I sent someone provocative messages to someone to annoy and annoy them."

that a solid base of friends is a deterrent and/or protective factor for victims. Jankowiak et al. (2021) refer the need to promote adolescents' self-esteem, stating that it will have the direct consequence of increasing their ability to seek social support and develop problem-solving skills. The study conducted by Aizenkot and Kashy-Rosenbaum (2020) is completely aligned with the perspectives of the previous authors, stating that, in their study, after implementing an intervention plan, there was a significant decrease in cases of cyberbullying and that the results point to an increased self-esteem post-intervention establishing a cause-effect relationship. These authors focus in the relevance of school leaders giving real importance to peer relationships and self-esteem as preponderant factors in the fight against any form of bullying. González Sodis et al. (2022) discuss that today's young people spend so much time online that their personality is a construct of both the physical and virtual context, which gives special emphasis to what was stated by Yang et al. (2021) who highlight the importance of promoting Social and Emotional Learning (SEL) competencies as a way of promoting positive relationships between peers, affirming their effectiveness in reducing cases of bullying, whatever its form. These authors reinforce that students with higher responsible decision-making tend to be more conscious and ethical in their online actions, highlighting the importance of promoting a positive school climate through SEL competencies. Simultaneously, Chaves-Álvarez et al. (2020), convey the idea that promoting good relationships in the school environment cannot and should not focus solely on peers, but that there is also a need for young people to establish positive and coherent connections with adults with whom they interact, as this sense of security will give them the skills needed to deal with problems. We consider, nevertheless, relevant to underscore what was stated by Nickerson et al. (2022) who concluded that the students in their study had a self-perception of their attitudes toward bullying and cyberbullying as more prosocial than that of the other students, that is, they had more positive attitudes about their behaviors than they do about their peers.

2.1.1.2.3 Bystander as a relevant actor. Designing an effective and relevant intervention plan to combat cyberbullying must advocate, as mentioned above, teacher training, the importance of promoting a school environment based on positive relationships between peers and also on the role, which is often minimized or not even considered, from the bystander. Menabò et al. (2023) state that it is necessary to establish a detailed analysis of the role and profile of the bystander and Cortés-Pascual et al. (2020) state that the bystander can be effective as a deterrent in a situation of abuse or can serve as a means of support and resistance for victims. In the study conducted by Chaves-Álvarez et al. (2020), students report that they are aware of cases of

cyberbullying and that they are aware of its impact. Still, they do nothing to minimize or prevent these situations.

2.1.1.2.4 Anonymity and cyberbullying. Several authors state that one of the reasons why cyberbullying has seen such exponential growth is directly related to anonymity. Chaves-Álvarez et al. (2020) state that, in their study, most victims knew their cyber attacker and knew exactly where to find him. It is stated by these authors that cyberbullying is often the online continuation of bullying that takes place at school, thus appearing as an aggravating factor taking into account its continuity, consequently, the issue of anonymity is excluded. Yang et al. (2021) also claim that, although the majority of cyberbullying situations do not occur at school, they often occur as a result of actions that occurred in a school environment, meaning that students are aware of the identity of their aggressor.

2.2 Questionnaire

The questionnaire was distributed online and the target participants were primary and secondary school students from public and private schools, from urban and rural areas, aged between 10 and 19 years. This study adhered to ethical research principles, ensuring that all participants were informed about the study's purpose, procedures, and their rights before participation. Given that the target population included minors (ages 10–17), a dual consent process was implemented. First, parental or legal guardian consent was obtained through an electronic form, in which guardians were informed about the nature of the study, data confidentiality, and their right to withdraw their child from participation at any time (Creswell and Creswell, 2018). In addition to parental consent, child assent was sought for all participants ensuring that they voluntarily agreed to participate after receiving an age-appropriate explanation of the study (Graham et al., 2015). Students were assured that their responses would remain anonymous, and no personally identifiable information would be collected. The study was conducted in compliance with the ethical guidelines of the General Directorate of Education through the School Environment Survey Monitoring Platform. Additionally, particular attention was given to the psychological wellbeing of participants, given the sensitive nature of cyberbullying. If students experienced distress while completing the questionnaire, they were informed of available support resources, including school counselors. Measures were also taken to ensure data security, with responses stored and accessible only to authorized researchers (Dobrick et al., 2018).

The first section of the questionnaire, (i) sample characterization, focuses on the characterization of the respondents, their household and their degree of student satisfaction with classmates, teachers, and parents, based on Huebner and Gilman (2002) Multidimensional Students' Life Satisfaction Scale (MSLSS) on a 5-point Likert scale, in which 1 is Very Dissatisfied and 5 is Very Satisfied; The second section of the questionnaire, (ii) cyberbullying, is related to perceptions of cyberbullying, in the Cyber Victimization Questionnaire (CYVIC), by Álvarez-García et al. (2017) and in the Cyberaggression Scale (CYB-AGS) by Buelga and Pons (2012). To ensure the methodological rigor and reliability of this study, we selected three validated and psychometrically robust instruments. These instruments were chosen based on their validation in previous studies and their demonstrated reliability coefficients, ensuring the consistency and accuracy of the data collected.

Prior contacts were established with the school boards to assess their receptivity and authorization for students to participate in the study. The questionnaires were distributed online, via Google Forms, in 9 public and private schools, with a total of 201 responses, 193 of which were validated.

Inclusion criteria: questionnaires submitted, fully completed, by students of Basic and Secondary Education, from public or private schools, from urban and rural areas, who declared that they were aware of the scope of the questionnaire, aged between 10 and 19 years.

Exclusion criteria: questionnaires without proper declarations of consent and incomplete questionnaires.

2.2.1 Sample characterization

There were 193 respondents to the questionnaire, 103 of whom were female and 90 males, aged between 10 and 19 years. Regarding the level of education, 11 (5.7%) attend the 2nd Cycle of Basic Education, 51 (26.5%) attend the 3rd Cycle of Basic Education and 131 (67.9%) attend Secondary Education. A majority of respondents live in urban areas.

Regarding family data, the majority of respondents live with their two parents (65.8%) and 15.5% live only with their mother. It should be noted that 24 respondents (12.4%) selected the "other" option, thus considering that they were not included in any of the other available options. Regarding education, the majority of the respondents' fathers and mothers have higher education, with 43.5 and 53.4%, respectively. A large majority of respondents own their room (85%), only 15.5% of respondents did not take a family holiday in the year of answering the questionnaire and only 1% of respondents say that their family does not own a personal vehicle. It should also be noted that 71% of respondents report that there are more than two computers in their household.

Of the respondents, 50.3% reported being Very Satisfied with their relationship with their parents, with only 4.1% being at the opposite extreme. Regarding the degree of satisfaction with peers, the difference in extremes is also significant, with 43.5% who are Very Satisfied as opposed to 1.6% who answer Very Dissatisfied. The same is true in the relationship with their friends, with the discrepancy between the opposites being very significant, respectively 56.5 and 1%. Regarding the degree of satisfaction with their grades, only 9.4% presented negative responses and regarding the relationship with their teachers, 93.2% presented positive evaluation responses.

2.2.2 Results

2.2.2.1 Cyberbullying

In this section of the questionnaire, we focused on students' perceptions regarding cyberbullying. 179 (92.7%) report that they do not have colleagues who were involved in cyberbullying, 185 (95.9%) report that they have never committed any act related to cyberbullying, and 157 (81.3%) say they have never been the victims. However, it is important to note that a significant proportion of students 57 (29.5%) reported that they have witnessed others being victims of cyberbullying, suggesting that the issue may be more prevalent than students realize. The psychological toll of cyberbullying is a growing concern, with significant impacts on student wellbeing. Our findings align with previous research indicating that victims of cyberbullying

often experience heightened anxiety, depression, and social withdrawal (Kowalski et al., 2023). Recent studies highlight that repeated exposure to online harassment can lead to long-term mental health consequences, including post-traumatic stress disorder (PTSD) symptoms, particularly among adolescents with pre-existing vulnerabilities (Fekih-Romdhane et al., 2024). Additionally, cyberbullying has been linked to increased suicidal ideation, with research indicating that victims of persistent online harassment are at significantly higher risk of engaging in self-harm or developing suicidal thoughts (Galán et al., 2021). The permanence of online attacks exacerbates these effects, as victims often feel a sense of helplessness and lack of escape from digital aggression (Henares-Montiel et al., 2023). Given these findings, mental health support systems within schools must incorporate proactive psychological interventions, ensuring that students facing cyberbullying receive timely counseling and emotional support.

It is also relevant to note that 126 (65.3%) state that they did not report a case of cyberbullying to an adult because they had never seen one, which implies that 34.7% have already seen it and of these, only 42 (21.8%) reported what happened. This reluctance to speak up is one of the most concerning findings of this study. Several sociocultural factors may explain this phenomenon. Firstly, fear of retaliation is a key deterrent, as reporting an incident could expose students to further harassment, particularly in tightly knit school communities where anonymity is difficult to maintain (Smith et al., 2021). Moreover, previous studies have shown that students often lack trust in school authorities due to perceived inaction or ineffective responses to bullying cases (Patchin and Hinduja, 2022). This perception discourages victims and bystanders from seeking help, reinforcing a cycle of silence (Menabò et al., 2023).

In terms of gender differences, our study found that a majority of students 122 (63.2%) believe that girls are the most frequent victims of cyberbullying. This perception suggests that stereotypes regarding gender and victimization in cyberbullying may influence student assumptions (Alcaine and Sánchez, 2020). Previous research has shown that while girls tend to experience more relational forms of cyberbullying, such as social exclusion and rumor-spreading, boys are also at risk, particularly through direct verbal aggression or impersonation (Tao et al., 2024). Additionally, the majority of students 133 (68.9%) believe that the aggressor in cyberbullying incidents can be male or female, suggesting that students are aware that both genders are capable of engaging in cyberbullying behaviors.

As a summary, this section shows us that, while the majority of students report that they are not actively involved in cyberbullying, the fact that a significant proportion have witnessed it highlights the importance of raising awareness about this issue and empowering students to speak up when they see it happening. Future research could further explore the reasons why students are hesitant to report cyberbullying incidents and develop strategies to encourage bystander intervention.

We will now focus on the results of the Cyber Victimization Questionnaire (CYVIC) and, generally speaking, we were able to infer that from these respondents, the most serious related situations obtain residual responses, with values falling between the parameters of "rarely" and "never." However, within the scope of this article, we decided to only focus on some of the results of our questionnaire as we found some of the responses somewhat surprising. Regarding the question "Someone impersonated me on the Internet, posting comments in my name." only 170 (88.1%) of students say they have not been the target of this form of cyberbullying. Regarding the question "I was kicked out or rejected from a chat list, a social media contact list, or a messaging group without doing anything, just because I was me." only 156 (80.8%) report never having experienced it. In the question "I received calls on my cell phone that are not answered, to irritate me." only 162 (83.9%) say it has never happened to them. Already question "Someone made fun of me with offensive or insulting comments on social media." obtained a surprising result of only 156 (80.8%) of students reporting that this had never happened to them. Also, the question "I received insults through short text messages (SMS) or instant messaging programs (for example, WhatsApp)" received responses that we found disturbing, with 148 (76.7%) of the students saying "never." To the question "Some people agreed to ignore me on social media." only 137 (71%) of students answered "never" and 165 (85.5%) answered "never" to the question "There have been false rumors about me on social media."

Overall, the data from this section of our questionnaire paints a concerning picture of the prevalence of cyberbullying among students. Despite the majority of students reporting never experiencing certain forms of cyberbullying, there is still a significant portion of students who have been targets of online harassment and abuse.

When analyzing the responses to our questionnaire in which we used The Cyber Aggression Scale (CYB-AGS), we decided to maintain the same analysis methodology within the scope of this article, as we considered some of the responses somewhat surprising. Regarding the question, "I called someone's cell phone and hung up to bother or scare them." 168 (87%) say they have never done it, and 20 students (10.4) say they have done it 1 or 2 times. The question "I told someone's secrets or revealed personal things about them on social networks or groups (WhatsApp, etc.)" had 171 (81.6%) students reported never having done so, and 20 students (10.4) reported having done it 1 or 2 times. Now the question "I entered someone's profile or accounts." 168 (87%) of the students answered "never" and 19 (9.8%) said it 1 or 2 times. In the question "I criticized someone or made fun of comments, photos or videos that someone made for social networks or groups" 169 (87.6%) answered "never" and 12 (6.2%) answered "1 or 2 times" It is noteworthy here that 8 (4.1%) answered "between 3 and 5 times" to this question. As for the question "I ignored and did not respond to someone's messages or things they shared in groups/social media, just to make them feel bad." got the answer "never" from 158 (81.9%), 28 students (14.5%) answered "1 or 2 times" and 6 (3.1%) answered "between 3 and 5 times."

Overall, the results of The Cyber Aggression Scale (CYB-AGS) suggest that while most students do not engage in severe forms of cyber aggression, there are still instances of harmful behaviors present among the student population.

3 Discussion

This study offers a distinctive contribution by integrating two complementary methodological approaches: a scoping review of the literature and an empirical analysis based on student questionnaires. While prior research has independently explored either theoretical frameworks or student experiences related to cyberbullying, this article bridges that gap by directly comparing evidence from both sources. Such triangulation enables a more comprehensive

understanding of cyberbullying in educational settings, revealing discrepancies between academic discourse and students lived realities. Additionally, the incorporation of the Digital Citizenship framework as a cross-cutting analytical lens adds an innovative dimension, positioning the study within contemporary discussions about ethical and responsible technology use in youth populations. This dual-method design strengthens both the external validity of the findings and their relevance for shaping practical school interventions.

When comparing our questionnaire data with the findings from our scoping study, several important insights emerge regarding students' perceptions of cyberbullying and potential intervention strategies. This discussion synthesizes these findings to provide a comprehensive understanding of the cyberbullying phenomenon in educational contexts, emphasizing Digital Citizenship not merely as a complement, but as an educational framework that supports ethical behavior, social responsibility, and active digital engagement.

Our research revealed a concerning pattern regarding cyber-observer behavior. The majority of students reported awareness of cyberbullying incidents but chose not to take action. This aligns with our questionnaire data showing that a significant proportion of students had witnessed cyberbullying without reporting it. This reluctance to intervene may stem from several factors identified in the literature: fear of retaliation, lack of reporting knowledge, or uncertainty about appropriate intervention methods (Cortés-Pascual et al., 2020; Menabò et al., 2023). Furthermore, many students may remain passive due to what Otchere et al. (2021) describe as the normalization of cyberbullying—where repeated exposure to online aggression leads students to view such behaviors as an inherent part of digital interactions rather than an issue warranting intervention. Peer pressure compounds this problem, as students may fear social exclusion if they report cyberbullying incidents (Waasdorp et al., 2017). These findings underscore the critical importance of empowering cyber-observers to take action. Studies have demonstrated that students who receive guidance on effective intervention strategies are significantly more likely to support victims and report incidents (Lee et al., 2024). Schools implementing active cyber-observer training programs have experienced substantial increases in reporting rates and corresponding decreases in cyberbullying incidents (Polanin et al., 2022). Within a Digital Citizenship paradigm, such empowerment becomes part of a broader educational mission: to instill in students a sense of civic responsibility, digital ethics, and the confidence to engage constructively in online spaces. By framing the observer as a digital citizen, we shift the focus from passive non-involvement to active, ethical participation in virtual communities.

Our analysis highlighted notable gender differences in cyberbullying experiences and perceptions. This finding emphasizes the need for gender-sensitive approaches in cyberbullying prevention, ensuring that intervention strategies address both male and female experiences rather than reinforcing one-dimensional victimization narratives. Educators and policymakers should be aware of gender biases in student perceptions, as these may shape how bullying cases are reported and addressed. Digital Citizenship frameworks, when implemented with equity in mind, can help support inclusive approaches that are sensitive to intersectional differences—including gender, identity, and vulnerability.

A particularly significant finding challenges the commonly held assumption regarding perpetrator anonymity in cyberbullying. Our empirical data suggests a potential continuum between traditional bullying and its cyber counterpart, wherein cyberbullying may function as an extension of face-to-face aggression. Studies by Aizenkot and Kashy-Rosenbaum (2020) and Chaves-Álvarez et al. (2020) support this observation, revealing that in many school cyberbullying cases, victims can identify their aggressors with considerable certainty. This identification capability may paradoxically contribute to victims' reluctance to report incidents, as they may fear physical retaliation. The digital medium allows for the prolongation and ubiquity of aggressive behaviors, effectively eliminating safe spaces for victims. Consequently, targets of such aggression may experience sustained attacks beyond the confines of the educational institution, amplifying negative impacts on their psychosocial wellbeing. These findings call for integrated approaches that do not treat the digital and physical school spaces as separate, but rather as overlapping domains of student interaction. Digital Citizenship education encourages this holistic perspective by fostering coherent values, behavior, and decision-making across both spheres. Students should be taught that ethical conduct, empathy, and accountability are not context-dependent, but are continuous across their daily social environments—both online and offline.

Based on our analysis of literature and questionnaire responses, we determined that the most frequent type of cyberbullying involves receiving derogatory or ridiculing messages online or via mobile devices. Additionally, our data indicates that cyberbullying incidents most frequently occur within online social connections and interaction platforms. This awareness of common cyberbullying forms and channels is crucial for developing targeted prevention strategies. Through the lens of Digital Citizenship, these findings reinforce the need for students to develop not only technical skills, but ethical discernment in digital communication—learning to identify, avoid, and challenge harmful behavior in platforms they use daily.

Our findings strongly support the implementation of comprehensive educational interventions at various levels. Teachers require digital literacy training programs that integrate cyberbullying prevention strategies into their curriculum. Research indicates that educators who receive formal training on digital citizenship are better equipped to identify and intervene in online harassment cases (Fredrick et al., 2023). Schools should incorporate mandatory digital literacy courses focusing on responsible online behavior, privacy protection, and ethical technology use, as outlined in the Be Internet Awesome curriculum (Jones et al., 2024). These interventions should emphasize the development of social and emotional skills among students, as promoting Social and Emotional Learning (SEL) competencies has been identified as a critical factor in deterring cyberbullying (Yang et al., 2021).

Among the key educational interventions, teacher training emerged as a recurring and critical theme in both the literature and the empirical data. Although initially introduced in the introduction as central to promoting Digital Citizenship, its practical implications merit deeper exploration. Studies have demonstrated that educators equipped with targeted training in digital ethics, online safety, and cyberbullying prevention are more capable of identifying risk behaviors and acting preemptively (Fredrick et al., 2023; Alcaine and Sánchez, 2020). The findings of this study reinforce the notion that any effective anti-cyberbullying plan must prioritize teacher professional development, particularly within the context of fostering ethical and empathetic online interactions. Strengthening teachers' capacity to deliver Digital Citizenship education is not merely a support mechanism—it is a foundational pillar for cultivating safer and more respectful digital school communities.

School administrators play a crucial role in establishing cyber-safe environments by implementing comprehensive cyberbullying policies. Their responsibilities should extend beyond policy enforcement to include proactive engagement with students, teachers, and parents. Research indicates that schools with administrators actively involved in cyberbullying prevention demonstrate lower incidence rates and higher student trust in intervention mechanisms (Fiorentini et al., 2022). Additionally, policymakers should establish clear guidelines on cyberbullying intervention protocols within school regulations, including enforcing mandatory reporting mechanisms and ensuring students have access to anonymous reporting platforms to reduce fear of retaliation. Clear internal procedural protocols ensure that all parties—especially victims and observers—understand appropriate responses to cyberbullying situations, promoting timely reporting of incidents. Digital Citizenship, when adopted at the policy level, provides a common ethical and procedural language across the entire educational community.

The data collectively emphasize the relevance of promoting Digital Citizenship, which prioritizes appropriate technology use as a driver of quality interpersonal relationships. An educational system that emphasizes cultivating positive relationships among students, as advocated by various researchers including Cortés-Pascual et al. (2020), Jankowiak et al. (2021), and particularly Aizenkot and Kashy-Rosenbaum (2020), can significantly reduce cyberbullying incidents. Framed within Digital Citizenship, these relationships are not incidental but intentional educational outcomes that contribute to healthier school climates and civic engagement online.

By focusing on these key areas, educational institutions can transform cyberbullying from an individual struggle to a community-wide concern, reinforcing social norms that reject online harassment while promoting respectful digital interaction. Digital Citizenship serves here not merely as content, but as a shared value system, a preventive mechanism, and an educational compass that empowers all stakeholders—students, teachers, families, and administrators—to navigate digital life ethically, empathetically, and collectively.

4 Conclusion

The findings from our correlation study between questionnaire results from 193 students and the scoping review on cyberbullying literature reveal several important insights for addressing this growing concern in educational environments.

Our research underscores the critical importance of understanding students' perceptions regarding cyberbullying, as they are the primary stakeholders in this phenomenon. This understanding forms the foundation for developing effective intervention strategies. Educational institutions must prioritize comprehensive intervention plans that promote social and emotional development while addressing the unique challenges of digital interactions. Within this context, Digital Citizenship emerges not as an isolated component, but as the ethical and educational framework through which all interventions should be structured.

Based on our analysis, we have identified six essential components that must be integrated into effective cyberbullying prevention frameworks—each of which gains coherence and sustainability when grounded in a Digital Citizenship perspective:

First, schools must emphasize activities that foster social and emotional skill development among students. This includes establishing robust mental health support systems with proactive psychological interventions to ensure timely counseling and emotional support for affected students. These elements are fundamental for promoting overall wellbeing in the digital age. Social and Emotional Learning (SEL), when embedded in Digital Citizenship education, equips students not only with emotional regulation skills but also with the ethical orientation necessary for respectful digital interactions.

Second, educational programs must promote appropriate technology usage by clearly defining and reinforcing proper online behaviors. This approach to digital literacy must extend beyond technical competence to encompass social and ethical dimensions of digital interaction. Digital Citizenship education provides this broader lens, helping students internalize norms of responsibility, privacy, empathy, and active online participation.

Third, teacher training represents a critical prerequisite for any effective intervention plan. Educators require formal preparation in digital citizenship and cyberbullying prevention strategies to identify and address online harassment effectively. Research demonstrates that properly trained teachers are significantly better equipped to intervene in cyberbullying situations. Teacher development rooted in Digital Citizenship not only improves incident management but also models ethical digital behavior for students.

Fourth, educational institutions must establish clear procedural protocols for addressing cyberbullying incidents. This includes implementing mandatory reporting mechanisms, anonymous reporting platforms, and comprehensive policies with active administrator involvement. Schools with engaged leadership demonstrate lower cyberbullying rates and higher student trust in intervention processes. Embedding Digital Citizenship into school policies creates a unified culture of accountability and shared values across all school actors.

Fifth, our research highlights the pivotal role of cyber-observers in both preventing and mitigating cyberbullying effects. Students who receive guidance on effective intervention strategies are substantially more likely to support victims and report incidents. Schools that implement active cyber-observer training programs have documented significant increases in reporting rates and corresponding decreases in cyberbullying incidents. Empowering observers through Digital Citizenship training reframes them as agents of positive digital change, fostering civic engagement and ethical responsibility.

Sixth, our empirical findings challenge the presumed anonymity of cyberbullying perpetrators. Our data suggests a potential continuum between traditional bullying and cyberbullying, with the latter often functioning as an extension of face-to-face aggression. This continuation into digital spaces eliminates safe havens for victims, amplifying negative impacts on their psychosocial wellbeing. By treating online and offline behavior as part of the same social ecosystem, Digital Citizenship provides a coherent ethical framework for consistent behavior across all environments.

In conclusion, creating educational environments that actively promote Digital Citizenship represents a powerful and comprehensive strategy to prevent and address cyberbullying. By fostering appropriate technology usage and implementing the recommended interventions through a shared ethical lens, schools can significantly improve personal and social relationships within their communities while protecting students in digital spaces. These comprehensive approaches transform cyberbullying from an individual struggle to a community-wide concern, reinforcing social

norms that reject online harassment and promote respectful, inclusive, and ethically grounded digital interaction.

5 Limitations

One limitation of this study is the use of convenience sampling for participant recruitment. While this method facilitates data collection by leveraging accessibility, it may introduce selection bias, as participants are not randomly chosen but rather self-selected based on their willingness and availability to respond. Consequently, the findings may not be fully generalizable to broader student populations, particularly those from different socio-economic backgrounds or educational contexts not represented in the sample (Creswell and Creswell, 2018). Furthermore, the reliance on an online questionnaire administered within specific schools may have excluded students with limited digital access or differing levels of technological proficiency, potentially skewing the data toward more digitally literate participants. Future research should consider employing stratified or random sampling techniques to enhance the representativeness of the sample and improve external validity.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving humans were approved by Monitorização de Inquéritos em Meio Escolar: MIME. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation in this study was provided by the participants' legal guardians/next of kin.

Author contributions

LC: Conceptualization, Formal analysis, Investigation, Writing – original draft. JL: Methodology, Supervision, Validation, Writing – review & editing. AT: Methodology, Supervision, Validation, Writing – review & editing.

Funding

The author(s) declare that no financial support was received for the research and/or publication of this article.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Correction note

This article has been corrected with minor changes. These changes do not impact the scientific content of the article.

Generative AI statement

The authors declare that no Gen AI was used in the creation of this manuscript.

Any alternative text (alt text) provided alongside figures in this article has been generated by Frontiers with the support of artificial intelligence and reasonable efforts have been made to ensure accuracy, including review by the authors wherever possible. If you identify any issues, please contact us.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

References

Aizenkot, D., and Kashy-Rosenbaum, G. (2020). The effectiveness of safe surfing, an anti-cyberbullying intervention program in reducing online and offline bullying and improving perceived popularity and self-esteem. *Cyberpsychol. J. Psychosoc. Res. Cyberspace* 14. doi: 10.5817/CP2020-3-6

Albiero, P., Matricardi, G., Tencati, S., and Lucidi, F. (2019). Bystanders' moral disengagement in cyberbullying. *Pers. Individ. Differ.* 144, 59–63.

Alcaine, P. B., and Sánchez, E. V. (2020). How the education community perceives cyberbullying: a comparison of students, teachers, and families. *J. New Approach. Educ. Res.* 9, 216–230. doi: 10.7821/naer.2020.7.554

Álvarez-García, D., Barreiro-Collazo, A., and Núñez, J. C. (2017). Ciberagresión entre adolescentes: prevalencia y diferencias de género [Cyberaggression among adolescents: prevalence and gender differences]. *Comunicar: Revista Científica Iberoamericana de Comunicación y Educación [Sci. J. Media Educ.]* 50, 89–97. doi: 10.1016/j.chb.2017.01.007

Arksey, H., and O'Malley, L. (2005). Scoping studies: Towards a methodological framework, International. *Journal of Social Research Methodology* 8, 19–32.

Booth, A., Sutton, A., and Papaioannou, D. (2016). Systematic approaches to a successful literature review. London, England: SAGE Publication.

Buelga, S., and Pons, J. (2012). Agresiones entre Adolescentes a través del Teléfono Móvil y de Internet. *Psychosoc. Interv.* 21, 91–101. doi: 10.5093/in2012v21n1a2

Chaves-Álvarez, A. L., Morales-Ramírez, M. E., and Villalobos-Cordero, M. (2020). Cyberbullying from students' perspective: "what we live, see and do". *Rev. Electrón. Educare* 24, 41–69. doi: 10.15359/ree.24-1.3

Cortés-Pascual, A., Cano-Escorianza, J., Elboj-Saso, C., and Íñiguez-Berrozpe, T. (2020). Positive relationships for preventing bullying and cyberbullying: a study in Aragón (Spain). *Int. J. Adolesc. Youth* 25, 182–199. doi: 10.1080/02673843.2019.1602064

Creswell, J. W., and Creswell, J. D. (2018). Research design: qualitative, quantitative, and mixed methods approaches. *5th* Edn. Thousand Oaks, CA: SAGE Publications.

Dobrick, F. M., Fischer, J., and Hagen, L. M. (2018). Research ethics in the digital age: Ethics for the social sciences and humanities in times of mediatization and digitization. *Springer VS Wiesbaden* doi: 10.1007/978-3-658-12909-5

Fekih-Romdhane, F., Malaeb, D., Farah, N., Stambouli, M., Cheour, M., Obeid, S., et al. (2024). The relationship between cyberbullying perpetration/victimization and suicidal ideation in healthy young adults: the indirect effects of positive and negative psychotic experiences. *BMC Psychiatry* 24, 1–13. doi: 10.1186/s12888-024-05552-2

Fiorentini, G., Palladino, B. E., Vespoli, G., and Menesini, E. (2022). Icts opportunities and risks: effectiveness of a nationwide intervention. *Cyberpsychol. J. Psychosoc. Res. Cyberspace* 16, 1–16. doi: 10.5817/CP2022-3-6

Fleeman, N., and Dundar, Y. (2014). Data extraction: Where do I begin?. In eds. A. Boland, G. Cherry and R. Dickso Doing a systematic review: A student's guide (pp. 84–98). SAGE.

Fredrick, S. S., Coyle, S., and King, J. (2023). Middle and high school teachers' perceptions of cyberbullying prevention and digital citizenship. *Psychol. Sch.* 60, 1958–1978. doi: 10.1002/pits.22844

Galán, C. A., Stokes, L. R., Szoko, N., Abebe, K. Z., and Culyba, A. J. (2021). Exploration of experiences and perpetration of identity-based bullying among adolescents by race/ethnicity and other marginalized identities. *JAMA Netw. Open* 4:e2116364. doi: 10.1001/jamanetworkopen.2021.16364

Giménez Gualdo, A. M., Galán Casado, D., and Moraleda Ruano, Á. (2021). Key competencies to develop school cibercoexistence: the "ICT peer support" program. *Educ. Knowl. Soc.* doi: 10.14201/eks.22168

González Sodis, J. L., Leiva Olivencia, J. J., and Matas Terrón, A. (2022). Pedagogical conception of ICT conflicts in schools in the province of Malaga (Spain): a commitment to mediation. *Int. J. Educ. Res. Innov.* 18, 199–213.

González-Cabrera, J., Tourón, J., Machimbarrena, J. M., Gutiérrez-Ortega, M., Álvarez-Bardón, A., and Ortega-Barón, J. (2021). Cyberbullying in gifted students: prevalence and psychological well-being in a Spanish sample. *Front. Psychol.* 12:595622. doi: 10.3390/ijerph16122173

Graham, A., Powell, M. A., Taylor, N., Anderson, D., and Fitzgerald, R. (2015). Ethical research involving children. UNICEF Office of Research-Innocenti. Available online at: https://childethics.com/wp-content/uploads/2013/10/ERIC-compendium-approved-digital-web.pdf

Henares-Montiel, J., Pastor-Moreno, G., Ramírez-Saiz, A., Rodríguez-Gómez, M., and Ruiz-Pérez, I. (2023). Characteristics and effectiveness of interventions to reduce cyberbullying: A systematic review. *Frontiers in Public Health* 11:1219727. doi: 10.3389/fpubh.2023.1219727

Hinduja, S., and Patchin, J. W. (2021). Digital dating abuse among a national sample of US youth. *J. Interpers. Violence* 36, 11088–11108. doi: 10.1177/0886260519897344

Huebner, E. S., and Gilman, R. (2002). An introduction to the multidimensional students' life satisfaction scale. *Soc. Indic. Res.* 60, 115–122. doi: 10.1023/A:1021252812882

Jankowiak, B., Jaskulska, S., Sanz-Barbero, B., Waszyńska, K., Claire, K. D., Bowes, N., et al. (2021). Will i like myself if you hurt me? Experiences of violence and adolescents' self-esteem. *Sustainability* 13:11620. doi: 10.3390/su132111620

Jensen, M., Yañez, C., Rojas, J., López, V., González, L., Urbina, C., et al. (2022). Cybervictimization in Chilean schools: an intersectional multilevel study. *Front. Educ.* 7:780193. doi: 10.3389/feduc.2022.780193

Jones, C. (2024). Still a rite of passage? A perspective on current therapeutic attitudes and interventions about cyberbullying. *Couns. Psychother. Res.* 24, 9–15. doi: 10.1002/capr.12635

Jones, L. M., Mitchell, K. J., and Walsh, W. A. (2024). The impact of youth digital citizenship education: insights from a cluster randomized controlled trial outcome evaluation of the be internet awesome (BIA) curriculum. *Contemp. Sch. Psychol.* 28, 509–523. doi: 10.1007/s40688-023-00465-5

Kowalski, R. M., Giumetti, G. W., and Feinn, R. S. (2023). Is cyberbullying an extension of traditional bullying or a unique phenomenon? A longitudinal investigation among college students. *Int. J. Bullying Prev.* 5, 227–244. doi: 10.1007/s42380-022-00154-6

Lee, D., et al. (2024). The impact of bystander inaction on the perpetuation of cyberbullying: a longitudinal study. *J. Comput.-Mediat. Commun.* 37, 289–301.

Lloret-Irles, D., Cabrera-Perona, V., Tirado-González, S., and Segura-Heras, J. V. (2022). Cyberbullying: common predictors to cyber-victimisation and bystanding. *Int. J. Environ. Res. Public Health* 19:15750. doi: 10.3390/ijerph192315750

Macharia, M., and Dunaway, M. (2025). Understanding the mediator and moderator role of digital citizenship on cyber harassment. *Inf. Technol. People*. Advance online publication. doi: 10.1108/ITP-05-2022-0376

McMillan, J. H., and Schumacher, S. (2001). Research in education: A conceptual framework. (*5th* ed.). Longman.

Menabò, L., Skrzypiec, G., Slee, P., and Guarini, A. (2023). What roles matter? An explorative study on bullying and cyberbullying by using the eye-tracker. *Br. J. Educ. Psychol.* 95:e12604. doi: 10.1111/bjep.12604

Mishna, F., Sanders, J. E., McNeil, S., Fearing, G., and Kalenteridis, K. (2020). "If somebody is different": a critical analysis of parent, teacher and student perspectives on bullying and cyberbullying. *Child Youth Serv. Rev.* 118:105366. doi: 10.1016/j.childyouth.2020.105366

Moher, D., Liberati, A., Tetzlaff, J., and Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Med*, 6:e1000097. doi: 10.1371/journal.pmed.1000097

Nickerson, A. B., Jenkins, L. N., Bellavia, G. M., Manges, M. E., Livingston, J. A., and Feeley, T. H. (2022). The role of personal and perceived peer norms in bullying and sexual harassment perpetration. *School Psychol.* 37, 236–247. doi: 10.1037/spq0000498

Oliveira, L., et al. (2024). Effectiveness of interventions in preventing cyberbullying: a meta-analysis. *Comput. Human Behav.* 84, 372–380.

Otchere, Y. O., Sarfo, J. O., and Primo, E. (2021). Exploring cyberbullying and its implications on psychosocial health of students in Accra, Ghana: a thematic analysis. *Eur. J. Contemp. Educ.* 10, 981–986. doi: 10.13187/ejced.2021.4.981

Patchin, J. W., and Hinduja, S. (2022). Cyberbullying among tweens in the United States: prevalence, impact, and helping behaviors. *J. Early Adolesc.* 42, 414–430. doi: 10.1177/02724316211036740

Polanin, J. R., Espelage, D. L., Grotpeter, J. K., Ingram, K., Michaelson, L., Spinney, E., et al. (2022). A systematic review and meta-analysis of interventions to decrease cyberbullying perpetration and victimization. *Prev. Sci.* 23, 439–454. doi: 10.1007/s11121-021-01259-y

Rovira, A. M., Figueiredo, P., Solé Cases, S., and Cabrera, L. (2022). #aquiproubullying Intervention Program in Compulsory Secondary Education: Results of a preliminary study. *REMIE: Multidisciplinary Journal of Educational Research* 12, 1–25.

Smith, P., Robinson, S., and Slonje, R. (2021). "The school bullying research program: why and how it has developed" in The Wiley handbook of bullying. eds. P. K. Smith and J. O'Higgins Norman (John Wiley & Sons), 42–59. doi: 10.1002/9781118482650.ch3

Tao, S., Lan, M., Tan, C. Y., Liang, Q., Pan, Q., and Law, N. W. Y. (2024). Adolescents' cyberbullying experience and subjective well-being: Sex difference in the moderating role of cognitive-emotional regulation strategy. *Computers in Human Behavior.* 153. doi: 10.1016/j.chb.2024.108122

Torgal, C., Espelage, D. L., Polanin, J. R., Ingram, K. M., Robinson, L. E., El Sheikh, A. J., et al. (2023). A meta-analysis of school-based cyberbullying prevention programs' impact on cyber-bystander behavior. *Sch. Psychol. Rev.* 52, 95–109. doi: 10.1080/2372966X.2021.1913037

Waasdorp, T. E., Mehari, K. R., and Bradshaw, C. P. (2017). "Research on family experiences with cyberbullying" in Contemporary families at the nexus of research and practice, 240–255.

Yang, C., Chen, C., Lin, X., and Chan, M. K. (2021). School-wide social emotional learning and cyberbullying victimization among middle and high school students: moderating role of school climate. *School Psychol.* 36, 75–85. doi: 10.1037/spq0000423

Ybarra, M. L., Mitchell, K. J., Palmer, N. A., and Reisner, S. L. (2015). Online social support as a buffer against online and offline peer and sexual victimization among US LGBT and non-LGBT youth. *Child Abuse Negl.* 39, 123–136. doi: 10.1016/j.chiabu.2014.08.006