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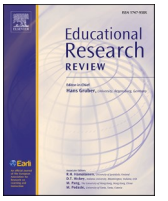

What do we know about cyberbullying assessment tools for Primary and Secondary Education students? A systematic review and meta-analytical study

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ABSTRACT

New forms of violence, such as cyberbullying, have emerged partly due to the increased use of technological devices at an early age. This rise in risk situations has led to a proliferation in the number of instruments that assess these behaviors, requiring an exhaustive analysis to determine the contents they address, the age range in which they are validated, their psychometric properties, and the way in which they approach the conceptualization of cyberbullying. To this end, a systematic review and meta-analysis was conducted, obtaining 3859 results in the selected databases (Web of Science, Scopus, PsycInfo, PsicoDoc, ProQuest, Psychology and Behavioural Sciences and PubPsych), which through a screening process, resulted in the analysis of 28 cyberbullying assessment tools that met the established inclusion criteria ((I) scientific articles that were published in peer-reviewed scientific journals; (II) that were validated in the selected age range (Primary or Secondary Education); (III) that addressed cyberbullying; (IV) that were written in English, Spanish or Portuguese; (V) that validity and/or reliability be analyzed). Taking into consideration the meta-analytical approach, the internal consistency of the cyberbullying detection instruments and scales was found to be significant, and the meta-analysis showed satisfactory results. According to the qualitative interpretation of this statistic, all of the aforementioned scales showed reliable results (between 0.84 and 0.90). The data indicated a medium-to-large effect of the precision and reliability of the psychological scales of bullying and cyberbullying.

Furthermore, with regard to the systematic review, it was possible to appreciate the need for the instruments to have a mixed methodology, establishing a connection between the macrosocial and microsocial frameworks. Similarly, it would be appropriate for these tools to address the subject from the age of eight, without combining educational stages or different variables.

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1. Introduction

The advance of technologies and the increase in the use of electronic devices has also generated new forms of peer violence (Wu et al., 2024), highlighting cyberbullying as an aggression with negative consequences for all those who are directly or indirectly involved (Marciano et al., 2020; Wright et al., 2018), including but not limited to internalizing problems such as low self-esteem, anxiety, and social problems (Schultze-Krumbholz et al., 2016; Wright, 2015), suicidal thoughts and attempts (Li et al., 2024), as well as social self-perception (Song et al., 2024).

Taking into consideration the information mentioned above, this new practice of peer violence involves risks with extremely harmful consequences, especially if we consider the population that suffers from it with greater intensity. In Europe, a study showed that between 18 % and 23 % of Primary school students had suffered from cyberbullying (Bali et al., 2023). Similarly, a study conducted by Sasson et al. (2024) highlighted that 9 % of adolescent participants reported having been cyberbullies in the past two years, 25 % considered themselves as cybervictims in the past twelve months, and 11 % indicated having exercised the role of cyberbully/cybervictim. Furthermore, with regard to the figure of the cyberbystander, research by González-Calatayud & Prendes-Espinosa (2021) indicated that 62.3 % of 950 participating adolescents had been considered cyberbystanders. These alarming data raise the need for intervention and further research to reduce the incidence and prevent future cases.

These consequences in online aggressions are aggravated by the ease of moving from cybervictim to cyberbully in cyberbullying compared to traditional bullying (Antoniadou et al., 2019), that is to say, having a dual role in these situations. This fact is mainly due to the characteristics that define this problematic (Moxey & Bussey, 2020). Analyzing the conceptualization of cyberbullying, it is defined by Tokunaga (2010) as "any behavior performed through electronic or digital media by individuals or groups that repeatedly communicates hostile or aggressive messages intended to inflict harm or discomfort on others" (p. 278). This online peer aggression increases the adverse consequences derived from these behaviors because of the unlimited access to technologies that allows the aggression to be seen repeatedly by an infinite audience (Wang & Ngai, 2020), the lack of temporal or geographical restrictions due to the inherent asynchrony of technologies, or the anonymity that promotes feelings of depersonalization (Schultze-Krumbholz et al., 2016; Wright, 2022). Cyberbullies are allowed to psychologically distance themselves from the consequences that their behavior may generate in both victims and bystanders (Tokunaga, 2010). This circumstance generates feelings of invisibility, disinhibition (Suler, 2004) and encourages moral disengagement, in which aggressors behave in ways that do not take responsibility for the consequences their behavior may provoke (Wang & Ngai, 2020) due to the nonexistence of visualization of the emotional reactions.

This fact cannot be missed out as during childhood and preadolescence, greater emphasis is placed on facial gestures to better understand situations and make judgments about feelings and reactions (Hoffner & Badzinksi, 1989). These aforementioned stages involve changes both at the cognitive level and in moral reasoning, including perspective-taking. In addition, changes also occur in terms of self-regulation and social competitiveness (DelGiudice, 2018). This period is considered a period of risk as status, reputation, self-concept, and patterns of thinking and relating to peers are established (Mehari et al., 2023). Hence, this period is critical for risky behaviors associated with technologies. Furthermore, this context also derives in altered levels of empathy (Mehari et al., 2023) and self-concept (Ortega-Barón et al., 2020) that influences aggression situations and are considered protective factors against cyberbullying (Chicote-Beato et al., 2024).

Furthermore, to complement the information about this stage, it is at this time, in preadolescence, when they begin to have more autonomous contact with technologies, especially social networks (Wu et al., 2024). Nonetheless, in the majority of cases, they are accessing without adult supervision and learning from the experiences of themselves and their peers, without prior training to minimize the risks to which they are exposed and to be aware of the actions and decisions they take in the online context (Tejada et al., 2019).

Hence, this stage is essential to establish the guidelines that are considered safe, and thus avoid future dangerous situations, due to the fact that in preadolescence, when they suffer victimization, they may come to normalize the situation of aggression between peers, considering it as a normal and habitual form of communication (Cuadrado-Gordillo & Fernández-Antelo, 2016), which could lead them to assume both roles, becoming potential victim-bullies in the future (Escortell et al., 2023). Furthermore, another reason why both roles could be assumed would be the intention to compensate for the consequences of the low self-concept they have or the need to take revenge for what they have been suffering (Ortega-Barón et al., 2019). Consequently, the role of socialization is fundamental as a support and means of help, being related to situations of aggression among peers, since it has been shown that peer support is a protective factor for behaviors of these characteristics and allows coping with these contexts in a more effective way, reducing the associated negative consequences (Wu et al., 2024). Hence, cyberbystander behavior is considered one of the critical situations in cyberbullying. This figure is divided into two categories: passive (observing peer aggression and not intervening or ignoring it) and active (assisting the bully or helping the victim) (Barton et al., 2025). Consequently, the manner in which this role is executed is paramount for the development and impact that this problematic has on the roles involved. The development of effective prevention strategies, as well as a comprehensive understanding of the extent of student involvement, is contingent upon the utilization of assessment instruments that address this phenomenon and incorporate the cyberbystander role (Sobol et al., 2025). Thus, their analysis and integration into the questionnaires is regarded as indispensable.

Despite the increase of cyberbullying in critical stages and its impact on social and emotional variables, there are many uncertainties and inaccuracies in the data collection instruments (Arif et al., 2020). These difficulties encountered generate inconsistency among the results obtained (Lucas-Molina et al., 2016), which hinders the comparison of the results and the validity of the analysis of the information obtained. Accordingly, establishing common standards for assessment is considered essential to analyze the prevalence among different geographical areas and time points (Zych et al., 2016). In addition, it is necessary to emphasize the need to analyze the already existing questionnaires, not only to verify the results between studies, but mainly to evaluate that the instruments correctly identify bullying situations in all their modalities (Dredge et al., 2013; Lucas-Molina et al., 2016). Measurement issues could

largely explain such wide variation in cyberbullying data (Chun et al., 2020). Different concepts have been considered cyberbullying even though they do not meet the characteristics established by Olweus (1996) or Tokunaga (2010), leading to a necessity of reviewing the existing instruments and the variables and factors that should be included (Berne et al., 2013). What is addressed in the questionnaires and how the different concepts are identified may not be meaningful if they are not clearly defined and operationalized, as they may be assessing completely different constructs (Zych et al., 2016).

For this aforementioned reason, the selection of common dimensions ought to be taken into consideration. These elements should be driven by the emphasis on bullying and cyberbullying behavior, a component that Bussey (2023) identified as a pivotal element in the evaluation of Social Cognitive Theory (Bandura, 1986). In this manner, this author conducts a thorough analysis of human functioning, in which one of the crucial components for comprehending the dynamics of peer aggression is the level of involvement of the various figures through their actions, emphasizing the necessity to evaluate the following behaviors: bullying, victimization, and bystanding, along with their respective counterparts in the virtual context. These factors determine interaction with the environment, as well as the beliefs that influence the actions of the students and their judgment of whether what they do is right or wrong. Thus, addressing these dimensions is imperative to comprehensively analyze this issue in depth.

Currently, a wide variety of instruments designed to collect information related to cyberbullying can be found, leading to significant barriers in the comparison of research, since there are studies that have the same aims, but the tool used is different (Lucas-Molina et al., 2016). This situation is mainly caused by researchers easily discarding existing instruments and developing new ones when, in general, the tools that could meet their research objectives already exist (Berne et al., 2013). Even when validated measures are used, these questions are often modified or additional options are added for no valid reason, restricting the advancement of cyberbullying research (Chun et al., 2020).

Furthermore, as indicated in the meta-analysis carried out by Sobol et al. (2025), taking into consideration one of the main roles involved, the cyberbystander, one of the most important concerns is the inconsistency obtained by different researchers due to the use of diverse tools to measure it, relying in some cases on a single question formulated for the purposes of a particular study, and leading to a lack of validity and reliability.

For these reasons, systematic reviews have been conducted in the past, as illustrated by Berne et al. (2013), Chun et al. (2020), and Zych et al. (2016), which examined cyberbullying assessment instruments and their properties. Nevertheless, despite the proliferation of data collection instruments, there has been little research analyzing these tools in recent years. A more focused examination reveals that no comprehensive systematic reviews of cyberbullying assessment tools have been found in the last years. In addition, focus must be brought to the circumstance that, despite the fact that systematics reviews were carried out some years ago, there are no references to any meta-analyses related to cyberbullying assessment instruments that have been conducted over the years in scientific literature. Given the dynamic nature of cyberbullying, influenced by technological advancements and the evolution of peer aggression, a comprehensive analysis is imperative. This analysis should encompass not only the tools previously examined in other reviews, with the objective of ascertaining their obsolescence or capacity to adequately capture the constructs for which they were designed, but also the novel tools that have emerged in recent years. These latter tools have not been systematically reviewed. Furthermore, the previous systematic reviews have not been meta-analyzed, which is essential for providing more precise insights into the existing evidence by statistically combining the results of diverse studies. These aforementioned systematic reviews, which have been published in previous years, do not carry out statistical inference tests, examine the quality of the statistical analysis taking into consideration the main dimensions that should be addressed in cyberbullying, or verify the accuracy and objectivity of the results, as they do not include a meta-analysis component. Consequently, it is necessary to undertake an analysis that facilitates the estimation of a summary effect size of the population and the examination of the internal consistency of the instruments and the reliability of each one.

This situation arises the need to analyze the instruments already designed (Kasturiratna et al., 2025) including the assessment tools developed over the last years and conducting a meta-analysis to further examine the quality of the statistical analysis and verifying the accuracy and objectivity of the results. In this manner, information will be obtained related to the objectives they address, their psychometric properties and, the appropriateness of the instruments according to the characteristics of each study.

Thus, this systematic review and meta-analysis was intended to answer the following research questions:

1) What is the purpose of the instruments designed? What are the contents/factors they address?
2) What are the psychometric properties of the instruments, and what is the validity and reliability of each instrument?
3) In what age range is each instrument validated?

2. Material and methods

2.1. Part one: systematic review

This scientific article has followed the standards established by PRISMA in its 2020 update (Page et al., 2021) in order to meet requirements of rigor and completeness. Furthermore, the quality of cyberbullying measures, including the risk of bias, has been previously analyzed using the taxonomy of the Consensus-based Standards for the Selection of Health Measurement Instruments Checklist (COSMIN Checklist) (Mokkink et al., 2018), taking as reference as observed in previous analysis of bullying measures (Xie et al., 2022).

The search for studies was conducted by screening the results, taking into consideration that they were instruments that assessed cyberbullying in students who were in Primary or Secondary Education. It is important to note that some results also included the analysis of students of a higher age range (baccalaureate and university), but they were included since they also considered the target age groups (Primary and Secondary Education).

2.1.1. Search strategy

For this purpose, the following databases were used: Web of Science (including all its information sources), Scopus, PsycInfo, PsicoDoc, ProQuest, Psychology and Behavioural Sciences and PubPsych, due to the fact that they are databases used for systematic reviews in the field of Psychology. There were no time restrictions on the search for instruments.

The keywords addressed were divided into three sections:

- Conceptualization of cyberbullying: “cyberbullying", "cyber bullying", "cyber-bullying", "online harassment", "online bullying", "cyber harassment", "electronic bullying", "cybervictimization", "online victimization", "electronic harassment", "electronic victimization".
- Instrument designation: "measurement", "measure", "scale", "instrument", "questionnaire", "survey", “self-report”, “tool”, “test”.
- Educational stage: "elementary school", "elementary education", "Primary school", "Primary education", "middle school", "middle education", “Secondary school”, “Secondary education”, “high school”.

2.1.2. Study selection criteria

This meta-analysis used precise terms to facilitate a rigorous search and thus obtain articles that met the established requirements. For these reasons, the inclusion criteria were the following: (I) scientific articles that were published in peer-reviewed scientific journals; (II) that were validated in the selected age range (Primary or Secondary Education; 6–16 years); (III) that addressed the topic under study (cyberbullying); (IV) that were research written in English, Spanish or Portuguese; (V) that validity and/or reliability be analyzed. In this way, it was necessary that the instruments had an internal consistency considered at least reasonable as established by Pallant (2020) and Pestana & Gageiro (2014).

The systematic search was carried out in June 2024, following the steps shown in Fig. 1, where the procedure of screening the results from the different databases can be seen.

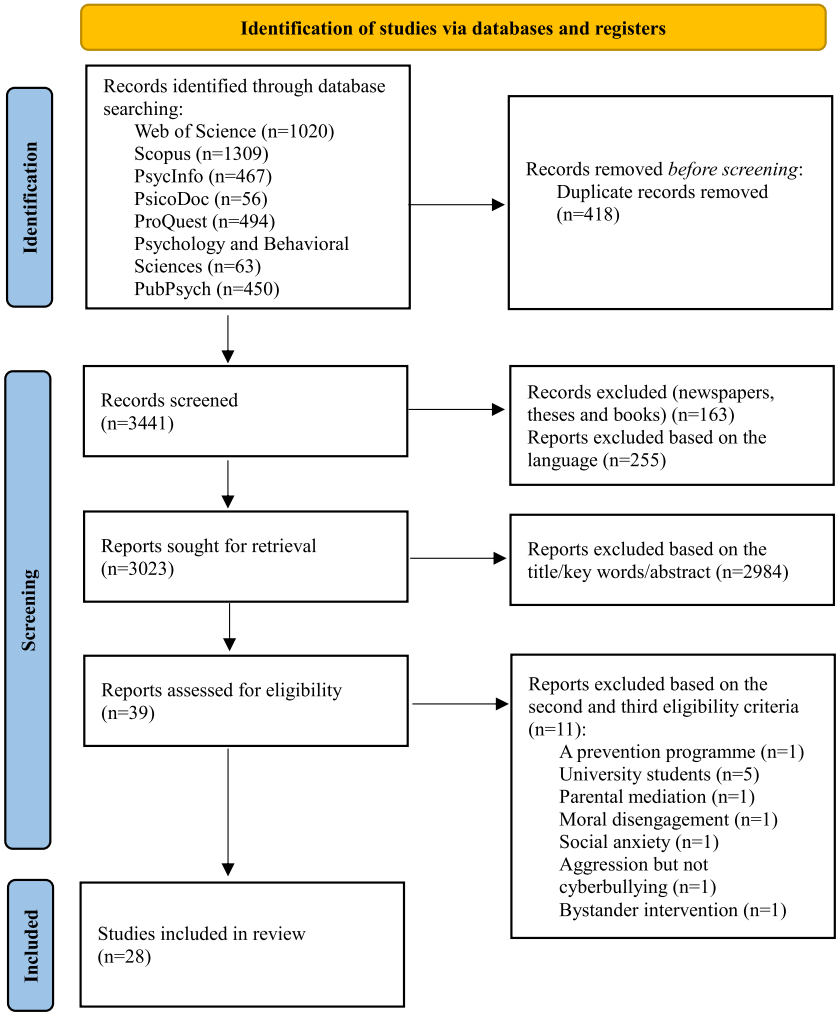

Fig. 1. Flow diagram.

2.2. Part two: meta-analysis procedure

In general terms, the goal of any meta-analysis is to objectively analyze quantitative data from different studies which share a common research question in order to estimate a summary effect size of the population (Cooper, 2016). Indeed, there are multiple approaches to conduct meta-analyses depending on the data available and/or the main objective. In the field of Psychology, and specifically in the area of instrument development, Cronbach's α is the most frequently used parameter for assessing internal consistency (reliability; Cho, 2016). Therefore, those meta-analytic techniques used to determine aggregate reliability estimates from the studies under analysis are termed as *reliability generalization method* (Vacha-Haase, 1998).

2.2.1. The reliability generalization method

The reliability generalization procedure tolerates the comparison of internal consistency parameters across the studies under analysis. Specifically, a r-equivalent correlation can be obtained through the square root of the Cronbach's α since it is a variance-adjusted value (Graham et al., 2011). Nevertheless, these correlations are not normally distributed due to the range from −1 to +1, leading to a skewed sampling distribution (Dunlap et al., 1986). For that reason, the Fisher's *z* transformation (z_r) must be applied to obtain a normal distribution with the following formula, where *ln* is Napierian logarithm and *r* is the standard correlation coefficient:

$$z_r = \frac{1}{2} \cdot \ln \cdot \left[\frac{1+r}{1-r}\right]$$

Then, the variance of the z_r value (V_z) was obtained by the inverse variance weight of the coefficients using the following formula, where n is the sample size of each study:

$$V_z = \frac{1}{n-3}$$

Next, the standard error (SE) is calculated from the V_z value using the following formula:

$$SE_z = \sqrt{V_z}$$

At certain point, the lack of reporting Cronbach's α may contribute to the publication bias due to consistency issues of using non-significantly reliable ad hoc instruments in the intervention. For that reason, Begg & Mazumdar (1994) suggested the use of a rank correlation based on Kendall's tau in order to quantify the relationship between the ranks of effect sizes and the ranks of their respective variances. In this sense, a lower correlation expresses that the effect size is independent of the sample of the study. Hence, the Fisher's *z* transformation (z_r, used for the meta-analysis) is finally converted back into correlation (r) using the following formula (Van Aert, 2023) with the aim of interpreting each effect size alongside the value of the correlations.

$$r = \frac{e^{2z} - 1}{e^{2z} + 1}$$

2.2.2. Bare-bones meta-analytic procedure

The focus of the present work is to examine the internal consistency of the Cronbach's α of the tools selected in the first part of the present study via the *Hunter and Smith Method* (also term the *Bare-bones Meta-analytic Procedure*; Hunter & Smith, 2004). From this point of view, the effect size estimates (ri) are used to obtain the weighted summary effect size ($\bar{r}$) alongside the sample size (ni) with the following formula:

$$\bar{r} = \frac{\sum_{i=1}^{k} ri \cdot ni}{\sum_{i=1}^{k} ni}$$

The variance of the population effect size is estimated by correcting the variance of the individual effect sizes by the sample error. Indeed, each individual variance of the effect sizes are estimated by considering the sample effect size and the sampling error. Then, the variance of the population effect size is estimated by subtracting the sampling error variance (σ_e^2) form the variance in the individual effect sizes. In addition, this procedure considers both the lower- and upper-credibility intervals, the summary effect size and the square root of the estimated population variance multiplied by 1.96.

The aforementioned procedures have been recently used in the literature to evaluate the internal consistency and other psychometrical parameters of the subjective instruments and scales in educational psychology with the aim of analyzing the quality of the measuring instruments (e.g., Krieglstein et al., 2022).

2.2.3. Meta-analysis software and associated libraries

The meta-analysis was carried out using the software environment for data analysis R (CRAN-R; 2023). Specifically, the main libraries *Psychmeta (Psychometri Meta-Analysis Toolkit), effectsize, tidyverse* and *ggplot2* were used for conducted the reliability generalization and the bare-bones meta-analysis.

All effect sizes that had a p-value of less than 0.050, when its respective Confidence Interval (CI) did not include zero, were defined as significant. In order to compare significant difference among individual affect sizes, the 95 % Confidence Intervals (95 % CI) were also calculated.

3. Results

3.1. Part one: systematic review

As can be seen, 28 articles that analyzed and validated cyberbullying assessment instruments in Primary and Secondary education were selected. From a geographical perspective, taking into consideration the countries with the highest number of validated instruments, a common pattern can be found. It should be noted that most of the instruments were developed in Spain, with eight of them, followed by Australia, with three of them, as well as Portugal, the United States and Colombia with two instruments each of them, respectively. It is noteworthy that the development of instruments has been predominantly undertaken in Western countries, with the exception of two studies that were validated in Asia (Chen & Cheng, 2016; Lam & Li, 2013). Concurrently, there is a gap in the development of instruments on the African continent, with no tools developed to analyze this issue within the inclusion criteria selected.

Each instrument was analyzed individually, as can be seen in Table 1, with the aim of offering an exhaustive and detailed analysis of the different scientific articles. This initial inquiry provides a foundation for understanding the purpose of the instruments, their contents, and the factors they address, offering a descriptive answer to the first research question. In this regard, all the scales could be categorized into different dimensions or factors: cyberbullying (CB), cybervictimization (CV), bullying (B), victimization (V), cyberbystanders' attitudes (CBYA), bystanders' attitudes (BYA). The selection of these dimensions was driven by the emphasis on the level of peer aggression involvement, established by Bussey (2023) in the evaluation of Social Cognitive Theory (Bandura, 1986), as it is explained in the introduction section.

For the majority of scales, the identification of the factor can be read on the name of the scale but also on the style of each item. Furthermore, as illustrated in Table 1, the findings pertaining to the validity and reliability of each instrument are presented, partially analyzing the second research question.

Taking into consideration the third research question, the column entitled "Design and sample" allows to know the age range at which each questionnaire is validated.

3.1.1. Age addressed in the instruments

One of the main characteristics to be taken into consideration in cyberbullying assessment instruments is the age range for which they are intended. The stage in which they are validated is fundamental to the choice of the instrument that best fits the characteristics of each study. Thus, given its importance and in order to clarify the third research question related to the age range in which each instrument was validated, this section provides a summary of those data collection instruments that are suitable for each age range, identifying common patterns, consistencies and gaps in the designed instruments. In this case, as can be seen in Table 1, most of the questionnaires present consistency, being validated for Primary Education and Middle Education students, counting 10 instruments that were validated in both educational stages (Betts & Spenser, 2017; Blakeney, 2012; Coelho et al., 2018; Coelho & Sousa, 2018; Gaete et al., 2021; Hunt et al., 2012; Lam & Li, 2013; Pozzoli & Gini, 2019; Twardowska-Staszek et al., 2018; Zych et al., 2020). Similarly, there are instruments that focus only on the Primary Education stage (García-Perales et al., 2020; Holfeld & Leadbeater, 2015; López-Pradas et al., 2017; Williford and DePaolis, 2019; Yanagida et al., 2016), as well as instruments that focus exclusively on Middle Education (Antoniadou et al., 2016; Hall, 2016; Thomas et al., 2019). On the other hand, there are data collection tools that combine different stages, such as the instruments designed by Garaigordobil et al. (2014), Moxey & Bussey (2020) and Sandoval et al. (2022), which are validated for Middle Education and the Baccalaureate stage, or the studies by Sumter et al. (2015), Romera et al. (2018), Chen & Cheng (2016), González-Cabrera et al. (2019), Herrera-López et al. (2017), and Resset & González-Caino (2024), which cover the broader age range, from Primary Education to Baccalaureate.

This section underscores the paucity of tools that address cyberbullying among the youngest involved participants. It is noteworthy that the instrument developed by Williford and DePaolis, 2019 was the sole instrument designed for students commencing in third grade, finding a gap in the research of the first cases of cyberbullying (eight years old). Nevertheless, four additional instruments whose age range begins in fourth grade are observed, bearing in mind that, although they do not address the age at which the first cases occur, they can tackle situations of aggression in the early stages (Gaete et al., 2021; Hunt et al., 2012; Sumter et al., 2015; Twardowska-Starzek et al., 2018).

3.1.2. Sample

Regarding the sample used to validate and test the reliability, efficacy and effectiveness of each of the instruments collected in this systematic review and meta-analysis, it is important to highlight a consistent pattern, with the majority of the questionnaires covering a range of 1000–2000 participants (Antoniadou et al., 2016; Coelho et al., 2016; Coelho & Soussa, 2018; Sumter et al., 2015; Thomas et al., 2019; Twardowska-Staszek et al., 2018; Williford and DePaolis, 2019; Yanagida et al., 2016; Zych et al., 2020). Nevertheless, there are studies with a smaller sample, pointing out instruments such as those of Pozzoli & Gini (2019), López-Pradas et al. (2017), Chen & Cheng (2016) or Sandoval et al. (2022), among others, whose range is between 500 and 1000 participants in the validation of the instruments. Additionally, there are data collection tools that have fewer than 500 participants (Betts & Spenser, 2017; Blakeney, 2012; García-Perales et al., 2020; Hall, 2016; Hunt et al., 2012; Lam & Li, 2013; Moxey & Bussey, 2020). On the other hand, there are

Table 1
Descriptive analysis of each data collection instrument.

Author(s) and instrument(s)	Country	Design and sample	Subscales (items, categories)	Contents	Validation/reliability
Antoniadou et al. (2016) **Cyber-bullying/victimization experiences questionnaire (CBVEQ-G)**	Greece	1097 participants Age range: 12–17 years old Mean Age: 14	12 items (CB, CV) Five-point frequency scale (from 1 = never, to 5 = every day) Participants who were self-identified as involved in CB/CV incidents had to address 12 items more (10 items yes/no format and 2 of them with a multiple-choice format).	Cyberbullying/ cybervictimization behaviors (social exclusion, rumor spreading, gossiping, virus-sending on purpose, infringement of the victim's accounts for harmful purposes). Direct CB/CV behaviors (destruction/ abuse of property, verbal CB/CV, threats). Indirect CB/CV behaviors (social exclusion, reputation defamation, masquerading). For the people involved in CB/CV: Core criteria (repetition, willful and unprovoked nature of aggressive behaviors, power imbalance, conduct of the act with the use of ICT).	The hypothesized four-factor model provided marginal fit to the data, x2(249) = 1189.71, p < 0.001, CFI = 0.89, TLI = 0.88, RMSEA = 0.059, with a 90 % CI = 0.055–0.062. All standardized factor loadings were statistically significant (ps < 0.05). The loadings for the direct CV items ranged from 0.49 to 0.71, indirect CV items 0.52 to 0.63, direct CB items from 0.69 to 0.86, and finally indirect CB items from 0.66 to 0.71. Cronbach's alpha values indicated that direct and indirect CB, as well as indirect CV exhibited reasonably high internal consistency. Construct validity, x2(208) = 425.678, p < 0.001; CFI = 0.97, TLI = 0.97, RMSEA = 0.031, with a 90 % CI ¼ 0.027–0.035. All standardized factor loadings were statistically significant (ps < 0.05). The loadings for CV items ranged from 0.55 to 0.72 and for CB items from 0.70 to 0.85.
Betts & Spenser (2017) **Cyber victimization experiences and Cyberbullying Behaviours scales**	United Kingdom	345 students (11–15 years old).	Cybervictimization experiences: 15 items. 6-point Likert-type scale, ranging from 1 (never) to 6 (everyday). Items covered a time span of three months. Cyberbullying behaviours:12 items. 6-point Likert-type scale, ranging from 1 (never) to 6 (everyday). Items covered a time span of three months (CB, CV).	CV experiences (sharing of images, threats, rumors, blaming, sharing personal information, disruption to social networks, gossip, personal attack). CB behaviours (anonymity, pretending to be someone else)	Cronbach's alpha: ≥0.83 and ≤0.90
Blakeney (2012) **Traditional, cyber bullying and victimization behaviors**	Europe	189 students Grade 6 to grade 8 (11–14 years)	26 items (B, V, CB, CV). Six-point response from a (six or more times in the last two months) to e (this has not happened in the last two months) and an option g (I do not know). Items covered a time span of two months.	Traditional bullying, traditional victimization, cyberbullying and cybervictimization.	Cronbach's α: above 0.70 for the overall instrument and each of the constructs.
Chen & Cheng (2016) **Cyberbullying Severity Scale (CSS)**	Taiwan	707 students 10–18 years old	16 items (CB, CV) 5-point Likert scale from	Verbal (flaming, harassment, cyberstalking,	Rasch measurement. Variance explained by the items was 88.6 %

(*continued on next page*)

Table 1 (*continued*)

Author(s) and instrument(s)	Country	Design and sample	Subscales (items, categories)	Contents	Validation/reliability
			1 (less serious) to 5 (more serious).	aggressive messaging), relational (backstabbing, denigration), visual (outing and posting, commenting on embarrassing photos or videos) and impersonation (masquerading and impersonating).	and the Secondary dimension in the residuals explains 2.5 % of the variance, which met Linacre's criteria and supported the unidimensionality of the scale. Content validity: all items showed good fit with the Rasch partial credit model (PCM; infit and outfit MNSQ ranged from 1.29 to 0.77). Item-total quality: correlation ranged from 0.75 to 0.89. Person separation reliability: 0.90. Item separation reliability: 0.99 Response category analysis: 0.87 and 1.42 for five categories
Coelho & Sousa (2018) **The Bullying and Cyberbullying Behaviors Questionnaire-Short Form (BCBQ-SF)**	(Lisbon) Portugal	1003 students. Age range: 10-16	20 items (B, CB, V, CV), 16 of which were organized into two subscales (victimization and bullying). The other 4 items were retained from the previous version and assess respectively victimization, bullying, defending and fear of being bullied. Five-Point scale from 1 (did not happen to me) to 5 (several times a week)	Bullying and cyberbullying behaviors including victimization, bullying, defending and fear of being bullied.	Cronbach's alpha: Victimization: $\alpha = 0.79$ Bullying: $\alpha = 0.82$
Coelho et al. (2016) **Bullying and cyberbullying Behaviors Questionnaire**	Lisbon (Portugal)	1039 students (sixth to eighth grade) (11–14 years)	36 items (B, CB, V, CV) (bullying scale-11 items; victimization scale-11 items; information about victimization situations-8 items; cyberbullying-6 items). Five-point Likert-type scale where 1 means "it never happened to me" and 5 "several times a week".	Portuguese adaptation of the victim and bullying scales of the Revised BVQ (Olweus, 1996) with items including verbal, physical, material, racial, sexual nature, lies, rumors and threats. Six items about cyberbullying (denigration, flaming, cyberstalking and outing) were included, divided into victimization and aggression.	Cronbach's alpha: Aggression scale: $\alpha = 0.77$ Victimization scale: $\alpha = 0.79$ Cyberbullying aggression: $\alpha = 0.81$ Cyberbullying victimization: $\alpha = 0.56$
Gaete et al. (2021) **Olweus Bully/Victim Questionnaire (OBVQ-R) in the Chilean context**	Chile	2775 students 9–16 years old 4th grade: 538 5th grade: 545 6th grade: 551 7th grade: 572 8th grade: 569	42 items (B, CB, V, CV) Five-point scale from 0 (it hasn't happened to me in the last two months) to 4 (it happened to me several times a week).	Bullying and victimization. Characteristics of bullying situations, cyberbullying, attitudes, school climate. Actions that have been taken in school by teachers or parents to stop bullying. Questions about what students think of	Confirmatory Factor Analysis (CFA) Victimization: RMSEA = 0.03; SRMR = 0.05; NFI = 0.95; NNFI = 0.96; CFI = 0.97; GFI = 0.99; AGFI = 0.99. Aggression: RMSEA = 0.02; SRMR = 0.08; NFI = 0.94; NNFI = 0.95; CFI = 0.96; GFI = 0.99; AGFI = 0.98.

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Table 1 (*continued*)

Author(s) and instrument(s)	Country	Design and sample	Subscales (items, categories)	Contents	Validation/reliability
				teachers' and parents' opinions about bullying.	Reliability: Victimization (Cronbach's alpha = 0.91, ω = 0.81); Aggression (Cronbach's alpha = 0.92, ω = 0.76)
Garaigordobil (2014) **Cyberbullying. Screening de acoso entre iguales**	Spain	3026 students 12–18 years	Bullying: 12 items (victim, aggressor, bystander) Cyberbullying: 45 items (cybervictim, cyberaggressor, cyberbystander) 4-point scale from 0 = nothing to 3 = always. (B, CB, V, CV, BYA, CBYA) Open-ended questions	Bullying (physical, verbal, social, psychological), cyberbullying (sending offensive and insulting messages, disseminating compromising photos or videos, sexual harassment, spreading rumors, tricking photos or videos, or threaten anonymous phones calls, among others). Victimization, aggression, observation, aggressive victimization.	Cronbach's alphas: Bullying total: α = 0.81; Victimization: α = 0.70; Aggression: α = 0.71; Bystanding: α = 0.80; Cyberbullying total: α = 0.91; Cybervictimization: α = 0.82; Cyberaggression: α = 0.91; Cyberbystanding: α = 0.87; Gamma coefficients were between 0.60 and 0.81; Bullying: Kaiser Meyer-Olkin test was 0.79; Barlett's test: c66 = 11634,93, $p < 0.001$; Cyberbullying: Kaiser Meyer-Olkin test was 0.94; Barlett's test: c990 = 51208,99, $p <$ 0,001
García-Perales et al. (2020) **Cuestionario de evaluación del acoso escolar (CAES)**	Castilla-La Mancha (Spain)	494 students 11–13 years old	40 items (B, CB, V, CV, BYA, CBYA) Likert type scale ranging from 1 (nothing) to 5 (a lot).	Conceptualization (bullying and cyberbullying), perceptions (victim, aggressor, bystander) and skills (personal and social)	Cronbach's alpha of the scale = 0.76. Cronbach' s alpha by dimension: Conceptualization: 0.94 Perceptions: 0.79 Skills: 0.78
González-Cabrera et al. (2019) **Cyberbullying Triangulation Questionnaire (CTQ)**	Spain	5036 students 10–23 years old	10 items (CB, CV, CBYA) cybervictimization 10 items cyberbystanding 15 items cyberaggression Likert scale with three alternative answers (0 = never, 1 = occasionally, 2 = often).	Cybervictim, cyberbully, cyberbystander, and the combination of the three roles. Includes actions that cannot be evaluated from the perspective of the cybervictim or cyberbystander and items related to cyberbystanding that enables categorization as assistant of cyberbully, reinforcer of cyberbully, outsider, supporter and defender.	Ordinal alpha coefficients were 0.92, 0.95 and 0.94; Omega coefficients were 0.94, 0.96 and 0.95 for cybervictimization, cyberaggression and cyberbystanding, respectively.
Hall (2016) **BullyHARM (Bullying, Harassment, and Aggression Receipt Measure)**	North Carolina (United States)	275 middle school students. 12–17 years old	22 items and 6 subscales. Physical bullying (5 items), verbal bullying (3 items), social bullying (3 items), cyberbullying (3 items), property bullying (3 items) and sexual bullying (5 items). 4-point scale (not in the past month, 1 or 2 times in the past month, about 1 time a week, about 2	Physical bullying, verbal bullying, social/ relational bullying, cyberbullying, property bullying and sexual bullying.	Cronbach's alphas: Overall scale: α = 0.93 Each subscale: Physical bullying: α = 0.85 Verbal bullying: α = 0.85 Social bullying: α = 0.82 Cyberbullying: α = 0.91 Property bullying: α = 0.83 Sexual bullying: α = 0.85

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Author(s) and instrument(s)	Country	Design and sample	Subscales (items, categories)	Contents	Validation/reliability
			or more times a week) (V, CV)		
Herrera-López et al. (2017) **Validation of the European Cyberbullying Intervention Project Questionnaire for Colombian and Spanish Adolescents**	Colombia and Spain	3830 students 10–19 years old Colombian subgroup (1931 students aged 10–19 years old) Spanish subgroup (1899 students aged 11 to 18).	22 items (11 for cybervictimization and 11 for cyberaggression) Likert-type scale with five response options ranging from 0 = never to 4 = more than once a week. (CB, CV, CBYA)	Cybervictimization and cyberaggression. Taking into consideration four roles: cybervictim, cyberbully, bully-victim and noninvolvement.	Confirmatory Factor Analysis (CFA): Colombian subsample $x^2_{S\text{-}B} = 644.97$; $x^2_{S\text{-}B}/(208) = 3.10$; $p < 0.001$; NNFI = 0.97; CFI = 0.97; RMSEA = 0.047 (90 percent CI (0.043, 0.052); SRMR = 0.080; AIC = 228.96. Internal consistency: Ω cyber-aggression = 0.94; Ω = cyber-victimization = 0.91. Spanish subsample $x^2_{S\text{-}B} = 563.07$; $x^2_{S\text{-}B}/(208) = 2.71$; $p < 0.001$; NNFI = 0.96; CFI = 0.97; RMSEA = 0.031 (90 percent CI (0.028, 0.034); SRMR = 0.079; AIC = 147.07. Internal consistency: Ω cyber-aggression = 0.96; Ω = cyber-victimization = 0.94
Holfeld & Leadbeater (2015) **Cyberbullying behaviors and victimization experiences**	Canada	714 children (Time 1) 638 (89 %) children (Time 2) Grades 5 and 6 (10–12 years)	Cyberbullying behaviors (4 items): 5-point Likert-type scale from 0 (never) to 4 (every day). Cybervictimization (4 items): 5-point Likert-type scale from 0 (never) to 4 (every day). Peer victimization (5 items relational and 5 items physical): 3-point Likert scale from 0 (never) to 2 (almost all the time). Aggression directed at peers (2 items): 4-point Likert scale from 0 (hardly ever) to 3 (almost always). (B, CB, V, CV)	Technology access and use, cyberbullying behaviors and victimization experiences, peer victimization, aggression directed at peers.	Confirmatory factor analyses (CFAs) were used. Model fit statistics were evaluated using x^2, comparative fit index (CFI), and the root mean square error of approximation (RMSEA). The CFAs for cyberbullying behaviors and victimization experiences (CFIs ≥0.99, RMSEAs <0.03). T1 cyberbullying behaviors (CFI = 0.92, RMSEA = 0.07). Factor loadings ($p < 0.01$), ranging from 0.45 to 0.89). Stability coefficients were moderate to high: cyberbullying behaviors (0.57) and victimization experiences (0.62).
Hunt et al. (2012) **The Personal Experiences Checklist (PECK)**	Australia	218 students 9–16 years old.	32 items related to relational or verbal bullying, cyberbullying, physical bullying with harm to self or property and bullying based on culture (V, CV). 5-point scale (from never, to most days) and a 5-point severity scale on which items were rated for how bad it made the	Verbal bullying (called mean names, made fun of, teased in hurtful way), being exclude, physical bullying (hit, kicked, pushed shoved around, locked indoors), and having rumors spread. Includes a variety of forms of relational bullying (turning	Cronbach's α range = 0.78–0.90 The internal consistency of each scale was: Verbal relational bullying: 0.91 Cyberbullying: 0.90 Physical bullying: 0.91 Bullying based on culture: 0.78

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Author(s) and instrument(s)	Country	Design and sample	Subscales (items, categories)	Contents	Validation/reliability
			student feel (not at all, a little bad, bad, really bad, terrible)	friends against their peers, saying mean things behind their back) and technology-based bullying.	Test-retest reliability (range $r = 0.61$–0.86)
Lam & Li (2013) **E-Victimization Scale (E-VS) and e-Bullying Scale (E-BS)**	China	484 adolescents (325 younger than 14 years) 11–16 years Mean age: 13.5 years.	Initially, 12 items, 6 for the E-VS and 6 for the E-BS (CB, CV). After removal of the unqualified items, 5 for the E-VS and 6 for the E-BS. Rating from 0 to 6 corresponding to a range of 0 times to 6 times.	E-bullying and e-victimization. Cybervictim and cyberbully.	Exploratory Factor Analysis (EFA). EFA for the E-VS – 1 factor loading less than 0.3; 5 items factor loading ranged from 0.635 % to 0.854 % and 47 % of variance explained. EFA for the E-BS (2 factor-structure – "Mild E-bullying" and "Serious E-bullying") – factor loading ranged from 0.315 to 0.998 and 55,8 of variance explained. Separate Confirmatory Factor Analysis (CFA) were conducted. Cronbach's alpha: E-VS: 0.92; Mild E-BS: 0.92; Serious E-BS: 0.95
López-Pradas et al. (2017) **Cybergossip-Q-Primary**	Córdoba (Spain)	Instrumental, cross-sectional, ex post design. Non-probability sampling (incidental sampling) 866 students from Spain. 4th year to 6th year. From 10 to 13 years	9-item instrument based on the Gossip Functions Questionnaire (Foster, 2004) (CG) Scored on a likert-type frequency scale (values from 0-never to 4-always)	Four main functions of gossip: information, influence, friendship and entertainment.	Coefficient omega: $\omega = 0.89$
López-Pradas et al. (2017) **Adaptation of the ECIPQ to Primary school students**	(Córdoba) Spain	Instrumental, cross-sectional, ex post design. Non-probability sampling (incidental sampling) 866 students from Spain. 4th year to 6th year. From 10 to 13 years	Two-scale questionnaire. Each construct comprises 8 items scored on a Likert-type frequency scale (values from 0-No, 1-yes, once or twice, 2-yes, once or twice a month, 3-yes, about once a week, 4-yes, more than once a week) (CB, CV) Items covered a time span of two months	Cyberaggression and cybervictimization.	Coefficient omega: $\omega = 0.95$ Cyber-aggressive behaviours ($\omega = 0.91$). Cybervictimization ($\omega = 0.90$). A confirmatory factor analysis (CFA) was performed to confirm whether the psychometric properties, remained invariant
Moxey & Bussey (2020) **Styles of Bystander Intervention Scale**	Australia	301 participants 200 students from grade 8 (Mean age: 13.8) 101 students from grade 10 (Mean age: 15.8)	15 items (5 items for the aggressive intervention subscale and 10 items for the constructive intervention). 5-point Likert scale (1 = never to 5 = always) (BYA, CBYA)	Types of bystander responses to cyberbullying incidents: aggressive, constructive victim-focused and constructive bully-focused.	Cronbach's alphas: Aggressive intervention: $\alpha = 0.86$; Constructive intervention: $\alpha = 0.96$; Bartlett's test of sphericity was significant, indicating the data were sufficiently correlated ($\chi 2(301) = 3728.94$, $p < 0.001$). The Kaiser-Meyer-Olkin measure of

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Author(s) and instrument(s)	Country	Design and sample	Subscales (items, categories)	Contents	Validation/reliability
					sampling adequacy was 0.92.
Pozzoli & Gini (2019) **Behaviour during cyberbullying episodes**	Italy	561 students. Age range: 11-15	16 items, 4 items for each type of behaviour enacted in the online context (cyberbullying, cybervictimization, cyber-defending and cyber-passive bystanding) (CB, CV, CBYA) Five-point scale from 1 (never) to 5 (almost always).	Cyberbullying behaviours (victimization, defending, passive bystanding) and cyberbullying attacks (written, visual and exclusion from online groups).	Cronbach's alpha and McDonald's ω were computed. Cyberbullying: α = 0.75; ω = 0.74 Cybervictimization: α = 0.77; ω = 0.77 Cyber-defending: α = 0.75; ω = 0.75 Cyber-passive bystanding: α = 0.65; ω = 0.65
Resset & González-Caino (2024) **Escala de Bullying y Cyberbullying (Spanish version of the BCS-A)**	Argentina	842 participants Mean age: 14.8 From 11 to 19 years old	13 items (victimization and cybervictimization subscale) 13 items (perpetration of the aggression and cyberaggression subscale) Each subscale: 4 questions physical bullying, 2 questions verbal bullying, 2 questions relational bullying, 5 questions cyberbullying (B, V, CB, CV). 5-point Likert scale (0 = did not happen to me (did not do it) to 4 = several times a week or more)	Victimization, cybervictimization, aggression, cyberaggression. Physical bullying, verbal bullying, relational bullying, cyberbullying.	Victimization: $\chi 2(78) = 672.64$; $p < 0.001$; CFI = 0.93; TLI = 0.91; RMSEA = 0.05 y SRMR = 0.04 Aggression: $\chi 2(78) = 516.51$; $p < 0.001$; CFI = 0.92; TLI = 0.91; RMSEA = 0.05 y SRMR = 0.06 Cronbach's alphas: Physical victimization: α = 0.62; Verbal victimization: α = 0.72; Relational victimization: α = 0.64; Cybervictimization: α = 0.72; Physical aggression: α = 0.78; Verbal aggression: α = 0.78; Relational aggression: α = 0.66 Cyberaggression: α = 0.74. With regard to Omega consistency, the values were 0.64, 0.73, 0.64 and 0.74 for the victimization scales, respectively, and 0.79, 0.79, 0.70 and 0.75 for the aggression scales, respectively. Reliabilities for victimization: 0.92, 0.93, 0.90 and 0.96, respectively, and for aggression: 0.98, 0.96, 0.93, 0.92, respectively.
Romera et al. (2018) **Cybergossip Questionnaire-Adolescents (CGQ-A) (Validation in a different age range)**	Spain and Colombia	3747 students (1931 Colombian adolescents, 10–19 years old; and 1816 Spanish adolescents, 12–19 years old)	9 items. Likert type scale ranging from 1 (never) to 4 (always) (CG)	Four main functions of gossip (to inform, to influence, to create friendship and to entertain oneself)	Internal consistency was analyzed with McDonald's Omega index (Ω): Ω = 0.839 Composite reliability (to test general reliability of the set of items: 0.904 The average variance extracted (to test the accuracy with which the construct is measured: 0.513

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Author(s) and instrument(s)	Country	Design and sample	Subscales (items, categories)	Contents	Validation/reliability
Sandoval et al. (2022) **Inventario de Estrategias de Afrontamiento del Ciberacoso desde la Perspectiva del Observador (IEAC-O)** (De Gante et al., 2020) **adapted to Secondary Education**	Mexico	997 students from 12 to 19 years old. Mean age: 15.89	29 items Report (5 items), ignore (6 items), assault (5 items), save evidence and seek support (5 items), disengage (5 items), avoid aggressors (3 items) (CBYA) 4-point Likert scale (1 = "I would definitely not do that" to 4 = "I would definitely do that")	Strategies to respond to cyberbullying situations as bystanders: report, ignore, assault, save evidence and seek support, disengage and avoid aggressors.	$x2/gl = 4.100$; RMSEA = 0.056; SRMR = 0.061; GFI = 0.903; AGFI = 0.884; PGFI = 0.752; NFI = 0.865; TLI = 0.881; CFI = 0.894. Cronbach's alphas: Report: α = 0.87; Ignore: α = 0.80; Assault: α = 0.80 Save evidence and seek support: α = 0.84; Disengage: α = 0.74; Avoid aggressors: α = 0.70; Total scale: α = 0.84
Sumter et al. (2015) **The Multidimensional Offline and Online Peer Victimization Scale (MOOPV)**	The Netherlands	1124 students from 9 to 18 years old.	10 items (offline peer victimization) 10 items (online peer victimization) (V, CV) Values were: never, once in the past six months, 2–3 times in the past six months, about once a month, about once a week, and almost every day.	Offline and online direct and indirect victimization. Age, gender, life-satisfaction, loneliness, social self-esteem.	Cronbach's alpha in all subscales were >0.80 To assess validity, all subscales were significantly related to indicators of psychosocial well-being.
Thomas et al. (2019) **Bullying and cyberbullying Scale for Adolescents (BCS-A)**	Australia	1271 students aged 12–17 years Mean age: 14 years old	13 items (victimization and cybervictimization); 13 items (perpetration and cyberperpetration) (B, CB, V, CV). Each subscale: 4 items for physical, 2 items for verbal, 2 items for relational and 5 items for cyber. 5-point Likert scale (from "did not happen to me/I did not do this, to "several times a week or more".	Bullying as an overarching construct, bullying by the experience of victimization and perpetration, bullying as an experience withing a traditional versus cyber domain. Victimization and perpetration (physical, verbal, relational and cyber)	Traditional victimization: SRMR = 0.03; p = 0.05; CFI = 0.98; RMSEA = 0.06 Cybervictimization: SRMR = 0.04; p = 0.38; CFI = 0.99; RMSEA = 0.04 Traditional perpetration: SRMR = 0.06; p = 0.29; CFI = 0.98; RMSEA = 0.05 Cyberperpetration: SRMR = 0.05; p = 0.01; CFI = 0.92; RMSEA = 0.12
Twardowska-Staszek et al. (2018) **ECIP-Q**	Poland	1052 students. Age range: 9-16	22 items (11 questions on different forms of cyberbullying victimization and 11 questions on different forms of cyberbullying perpetration) (CB, CV). 5-point Likert scale ranging from 0 (never) to 4 (several times a week). Items covered a time span of a year.	Cybervictimization and cyberperpetration.	Cronbach's alpha: Cybervictimization: α = 0.90 Cyberperpetration: α = 0.89
Williford and DePaolis, 2019 **A modified version of The European Cyberbullying Intervention Project Questionnaire (validation for elementary school students) + The Peer Experiences Questionnaire (PEQ)**	The United States (Midwestern)	1222 students in enrolled in 3rd through 5th grade) 29 % were 3rd graders 38 % were 4th graders 33 % were 5th graders (8–11 years)	11 items (5 for cyberbullying and 6 for cybervictimization) (CB, CV). A five-point scale ranging from never to a few times a week. 21 items (7 for overt victimization, 4 for relational victimization, 5 for overt bullying and 5 for relational bullying) (B, V)	Internet access, daily internet access, cell phone ownership, demographic characteristics, overt bullying, relational bullying, cyberbullying, overt victimization, relational victimization and cybervictimization.	Victimization (overt, relational and cyber): CFI = 0.921; RMSEA = 0.044 (CI 0.038, 0.051). Bullying (overt, relational and cyber): CFI = 0.596; RMSEA = 0.061 (CI 0.054, 0.067).

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Author(s) and instrument(s)	Country	Design and sample	Subscales (items, categories)	Contents	Validation/reliability
Yanagida et al. (2016) **Single-Item and Multiple-Item approaches of measurement**	Austria, Cyprus and Romania	1966 students of 35 schools (12 years old): −671 Austrian −691 Greek Cypriot −604 Romanian	4 scales (traditional bullying, traditional victimization, cyberbullying, cybervictimization) 24 items (B, CB, V, CV) Five-point response from 0 (not at all) to 4 (nearly every day). Items covered a time span of two months.	Bullying perpetration and Bullying victimization (one global item and three specific items covering different forms of physical, relational and verbal bullying and victimization). Cyberbullying and cyber-victimization (one global item and seven specific items related to different electronic means based on Smith et al. (2008), call, text, email, chat, board, instant and video.	Cronbach's α coefficients (Austrian/Cypriot/Romanian): Bullying perpetration: 0.77/0.70/0.77 Bullying victimization: 0.81/0.75/0.81 Cyberbullying: 0.87/0.76/0.67 Cyber-victimization: 0.85/0.86/0.69
Zych et al. (2020) **The Perceived Parental Moral Disengagement Induction Questionnaire**	South of Spain	1483 students (598 Primary Education; 885 Secondary Education). Grades 5 to 6 (Primary) Grades 1 to 4 (Secondary) (10–16 years)	10 items (Perceived Parental Moral Disengagement) 5-point Likert scale ranging from 1 (totally disagree) to 5 (totally agree) (PA). Items covered a time span of an academic year.	Perceived Parental Moral Disengagement related to bullying and cyberbullying behaviours.	Cronbach's alphas and McDonald's omegas were calculated: Primary Education: α = 0.90; Ω = 0.90; Secondary Education: α = 0.93; Ω = 0.93; Composite reliability (to test general reliability): Primary: 0.91; Secondary: 0.93. The average variance extracted (to test the accuracy with which the construct is measured): Primary: 0.71; Secondary: 0.66

B: Bullying; BYA: Bystander Attitudes; CB: Cyberbullying; CBYA: Cyberbystander Attitudes; CG: Cybergossip; CV: Cybervictimization; PA: Parental Attitudes; V: Victimization.

also studies with a sample larger than 2000, highlighting the study by Gaete et al. (2021), with 2775 participants, the instruments by Garaigordobil (2014), Herrera-López et al. (2017) and Romera et al. (2018), which have more than 3000 students, and González-Cabrera et al. (2019) whose validation had the largest sample with 5036 students who participated in the validation of the instrument.

3.1.3. Scales and subscales

With regard to the scales and subscales of the instruments, another fundamental element to be considered is the number of items developed by the different authors. In this case, of the twenty-eight studies analyzed, only three of them have fewer than 10 items (López-Pradas et al., 2017; Romera et al., 2018; Zych et al., 2020). Consistency can be found in the design of instruments that have between 10 and 30 items, counting 18 tools that fall within these aforementioned characteristics. More specifically, nine of them have 10 to 20 items (Chen & Cheng, 2016; Coelho & Sousa, 2018; Pozzoli & Gini, 2019; Sumter et al., 2015, among others) and nine other cyberbullying data collection tools have 20 to 30 items (Blakeney, 2012; Hall, 2016; Herrera-López et al., 2017; Sandoval et al., 2022; Thomas et al., 2019; among others). Alternatively, there are five instruments with several items ranging from 30 to 40 (Coelho et al., 2016; García-Perales et al., 2020; González-Cabrera et al., 2019; Hunt et al., 2016; Williford and DePaolis, 2019), and two instruments with more than 40 items (Gaete et al., 2021; Garaigordobil, 2017).

Concerning the typology of the questions asked in the selected instruments, there is a common pattern in most of them, bringing to light that 16 studies used "a 5-point Likert scale" (Coelho & Soussa, 2018; García-Perales et al., 2020; López-Pradas et al., 2017; Zych et al., 2020, among others). It should be noted, that only one of them used questions with 3 options to choose from (González-Cabrera et al., 2019), 3 instruments offered 4 response options (Hall, 2016; Romera et al., 2018; Sandoval et al., 2022), 3 studies validated questionnaires with "a 6-point Likert scale" (Betts & Spenser, 2017; Blakeney, 2012; Sumter et al., 2015), and one of them used responses in where one could choose from seven options (Lam & Li, 2013).

Conversely, even though they are the minority of instruments, there are also questionnaires that have combined different response typologies. In this case, it would be important to stress the questionnaire designed by Hunt et al. (2012), which used "a 5-point scale" combined with "a 5-point severity scale", in which items were rated in terms of how bad they made the participant feel. Similarly, at this point it is necessary to emphasize the study by Garaigordobil (2017), which, in addition to using "a 4 -point scale", they added

"open-ended questions", the questionnaire designed by Holfeld & Leadbeater (2015), which used three different types of responses (5 points, 4 points and 3 points) and the scale designed by Antoniadou et al. (2016) that addressed cyberbullying with "a 5-point scale" and supplemented it with questions intended for those participants who self-identified as being involved in cyberbullying or cybervictimization situations, who had to answer twelve more items, ten of which had a yes/no format and two items with "multiple choice". At this juncture, it is important to take into consideration the gap that none of the instruments incorporates a qualitative component, with the exception of the instrument validated by Garaigordobil (2017).

In the context of the typology of responses, it is imperative to acknowledge that all instruments provided information on the frequency with which participants were involved in situations of this nature, observing a consistency beyond the designs of these tools. Thus, a common pattern was found as they analyzed the perspective of the participants, being considered as self-reports. Additionally, focus must be brought to the fact that some of the tools also tackled the perspective of the bystander and cyberbystander (Garaigordobil, 2014; García-Perales et al., 2020), relying on the observation of other individuals, and peer reporting (González-Cabrera et al., 2019; Herrera-López et al., 2017; Pozzoli & Gini, 2019). Nevertheless, none of the instruments used peer-nominations or peer-ratings as a peer-reporting method.

Furthermore, two instruments (Moxey & Bussey, 2020; Sandoval et al., 2020), despite their emphasis on the perspective of the cyberbystander, addressed inquiries concerning how they intervened in cases of cyberbullying. Consequently, they were also classified as self-reports.

With regard to the subscales, Table 1 shows how all studies addressed at least one of the following dimensions: cyberbullying from the perspective of the cyberbully (20 instruments; Betts & Spenser, 2017; Resset & González-Caino, 2024), cybervictimization (23 instruments; Twardowska-Starzek et al., 2018; Williford and DePaolis, 2019), bullying (11 instruments; Blakeney, 2012; García--Perales et al., 2020), victimization (14 instruments; Thomas et al., 2019; Yanagida et al., 2016), and the perspective of the cyberbystander (7 instruments; Garaigordobil, 2014; González-Cabrera et al., 2019). These subscales were included and analyzed in the meta-analysis as they were the most prevalent dimensions in the selected questionnaires and tackled the level of peer aggression involvement.

Nevertheless, it is imperative to acknowledge that, given the dimensions selected, there were only two instruments (Garaigordobil, 2014; García-Perales et al., 2020) whose design integrated the analysis of the six dimensions.

In the specific case of cyberbullying and its corresponding three dimensions (cyberbullying from the perspective of the cyberbully, cybervictimization and cyberbystanding), three more instruments are added (González-Cabrera et al., 2019; Herrera-López et al., 2017; Pozzoli & Gini, 2019). Thus, there would only be five instruments that take into consideration the three main components of cyberbullying (Garaigordobil, 2014; García-Perales et al., 2020; González-Cabrera et al., 2019; Herrera-López et al., 2017; Pozzoli & Gini, 2019), identifying a gap in the design of the instruments whose aim is to analyze the dynamics of cyberbullying based on its theoretical framework.

Table 2
Categorization of the instruments by dimensions.

Instrument	B	V	CB	CV	BYA	CBYA	CG	PA
Antoniadou et al. (2016)			X	X				
Betts & Spenser (2017)			X	X				
Blakeney (2012)	X	X	X	X				
Chen & Cheng (2016)			X	X				
Coelho & Sousa (2018)	X	X	X	X				
Coelho et al. (2016)	X	X	X	X				
Gaete et al. (2021)	X	X	X	X				
Garaigordobil (2014)	X	X	X	X	X	X		
García-Perales et al. (2020)	X	X	X	X	X	X		
González-Cabrera et al. (2019)			X	X		X		
Hall (2016)		X		X				
Herrera-López et al. (2017)			X	X		X		
Holfeld & Leadbeater (2015)	X	X	X	X				
Hunt et al. (2012)		X		X				
Lam & Li (2013)			X	X				
López-Pradas et al. (2017)							X	
López-Pradas et al. (2017)			X	X				
Moxey & Bussey (2020)					X	X		
Pozzoli & Gini (2019)			X	X		X		
Resset & González-Caino (2024)	X	X	X	X				
Romera et al. (2018)							X	
Sandoval et al. (2022)						X		
Sumter et al. (2015)		X		X				
Thomas et al. (2019)	X	X	X	X				
Twardowska-Starzek et al. (2018)			X	X				
Williford & DePaolis (2019)			X	X				
Yanagida et al. (2016)	X	X	X	X				
Zych et al. (2020)								X

B: Bullying; BYA: Bystander Attitudes; CB: Cyberbullying; CBYA: Cyberbystander Attitudes; CG: Cybergossip; CV: Cybervictimization; PA: Parental Attitudes; V: Victimization.

In addition to these aforementioned subscales, other constructs with lower prevalence could be identified. Consequently, subscales pertaining to the attitudes of bystanders in face-to-face contexts (3 instruments; García-Perales et al., 2020; Moxey & Bussey, 2020), cybergossip (2 instruments; López-Pradas et al., 2017; Romera et al., 2018), and parental attitudes toward cyberbullying situations (1 instrument; Zych et al., 2020) were observed. Nevertheless, none of the instruments addressed the vision of the educational center, thereby neglecting to consider the perspective of the teachers and, exclusively focusing on the school climate (Gaete et al., 2021).

Table 2 shows a categorization of the instruments, taking into consideration the dimensions they address. Nevertheless, although, as can be seen in Table 2, some instruments tackle several dimensions, not all instruments provide statistical data on the validation of each of those dimensions, as can be seen in Table 1, in the column entitled "validation/reliability" and in Table 3 "Summary effect sizes and confidence intervals for the internal consistency", making it difficult to analyze based on dimensions and finding a gap in the comparison of all instruments that addressed the different subscales. Thus, statistical analysis by dimension could only be performed on those instruments that provided information of each dimension.

3.1.4. Contents addressed in the scales

The main content addressed by all the instruments in this meta-analysis is cyberbullying, as can be seen in the inclusion criteria when screening the results. In addition, each instrument has its own particularities and collects information on other factors that influence or are related to online bullying behaviors. At this point, it would be necessary to highlight a common pattern observed in most of the questionnaires, due to the fact that these instruments not only analyze cyberbullying, but also include traditional bullying, with fourteen instruments collecting information on peer bullying and victimization (Blakeney, 2012; Coelho et al., 2016; Coelho & Sousa, 2018; Gaete et al., 2021; Garaigordobil, 2014; Garcia-Perales et al., 2020; Hall, 2016; Holfeld & Leadbeater, 2015; Hunt et al., 2012; Resset & Gonzalez-Caino, 2024; Sumter et al., 2015; Thomas et al., 2019; Williford and DePaolis, 2019; Yanagida et al., 2016). In this same line, related to the contents, most of the research explicitly talks about cybervictimization, with specific items addressing this concept, as would be the case of Garaigordobil (2014), López-Pradas et al. (2017), Pozzoli & Gini (2019), or Yanagida et al. (2016), among others.

Correspondingly, in the context of online peer aggression, one of the fundamental roles for prevention and intervention in situations with these characteristics is the cyberbystander. Several of the instruments explicitly took it into consideration this figure, with questions aimed at finding out their perceptions (Garaigordobil, 2014; García-Perales et al., 2020; González-Cabrera et al., 2019; Pozzoli & Gini, 2019), the types of responses they gave to cyberbullying situations (Moxey & Bussey, 2020) or the strategies followed: report, ignore, attack, know evidence, seek support, disengage or avoid cyberbullies (Sandoval et al., 2022).

On the other hand, one of the characteristics that differentiates bullying from cyberbullying is the use of technology to exercise aggression. For this reason, several of the instruments also analyzed the use of electronic devices, access to technology (Holfeld & Leadbeater, 2015; Williford and DePaolis, 2019), and the possession or not of cell phones (Williford and DePaolis, 2019).

Along the same lines, there are protective factors for behaviors related to peer aggression, both in physical and virtual contexts, that can help make prevention and intervention more effective. Hence, some questionnaires include items that address life-satisfaction, loneliness, social self-esteem (Sumter et al., 2015), empathy, leadership, decision-making, friendship, or self-concept (García-Perales et al., 2020). Nevertheless, this review of the extant instruments reveals that the majority of tools do not consider these factors, identifying a common pattern due to the fact that they do not assess the frequency of behaviors associated with peer aggression. Likewise, the actions of educational centers and families are essential for the prevention of cyberbullying. With regard to the instruments analyzed, an important gap is found as only two tools (Gaete et al., 2021; Zych et al., 2020) addressed these influential factors. In this case, Gaete et al. (2021), analyzed the school climate, and delved into the actions that had been carried out by teachers or parents to help students who were suffering from situations with these characteristics or even as prevention before they happened. Furthermore, the opinion of the students was also studied in order to know how educators reacted in bullying situations. Regarding the family component, Zych et al. (2020), analyzed perceived parental moral disengagement with the aim of knowing the influence it had on traditional bullying and cyberbullying behaviors.

Finally, completing the first of the research questions related to the objective, as well as contents and factors addressed by the questionnaires, it is worth highlighting another of the contents that is analyzed by several studies, cybergossip. The implication of this behavior in the formation of cyberbehaviors present in cyberbullying and in indirect relational aggression has been studied (Antoniadou et al., 2016; Betts & Spencer, 2017; López-Pradas et al., 2017), in addition to focusing on the positive part of cybergossip including the collection of information on positive comments and motivations (Romera et al., 2018).

3.2. Part two: meta-analysis: internal consistency of the tools

In terms of internal consistency (reliability via Cronbach's α) of the instruments and scales for detecting bullying and/or cyberbullying, the meta-analysis showed satisfactory results. Subsequent analysis will provide a comprehensive evaluation, thereby addressing the second research question concerning the reliability of the instruments and complementing the descriptive information in the results section related to the systematic review. In this case, the subscales that predominated in the instruments were selected. Hence, cyberbullying, cybervictimization, bullying, victimization, and cyberbystanders' attitudes were included in the analysis. Focus must be brought to the fact that some instruments, despite addressing different dimensions, did not analyze them, addressing the instrument in a general manner. Therefore, to calculate effect sizes and confidence intervals, the analysis had fewer instruments per dimension than those found in Table 2.

First of all, the aggregated effect sizes analysis was conducted to verify that the scales measure the constructs adequately and consistently. In total, the results showed an alpha value of $\alpha = 0.795$ ($k = 28$ questionnaires). Specifically, when the analysis is divided

Table 3
Summary effect sizes and confidence intervals for the internal consistency.

Scale – Factor	k	r – α^2	SE	95 % CI		Rank correlation	
				Lower	Upper	Kendall's tau	*p*
Victimization	8	0.720	0.07	0.59	0.85	0.400	0.212
Bullying	7	0.720	0.07	0.57	0.87	0.428	0.229
Cyber-victimization	11	0.810	0.05	0.71	0.91	0.208	0.283
Cyberbullying	15	0.760	0.05	0.66	0.86	0.048	0.842
Cyberbystander's attitudes	2	0.822	0.05	0.77	0.89	0.376	0.234
Summary – Total	43	0.796	0.05	0.69	0.90	0.197	0.253

K. number of scales from the 28 included studies; r. effect size; SE. standard error; 95 % CI. confidence interval; 95 % CC. credibility interval.

by the different types of scales showed similar results: α of the factor victimization = 0.846 (k = 8 scales), α of the bullying scales = 0.851 (k = 7 scales), α of the factor cyber-victimization = 0.898 (k = 11 scales), α of the factor cyberbullying = 0.873 (k = 15 scales) and α of the factor bystander's attitudes = 0.883 (k = 2 scales). According to the qualitative interpretation of this statistic, all of the aforementioned scales showed reliable results (between 0.84 and 0.90; Taber, 2018). In addition, considering the 95 % Confidence Intervals (95 % CI) of those effect sizes, significant differences are found, as it is shown in Table 3.

Table 3 showed a large summary effect size, which accounted for 64 % of the total variance. Indeed, the effect size could be estimated high enough precision to exclude the zero effect of the confidence interval. For that reason, together with the analysis of the individual scales, the results indicated a medium-to-large effect of the precision and reliability of the psychological scales of bullying and cyberbullying. In addition, the rank correlations based on Kendall's tau were not significant (>0.050), representing that the bias is not present in the internal consistency of the questionnaires.

The forest plot (see Fig. 2) illustrated that all the studies had significant consistency in their individual effect size, contributing to the summary effect size (r = 0.790). In this sense, there are no studies that have reported small effect size, corroborating the initial hypothesis that the internal consistencies of the scales are adequate to use with the aim of detecting cases of bullying and/or cyberbullying. Although all tools showed an effect size more than 0.50, three tools demonstrated the highest effect size: Sumter et al. (2025), Herrera-López et al. (2017) and González-Cabrera et al. (2017). However, more research is needed in terms of other variables such as construct and criterion validity, especially when there are different approaches to validate subjective scales.

Nevertheless, when it comes to I^2, the value was significantly high (>95 %), estimating that the total variance in the summary effect size could be due to the inconsistencies among the underlying effect across individual studies. For that reason, the 95 % Credibility Factor (95 % CC) of the *Hunter and Smith Method* was also calculated to quantify uncertainty within the overall population effect size. The 95 % CC indicated that this effect size must lie in the interval 0.50 and 0.99. In fact, this suggests the idea that there are multiple factors which differ between the studies, including cultural variables during the validation process of each scale.

4. Discussion

Nowadays, with the advancement of technologies, students have more and more access to electronic devices, as well as to the Internet at a younger age, so that cases of cyberaggression through social networks have increased over time and have a higher incidence among Primary school students (Escortell et al., 2023). More specifically, in the aforementioned research, out of 548 students belonging to fifth and sixth grades, 37.7 % were considered moderately cybervictimized, and 19.29 % indicated high scores on scales measuring cyberbullying (Escortell et al., 2023). It is considered essential that those instruments that assess and collect information on students in Primary education take into consideration lower grades, since in the research carried out by Holfeld & Leadbeater (2015), it was shown that the first cases of cyberbullying could be found in students as young as eight years old. Nonetheless, the majority of the instruments that collected cyberbullying data addressed the last two grades of Primary Education, fifth and sixth grade, and only four of the instruments analyzed in this meta-analysis tackled this issue in nine-year-old students (Gaete et al., 2021; Hunt et al., 2012; Sumter et al., 2015; Twardowska-Staszek et al., 2018) and one instrument addressed this dynamic in eight-year-old students (Williford and DePaolis, 2019). In this case, one of the instruments that took into consideration this early age was the corresponding to Sumter et al. (2015), obtaining one of the most significant results.

Considering the stage at which these instruments were validated, as can be seen in the results section, the main age range on which most of the instruments were focused is the one that includes the last years of Primary Education and Middle Education. However, the characteristics of cognitive and emotional development are not the same in Primary Education as in Middle or Secondary Education (Kasturiratna et al., 2025), experiencing and interpreting cyberbullying in different ways. For this reason, it is considered necessary to use unitary samples of each educational stage, instead of combining the different age ranges, in order to provide greater clarity on the functioning and specificities of each of the situations and processes, and accordingly, to design and respond appropriately to each of the required needs (Escortell et al., 2023). This phenomenon is exemplified by the most efficacious tools, including González-Cabrera et al. (2019), Herrera-López et al. (2017) or Sumter et al. (2015), which encompasses a broad age spectrum and do not compartmentalize the findings based on educational levels. Furthermore, most studies combine the score obtained from the bullying and cyberbullying items, without separating the diversity of each type, nor the differences of each of these concepts (Ding et al., 2020), which leads to greater inaccuracy in the results obtained.

In light of the dimensions that have been delineated, it is imperative that the instruments address the emergent roles that have been

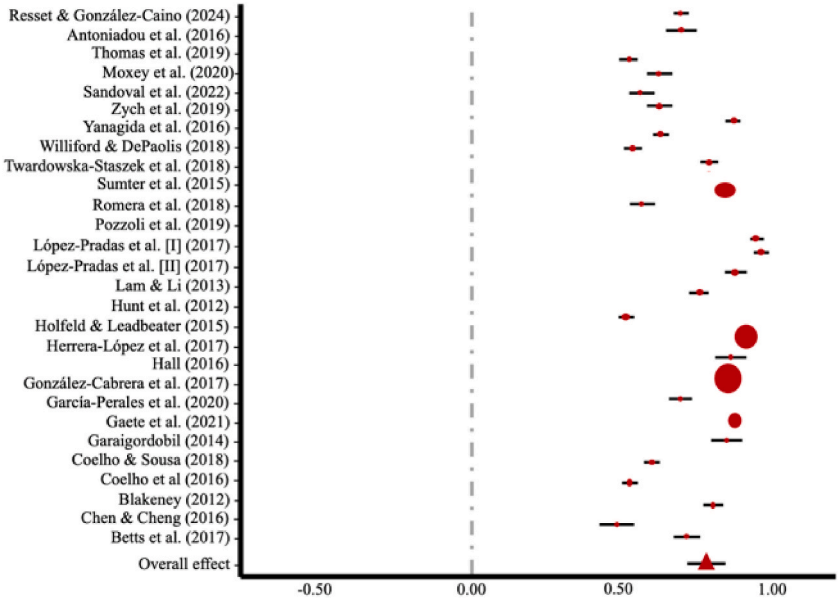

Fig. 2. Forest plot of the internal consistency of the scales.

identified as research into cyberbullying progresses. In this particular instance, the dual role of cyberbully-cybervictim has been identified as a highly representative profile, stressing the increase of students who acquire this dual role (Escortell et al., 2023). Consequently, it is noteworthy that the instruments tackle these two dimensions (cyberbullying and cybervictimization) to comprehend the roles that individuals assume and to guarantee that interventions are customized to address their specific needs and concentrate on the roles that predominate in educational institutions (García-Perales et al., 2020; Resset & González-Caino, 2024). Nevertheless, an important gap has been found in the cyberbystander dimension, due to the fact that a dearth of instruments designed to elucidate the nature of cyberbullying has hitherto focused on this particular vantage point.

On the other hand, addressing the protective factors, the involvement of the family should be taken into consideration. As pertaining to the inclusion of sections or items related to interventions carried out by family members, as can be seen in the results section, only two of the instruments analyzed these factors (Gaete et al., 2021; Zych et al., 2020). Although these are variables that do not directly measure the prevalence of cyberbullying, as is the objective of this meta-analysis, they are factors that influence the results obtained. Thus, obtaining information on the strategies followed, the involvement of family members or the reactions to situations of these characteristics, can be beneficial to better understand the problem that arises and encourage cybervictims to have enough confidence to seek for help (Espino et al., 2023). The educational setting is also considered a critical context. In this case, it is controversial whether or not to address cyberbullying within schools, since these are situations that occur outside that context. Nevertheless, the perspective of the teacher has not been taken into consideration in any of the instruments analyzed, leading to a lack of information related to the school context. In most cases, this online aggression of students in Primary and Secondary education tends to occur between classmates (Calmaestra et al., 2016), directing to consequences that affect their academic and social development in the educational environment. It has been shown that students who suffer cyberbullying victimization reduce their intention to interact and relate with their peers, harming their social satisfaction (Arif et al., 2020). This perceived social support is primordial for individuals to maintain their mental health (Wu et al., 2024). One of the ways for students who are experiencing cyberbullying to perceive this necessary social support is through coping strategies and cyberbystander reaction. Instruments addressing cyberbullying would need to take this role into consideration (Garaigordobil, 2014; García-Perales et al., 2020; González-Cabrera et al., 2019; Pozzoli & Gini, 2019), in order to know their influence on the prevention and intervention of these online peer aggressions. Bystander intervention has been previously conceptualized as a "unitary prosocial construct" involving victim advocacy (Pronk et al., 2019). Nonetheless, researchers who study peer defending highlighted the necessity to move their focus from one unitary construct to at least a dual construct (Pronks et al., 2019). As indicated by Moxey & Bussey (2020), the way in which people who assume this role respond can sometimes be aggressive. In the same vein, Barton et al. (2025), found different bystander responses, passive, constructive and aggressive bystanding. Furthermore, Moxey & Bussey (2020), in their research, showed that being a perpetrator of cyberbullying was positively correlated with aggressive interventions, but negatively correlated with constructive interventions, suggesting that adolescents who intervened aggressively also assumed the role of cyberbullies toward other peers. This type of aggressive bystander intervention was also associated with greater moral disengagement. Hence, it is essential that the tools whose objective is to know the situation of cyberbullying, also address the strategies followed by the bystander, and even by the victims, since, as discussed above, knowing the profiles and the actions that are carried out allows the design and implementation of interventions appropriate to the characteristics of each situation, reducing moral disengagement, and promoting more constructive and less aggressive strategies in online contexts (Moxey & Bussey, 2020).

This social involvement is fundamental since the period of preadolescence and adolescence is important at the psychological level and, therefore, the search for social support influences how personality and psychological well-being are constructed (Holt & Espelage, 2007), with cybervictimization being a predictor of loneliness (Wu et al., 2024). In this sense, instruments should study this social support, integrating the cyberbystander role as it is a relevant and protective factor for these behaviors.

Furthermore, in the results section, it can be seen that several cyberbullying evaluation instruments (García-Perales et al., 2020) also analyzed other associated factors, as empathy, although it cannot individually predict or explain cyberbullying (Zych et al., 2019).

Conversely, the relationship between cyberbullying, cybervictimization and empathy is important, as having low levels of empathy is associated with being a cyberbully (Zych et al., 2019). However, Zych et al. (2019), in their research, stressed the need to conduct more studies and develop instruments that analyze these factors, knowing the effect sizes and thus, favoring the understanding of this complicated construct (Zych et al., 2019).

Furthermore, contents as for instance self-esteem, shyness (Gao et al., 2023; Sumter et al., 2015), life satisfaction, friendship relationships or loneliness (García-Perales et al., 2020) were also tackled by some instruments. It has been pointed out that shyness suggested to be a positive predictor of cyberbullying (Gao et al., 2023). This is because "the social compensation model" postulates that individuals who lack social resources can access these sources through the Internet (Niu et al., 2016) showing higher levels of cyberbullying, moving from being cybervictims to becoming cyberbullies (Lee & Shin, 2017). The analysis of these variables is considered essential, especially in those studies whose aim is to know the prevalence of online peer aggression and the influence of these variables in specific contexts of cyberbullying.

On the other hand, assuming a more methodological perspective, taking into consideration the typology of the questions, it was observed that almost all the instruments designed used responses characterized by the presence of several options to choose from, of a quantitative nature, with only one study adding a qualitative component with open-ended questions (Garaigordobil, 2014), considering this fact as a gap in the design of cyberbullying instruments. The use of this type of quantitative self-reporting measure raises the possibility of generating problems of social desirability, which indirectly affects the validity of the results obtained, since participants often tend to underestimate the behavior that corresponds to the characteristics that define cyberbullying, or to answer what they consider to be correct or expected (Berne et al., 2013). Using a mixed methodology, combining quantitative and qualitative questions, allows to deepen and provide knowledge and explanations more appropriate to the situation presented, considering that it is a construct and it is necessary to approach it by establishing a connection between the explanation/understanding in a systematic and flexible way, so that this multi-strategic perspective is placed between a macro-social framework (institutional and structural analysis) and the micro-social (social interaction, situations, representations or individuals) (López-Roldán & Fachelli, 2015). Thus, it is very important to complement the information obtained from students with data collected from those people related to them, such as the educational center, families, classmates or their own friends (Chun et al., 2020; Lucas-Molina et al., 2016), in order to obtain more reliable and accurate evidence regarding their experiences.

Furthermore, taking into consideration the information presented above, it would be interesting if the instruments that collected data on bullying and cyberbullying situations also addressed the protective factors, with the objective of knowing the level at which these indicators influence behaviors and favor interventions that are carried out to be adapted to each of the contexts and improving effectiveness. Nevertheless, the number of items in the instruments should not be forgotten, especially considering that the target population of the tools analyzed in this study are preadolescents. It is important to note that long questionnaires cause fatigue and rejection in the subjects who fill them out, with the added risk of incompleteness or answering without appropriate reflection (García-Muñoz, 2003). It is generally considered that 30 items are the ideal size, bearing in mind that the larger the number of items, the less convenient it is. Nonetheless, if the questions are simple and can be answered with a "yes" or "no", the number of items could be increased (García-Muñoz, 2003). In the instruments analyzed, most of the studies were in this range, without exceeding 30 questions.

Finally, concluding the discussion section and regarding the comparison and the inclusion of questions related to traditional bullying, a common pattern can be observed. Cyberbullying questionnaires have been methodologically influenced by the close-ended self-report instruments used in bullying research (Tokunaga, 2010). It is important to note that the comparison between the two constructs is complicated because they are two completely different concepts. In the case of instruments addressing bullying, as indicated by Zych et al. (2016), reporting an act of aggression that occurred two or three times means having been victimized that number of times, whereas in the case of cyberbullying, reporting having been cybervictimized two or three times means that it may have been viewed by an immense number of people with their respective increased suffering of negative effects. Thus, the action may have been committed only once but suffered as if it had been repeated a multitude of times (Menesini et al., 2012), not being possible or reliable to compare conceptualizations that may seem similar but have very different characteristics and consequences.

5. Implications for practice and limitations

The contribution of this systematic review and meta-analysis aims to clarify the existing dilemma with cyberbullying data collection instruments. The analysis of each of the studies allows to know the focus of each tool, the validity and reliability they have, the dimensions they address, as well as the age at which they were validated. This fact provides information and facilitates the choice of instruments according to the characteristics of each situation and context, obtaining data more in line with reality or the new roles that are emerging. To date, systematic reviews had been performed some years ago, but focus had not been brought to the meta-analytical component.

Hence, this study gives schools information about the different instruments that exist, allowing them to select the most appropriate tool for each situation of peer aggression, the roles on which they want to focus their data collection, or the protective factor related to

bullying or cyberbullying that they want to know about.

The findings of this study are instrumental in assisting policymakers in the formulation and execution of regional, national, and international interventions, encompassing legislation and the establishment of shared policies aimed at mitigating and reducing aggressive behaviors among peers.

One of the limitations of this study should be pointed out through the exclusion of studies that were not published in peer-reviewed journals, leading to publication bias. In order to offer a rigorous and exhaustive investigation, research that did not meet the criteria was excluded, despite the fact that the subject matter could be included in the established criteria. Furthermore, the loss of articles due to language was also noteworthy, since only those written in English, Portuguese or Spanish were included. It is also significant to highlight the variations in sample across studies impacting the interpretation of pooled results due to heterogeneity. In addition, although there were instruments that addressed various dimensions, several of them performed a general analysis, without dividing it by dimensions, hampering validation, interpretation and analysis. The lack of reporting Cronbach's α may contribute to the publication bias due to consistency issues of using non-significantly reliable ad hoc instruments in the intervention.

Furthermore, it is essential to promote a common and universal conceptualization of what is and is not considered cyberbullying, so that the instruments used to collect information are along the same lines and data can be obtained that reflect the reality experienced globally, taking into consideration the demographic characteristics, as well as the social and cultural context in which each study is framed. Hence, this lack of consensus is considered a limitation within the basis of this study.

Finally, specifically addressing the instruments, the use of self-reports tends to underestimate bullying and cyberbullying due in part to social desirability and participation bias, affecting the validity of the results. The disciplinary measures associated with peer aggression may cause many students to downplay their involvement when reporting (Yun & Espelage, 2024). Furthermore, the lack of cross-cultural validation in most instruments prevents their application in populations other than those established in each study, hindering generalizability and context understanding of this phenomenon.

6. Conclusions and future work

Through this research, those barriers that hinder the analysis of cyberbullying have been attempted to be removed. In terms of the reliability provided by the meta-analysis, positive results were observed, indicating consistency in the values offered. The wide variety of instruments requires an exhaustive analysis in order to avoid a proliferation of instruments that evaluate the same variables and have the same objectives. This observation underscores the necessity for standardized and globally validated assessment tools. Consequently, it would be intriguing to examine the validation processes employed in various countries. Furthermore, it would be necessary for the instruments to take into consideration different methods for collecting information, integrating diverse perspectives (e.g. peer-report, family-report or school-report) to evaluate more accurately this construct. In the same vein, it would be essential for the instruments to focus exclusively on one educational stage, since the combination of different age groups can cause difficulties in the analysis of the results when information is obtained from individuals with different levels of development. Thus, through this systematic review and meta-analysis, educational institutions and policymakers should be able to select the most appropriate instrument for the needs of the target sample and for establishing safety and preventive regulations, selecting an instrument whose validation has been carried out for that grade or educational stage.

In the same disposition, one of the results found allows to determine the need for those assessment tools that address the Primary education stage to collect information from the age of eight years, since the first cases can be originated at this age. Further research on criterion and construct validity would also be needed due to the different approaches to validating subjective scales. Finally, focus must be brought to the fact that it would be worthwhile investigating the necessity for the development of studies that analyze the effectiveness of cyberbullying instruments on a longitudinal and cross-cultural basis.

Authors statement

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Declarations of interest

None.

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Data availability

No data was used for the research described in the article.

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