Cyberbullying in elementary and middle school students: A systematic review

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ABSTRACT

The goal of the present study was to extend the scope of previous reviews on cyberbullying to focus on elementary and middle school students, ages when research indicates that children begin to use mobile phones and social media. From 2016 to 2020, a total of 43 articles were included in the final selection, and purpose/s, sample, design/instruments, and main findings/conclusions were assessed on each one. The following topics emerged from the results and were discussed: *cyberbullying/cybervictimization and psychosocial variables, students' sociodemographic variables, connections between bullying and cyberbullying, students' roles related to cyberbullying, external factors and students' responses, and effectiveness of cyberbullying programs*. Students experiencing cyberbullying at an early school age reported negative feelings, such as depression or anxiety. They are often linked to bullying scenarios and even to the same role (cyberbully, cybervictim or cyberwitness). Different programs have been shown to positively influence cyberbullying from a young age, important to prevent it, when children begin to use mobile phones and social media. Protective factors, such as specific pedagogical approaches (e.g. Cooperative Learning or Teaching for Personal and Social Responsibility) or programs, as well as the joined work of different agents (e.g. psychologists, teachers, parents, peers), should be considered to promote a positive evolution on CB prevention. Nevertheless, more studies are needed at these grades, as well as qualitative research designs, to deepen on the students' feelings on cyberbullying.

1. Introduction

Today's social networks and instant messaging applications have become everyday virtual platforms in our society. Given the constant availability of computer devices for children and adolescents (e.g., cell phones, computers, tablets) and the possibility of being constantly connected with the rest of the world, new types of social relationships and behaviors are emerging and developing (Hülür & Macdonald, 2020). The use of social networks offers great opportunities to connect with others, giving birth to online communities where you can meet people with similar interests or maintain relationships with others (Ellison, Steinfield, & Lampe,

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2007). Half of ten-year-olds have their own smartphone, being between the ages of nine and ten when smartphone ownership doubles, “marking an important milestone in children’s digital independence as they prepare for secondary school” (Ofcom, 2020, p.1). However, the use of social networks presents risks for those involved, especially for children and adolescents, and cyberbullying (CB) is one of them (Aizenkot, 2017; Patchin & Hinduja, 2015). The current context is so problematic that it has been declared a global issue occurring at different educational stages (Kowalski, Giumetti, Schroeder, & Lattanner, 2014).

CB is a form of bullying that reaches all ages due to the ubiquity and anonymity of social networks (Peter & Petermann, 2018). Mockery and derision haunt many students (Kowalski, Limber, & McCord, 2019; Patchin & Hinduja, 2010). Although according to prior evidence traditional bullying and CB seem to be correlated (Görzig & Machackova, 2015), there is still some debate as to whether CB is a distinct form of bullying or simply bullying using electronic platforms. Traditional bullying is typically defined as an act of aggression that is repeated over time and that is intended to cause harm or distress among individuals whose relationship is characterized by a power imbalance (Olweus, 1993; 2013). Thus, the definition of bullying is based on three fundamental characteristics: intent to harm, repetition, and an imbalance of power between the victim and the perpetrator (Olweus, 1997). Despite sharing some characteristics, traditional bullying and CB differ in important features that influence outcomes experienced by CB and traditional bullying victims (Giumetti & Kowalski, 2016). Similar definitions have been offered for CB based on the three key characteristics noted for the traditional forms of bullying (Slonje & Smith, 2010; Olweus & Limber, 2018). However, there is some debate about how each traditional bullying characteristic applies to CB (Olweus, 2013). The digital medium includes specific features: (a) wider audience and impact, which enhances its negative effects; (b) anonymity, which makes it easier to be both a cyberbully and a victim; (c) permanence, bullying acts remain “active” longer; and (d) minimal restrictions, there is hardly any control (Nocentini et al., 2010; Smith & Slonje, 2010). Due to the lack of agreement on the definition and the basic elements, other terms have emerged: internet harassment, online harassment, and online bullying, making it difficult to differentiate between them (Menesini, Nocentini, Palladino, Frisén, Berne, Ortega-Ruiz et al., 2012).

Nevertheless, Tokunaga’s (2010) definition of CB seems to be the most widely accepted: “Cyberbullying is 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 definition does not include a power differential, which is a central feature of traditional bullying. Furthermore, it is not clear whether it is possible to see the power imbalance and repetitiveness characteristics of traditional bullying in CB (Olweus, 2013). Smith, del Barrio and Tokunaga (2013) explained that power imbalance with electronic means could be understood in terms of differences in technological expertise between the aggressor and the victim, relative anonymity, social status, number of friends or marginalized group position. The repetitiveness feature in CB could also be understood as the way in which negative messages, images or videos reach individuals; or the time that these messages, images or videos last in the net, more than on the cyberbully’s behavior, which is often a single act (Olweus & Limber, 2018). CB includes, among others, attitudes and actions such as excluding someone from an online group, spreading gossip by mobile phone, making threatening, abusive or offensive remarks on social networks, sending WhatsApp messages to insult or threaten, or uploading degrading videos on online platforms (Garaigordobil, 2015).

CB perpetration, cybervictimization (CV) and CB witnessing (CBW) have been associated with adverse physical, psychosocial and/or educational expectations (Kowalski et al., 2014). According to prior evidence, some individuals who got involved in CB as victims reported low self-esteem (Palermi, Servidio, Bartolo, & Costabile, 2017; Patchin & Hinduja, 2010; Wachs, Vazsonyi, Wright, & Ksinar Jiskrova, 2020), stress (Garaigordobil & Machimbarrena, 2019; Martínez-Monteaudo, Delgado, Díaz-Herrero, & García-Fernández, 2020), anxiety (Chu, Fan, Liu, & Zhou, 2018a; Martínez-Monteaudo et al., 2020), depression (Calvete, Orue, & Gámez-Guadix, 2016; Chu et al., 2018a; Varghese & Pistole, 2017), low academic performance (Torres, D’Alessio, & Stolzenberg, 2020) and suicidal ideations (Kowalski et al., 2014). For its part, some cyberbullies showed aggressive behavior (Fletcher et al., 2014), low self-esteem (Patchin & Hinduja, 2010), stress (Cañas, Estévez, Marzo, & Piqueras, 2019), anxiety (Pabian & Vandebosch, 2016) and depression (Cañas et al., 2019; Wang et al., 2019). Some witnesses of CB showed depression and anxiety (Wright, Wachs, & Harper, 2018) and some who did not become involved while witnessing CB aggressions, experienced depression and suicidal ideation (DeSmet, De Bourdeaudhuij, Walrave, & Vandebosch, 2019). DeSmet et al. (2019) found no significant adverse psychological problems in those cyberwitnesses who got involved while CB occurred.

Regardless of the role played in CB, previous systematic reviews on CB (e.g., Camerini, Marciano, Carrara, & Schulz, 2020; Kowalski et al., 2014; Zych, Ortega-Ruiz, & Del Rey, 2015; Zych, Ortega-Ruiz, & Marín-López, 2016) acknowledged the impact on different psychological variables, the influence of socio-demographic variables (e.g., gender, age), the relation between CB and traditional bullying (Jadambaa et al., 2019), the effects of several anti-bullying interventions conducted (Tanrikulu, 2018) or the causal and environmental factors influencing CB (Heerde & Hemphill, 2018). These previous reviews assessed primary, middle and high school students (e.g., Zych et al., 2016) or middle and high school students (e.g., Heerde & Hemphill, 2018) jointly, making it hard to understand, precisely, and draw conclusions on primary and middle school students, when research indicates that children begin to use mobile phones and social media. Consequently, there seems to exist a gap of systematic reviews on CB focused on primary education and middle school.

International reports on internet use showed an increase in elementary and middle school students: 99% of children aged 12–15 in the United Kingdom (Ofcom, 2017), 86.7% of children aged 10 and 93% aged 13 in Spain (National Statistics Institute, 2019), and similar data for the United States (Pew Research Center, 2018). Previous studies reported grades 5–6 as the beginning of children’s access to technology and CB (Cole et al., 2016; Holfeld & Leadbeater, 2015), and Aizenkot and Kashy-Rosenbaum (2019) concluded that CV was more likely in grades 4–6 than in older graders. Furthermore, middle school (grades 6–8) seems to be the time when CB peaks, continuing through high school, college, and work (Kowalski et al., 2014; Myers & Cowie, 2019; Tokunaga, 2010). For these reasons (the lack of a specific review on elementary/middle school and the relevance of internet and social media use from short ages),

specific information is still needed to understand the impact of CB on elementary and middle school students to help prevent it in these and subsequent ages, as well as to uncover protective factors (Hamm et al., 2015; Zych et al., 2015).

2. Research aims

Based on the aforementioned, and on the ideas uncovered in previous studies, the aim of this review was to assess CB in young graders, identifying existing empirical studies conducted in elementary and middle school students (Grades 1–8) from 2016 to 2020 to highlight the importance of these ages in the prevention of CB behaviors. Two research questions guided this study (1) What are the characteristics of the studies (e.g., purposes, samples, research designs): conducted in elementary and middle school students on CB and their differences with other studies in older ages over the last five years?; (2) What specifically happens in elementary and middle school students and what is the relation between the findings/conclusions and the main issues identified in previous reviews conducted in middle and high school students?

To answer the first question, the articles selected were analyzed based on: ‘authors’ (publication year); ‘purpose/s’; ‘sample’; ‘design/instruments’; ‘main findings/conclusions (theme/s of the thematic analysis)’. To answer the second question, the findings and conclusions of the selected articles were categorized using inductive thematic analysis. The results of this review were discussed comparing them with findings from previous studies in the same section (4. Results and discussion) to facilitate their understanding.

Flow diagram of the systematic search.

Fig. 1. Flow diagram of the systematic search.

Table 1

MMAT to assess the studies quality (Hong et al., 2018).

	Qualitative studies					Quantitative studies										Quantitative descriptive					QR
Author/s (year)	1.1.	1.2.	1.3.	1.4.	1.5.	Randomized controlled trials					Non-randomized studies					4.1	4.2	4.3	4.4	4.5	
						2.1	2.2	2.3	2.4	2.5	3.1	3.2	3.3	3.4	3.5						
Aizenkot and Kashy-Rosenbaum (2018)											Y	Y	Y	Y	Y						H
Aizenkot and Kashy-Rosenbaum (2020)											Y	Y	Y	Y	Y						H
Athanasziades et al. (2016)											Y	Y	N	Y	Y						H
Carter et al. (2020)																Y	Y	Y	Y	Y	H
Chu et al. (2018b)											Y	Y	Y	Y	Y						H
Coelho and Romão (2018)																Y	Y	Y	CT	Y	H
Cole et al. (2016)																Y	Y	Y	CT	Y	H
Cuesta, Hennig, Adriana & Malfasi (2020)	Y	Y	Y	Y	Y																H
Da Silva et al. (2016)						Y	Y	Y	Y	Y											H
Delgado, Escortell, Martínez-Monteagudo, Ferrández & Sanmartín (2019)																Y	Y	Y	Y	Y	H
Delgado and Escortell (2018)																Y	Y	Y	Y	Y	H
DeSmet et al. (2018)						Y	Y	Y	Y	Y											H
Díaz and Fite (2019)											Y	Y	Y	Y	Y						H
Doumas and Midgett (2020)																Y	Y	Y	Y	Y	H
Escortell, Aparisi, et al. (2020)																Y	Y	Y	CT	Y	H
Escortell, Delgado, and Martínez-Monteagudo (2020)																Y	Y	Y	Y	Y	H
Fahy et al. (2016)						Y	Y	Y	Y	Y											H
Garaigordobil and Martínez-Valderrey (2016)						Y	Y	CT	Y	Y											H
Gradingier et al. (2016)						Y	Y	N	Y	Y											H
Govender and Young (2018)																Y	Y	Y	Y	Y	H
Holfeld and Leadbeater (2017)											Y	Y	Y	Y	CT						H
Knauf et al. (2018)																Y	Y	Y	Y	Y	H
Longobardi, Gullotta, Ferrigno, Jungert, Thonberg & Settanni (2020)																Y	Y	Y	Y	Y	H
López-Pradas et al. (2017)																Y	Y	Y	Y	Y	H
Machimbarrena and Garaigordobil (2017)																Y	Y	Y	Y	Y	H
Machimbarrena & Garaigordobil (2018a)																Y	Y	Y	Y	Y	H
Meter and Bauman (2018)																Y	Y	Y	Y	Y	H
Moyano et al. (2019)																Y	Y	Y	Y	Y	H
Muller et al. (2017)																Y	Y	Y	Y	Y	H
Navarro et al. (2018)																Y	Y	Y	Y	Y	H
Quintana-Orts and Rey (2018)																Y	CT	CT	Y	Y	H
Sidera et al. (2020)																Y	Y	Y	Y	Y	H
Solomontos-Kountouri et al. (2016)											Y	Y	Y	Y	Y						H
Vivolo-Kantor et al. (2020)						Y	Y	Y	Y	Y						Y	Y	Y	Y	Y	H
Wang et al. (2019)																					H
Wegge et al. (2016)											Y	Y	Y	Y	Y						H
Wright (2016)											Y	Y	Y	Y	Y						H
Wright (2017a)											Y	Y	Y	Y	Y						H
Wright (2017b)											Y	Y	Y	Y	Y						H
Wright (2017c)											Y	Y	Y	Y	Y						H
Wright and Wachs (2019)											Y	Y	Y	Y	Y						H
Wright and Wachs (2020)																Y	Y	Y	Y	Y	H
Zhang et al. (2020)																Y	Y	Y	Y	Y	H

For each item: Yes (Y) = 1; No (N) = 0; Cannot tell (CT) = 0.5. Quality rating (QR): Low (L) = 1–2; Medium (M) = 3; High (H) = 4–5.

Items: 1.1. Is the qualitative approach appropriate to answer the research question? 1.2. Are the qualitative data collection methods adequate to address the research question? 1.3. Are the findings adequately derived from the data? 1.4. Is the interpretation of results sufficiently substantiated by data? 1.5. Is there coherence between qualitative data sources, collection, analysis, and interpretation? 2.1. Is randomization appropriately performed? 2.2. Are the groups comparable at baseline? 2.3. Are there complete outcome data? 2.4. Are outcome assessors blinded to the intervention provided? 2.5. Did the participants adhere to the assigned intervention? 3.1. Are the participants representative of the target population? 3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)? 3.3. Are there complete outcome data? 3.4. Are the confounders accounted for in the design and analysis? 3.5. During the study period, is the intervention administered (or exposure occurred) as intended? 4.1. Is the sampling strategy relevant to address the research question? 4.2. Is the sample representative of the target population? 4.3. Are the measurements appropriate? 4.4. Is the risk of nonresponse bias low? 4.5. Is the statistical analysis appropriate to answer the research question?

Table 2

Summary of studies selected from the systematic review.

Authors (year)	Purpose/s	Sample	Design/instruments	Findings/conclusions (theme/s)
Aizenkot and Kashy-Rosenbaum (2018)	Evaluate the effectiveness of an intervention program designed to reduce CB and improve usage of WhatsApp classmates' groups.	1268 4th-6th and 8th graders (52% female); 12 schools; Israel.	CB in WhatsApp classmates' group quest.; Usage norms of WhatsApp classmates' groups; Classroom climate; WhatsApp classmates' group activity level.	The intervention led to a significant improvement of usage norms in WhatsApp classmates' groups. Classroom climate also improved. (1)
Aizenkot and Kashy-Rosenbaum (2020)	Explore the results of the Safe Surfing program to decrease CB in WhatsApp classmate discourse.	533 4th-6th graders (50% female); 6 schools; Israel.	CV in WhatsApp classmate discourse quest.; Perception of classroom climate and student sense of class belonging quest. (RAMA, 2015).	Students decreased their CV in WhatsApp, improving the classroom climate and their sense of class belonging. (1)
Athanasiades et al. (2016)	Assess the effects of Internet use, parental mediation, victimization, gender, bullying and empathy on CB and CV (2 measures/4 months).	440 7th-8th graders (46.1% female; $M_{age} = 12.74$); 6 schools; Greece.	Self-reported quest. to assess demographic features, use of social networks, students' involvement in bullying and CB incident, and students' knowledge of the CB.	Involvement in traditional bullying as a victim or perpetrator is the factor with the highest predictability of CB and CV. (2,3,5)
Carter et al. (2020)	Study the mediation/moderation of the parent-child attachment students' perception on the links between parenting dimensions and different types of bullying.	1078 5th-6th graders (59.1% female; $M_{age} = 11.24$); South Africa.	Inventory of Parent and Peer Attachment Revised (Gullone & Robinson, 2005); Adolescent Peer Relations: Bully/Target (Parada, 2000); Child's Report of Parental Behaviour Inventory 30 (Schaefer, 1965).	Parent-child attachment mediated the relations between parental acceptance-bullying events and moderate the first-verbal bullying. CB was lower than other forms of bullying. (4,5)
Chu et al. (2018b)	Examine whether bullies and victims would remain or change their roles across time in traditional and virtual contexts.	661 7th-8th graders (39% female; 11–15 years); China.	Traditional Bullying Scale (Li et al., 2012); Chinese version of the Revised CB Inventory (Topcu & Erdur-Baker, 2010); CB Victimization (Chu & Fan, 2017).	Bullying roles were maintained. Cyberbullies were more likely to become cybervictims, and victims to. Bullies continued to bully online and cybervictims remained to be bullied. (2,4)
Coelho and Romão (2018)	Study how social withdrawal and social anxiety involve students in bullying and CB, and the influence of the class-levels.	668 7th-8th graders (44.2% female; $M_{age} = 12.73$); 5 schools; Portugal.	Bullying and CB Behaviors Quest. (Coelho et al., 2016); Social Withdrawal and Social Anxiety subscales (Coelho et al., 2015).	Bullying/CB overlap in bullies. Bullying roles showed higher levels of withdrawal. CB roles affect social withdrawal/anxiety. Girls showed more anxiety than boys, and CB and bullying victims than bully-victims. (2,3,6)
Cole et al. (2016)	Examine the relation between CV and depressive symptoms/negative self-cognitions. Compare types of peer victimization for 12-months and age/gender links to these types.	827 3rd-6th graders (55.1% female; $M_{age} = 10.90$); 6 schools; USA.	Reynolds Adolescent Depression Scale-2 (Reynolds, 2002); Behind Your Back protocol/Peer Victimization Self-Report (Cole et al., 2014); Children's Automatic Thoughts (Schniering & Rapee, 2002).	CV was related to negative self-cognitions and depressive symptoms development. CV is less stable and increase slightly with time. Gender/age differences emerged for others victimizations. (3,6)
Cuesta et al. (2020)	Check the effect of CB prevention program which involve the safe use of social media and technologies.	151 5th graders (51% female; 9–11 years); 5 schools; Colombia.	Focus Groups, and students' forum postings in Edmodo.	Program helped students to understand CB and face CB threats: conflict resolution skills and students' empowerment was relevant. (1)
Authors (year)	Purpose/s	Sample	Design/instruments	Findings/conclusions (theme/s)
Da Silva et al. (2016)	Verify whether improving social and emotional skills can reduce the victimization of bullying in Brazilian students.	78 6th graders victimized students ($M_{age} = 11.2$); 6 schools; Brazil.	Aggression and Peer Victimization Scale (Cunha et al., 2009); Peer Report Sociometric scale (Martins, 2009); Multimedia System of Social Skills for Children (Del Prette & del Prette, 2005).	Before and after the test, the victimization rate of the intervention and the control groups was significantly reduced. (1)
Delgado et al. (2019)	Analyze the value of academic goals and self-		Self-Description Quest. I (Marsh, 1986); Achievement	Social self-concept, learning goals (both in

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Table 2 (continued)

Authors (year)	Purpose/s	Sample	Design/instruments	Findings/conclusions (theme/s)
	concept in cyber bullies, victims and witnesses in relation to the gender and grade.	548 5th-6th graders (49.8% female; $M_{age} = 10.95$); 6 schools; Spain.	Goals Tendencies Quest. (Hayamizu & Weiner, 1991); Screening for Peer Bullying (Garaigordobil, 2013).	victims) and social reinforcement goals (in bullies and witnesses) were relevant in the emergence of CB. Results varied according to gender and grade. (2,6)
Delgado and Escortell (2018)	Analyze the differences of the CB roles (bully, victim and witness) according to gender and grade of the students.	548 5th-6th graders (49.8% female; $M_{age} = 10.95$); 6 schools; Spain.	Screening for Peer Bullying (Garaigordobil, 2013).	Girls are more victimized than boys for all roles, but there were no differences based on grades. 5th graders produced more blackmails via calls or messages, while 6th graders were more victimized by videos, death threats and blackmails about unveiling secrets. (2,6)
DeSmet et al. (2018)	Design an intervention to increase positive witness behavior and reduce negative witness behavior in adolescent CB	216 8th graders (60% female; 13–14 years); 2 schools; Belgium.	Demographic information; involvement in bullying and CB; witness behavior and its determinants (DeSmet et al., 2016a; b); KIDSCREEN scale (Ravens et al., 2010).	The intervention improved prosocial skills, self-efficacy and the intention to act as a positive witness. It increased CBW, CB awareness and life quality. (1,2)
Díaz and Fite (2019)	Examine links between CV, substance use, and anxiety and depression symptoms, considering physical/relational victimization over 1 academic year.	260 6th-8th graders (47% female; $M_{age} = 12.24$); USA.	Demographic info and substance use survey; European CB Intervention Project Quest. (del Rey et al., 2015); Short Mood and Feelings Quest. (Angold & Costello, 1987); Emotional Distress & Anxiety Scale (Ader 2007); Social Experience Quest. (Cullerton & Crick, 2005).	CV was related to higher risk for substance use, but not to anxiety or depression, considering physical and relational victimization. (3)
Doumas and Midgett (2020)	Study the associations among depressive and anxiety symptoms with CBW.	122 3rd-5th graders (43.8% female; $M_{age} = 9.65$); 1 school; USA.	CBW questions; Olweus Bullying Quest. (Olweus, 1996); Epidemiological Studies Depression (Weissman et al., 1980); Social Anxiety Scale (Greca & Stone, 1993).	CB witnessing was related to depressive symptoms and social anxiety with higher levels than students who witnessed bullying. (2,3,4)
Escortell, Aparisi, et al. (2020)	Assess aggression and personality traits in different CB roles and the influence of these levels predicting participation in other roles.	548 5th-6th graders (49.8 female; $M_{age} = 10.95$); Spain.	CB: Peer Harassment Screening (Garaigordobil, 2013); Big Five Quest. For children (Barbaranelli et al., 2003); Aggression Quest. (Buss & Perry, 1992).	Verbal aggression and extraversion were factors to be victims; anger explained being a victimized bully; and agreeableness a predictor to be CB victim (2,3).
Escortell, Delgado, and Martínez-Monteaudo (2020)	Define an explanatory model on CV through a structural equations analysis, on the basis of CV relations with aggressiveness, school anxiety and self-concept.	542 5th-6th graders (49.8 female; $M_{age} = 10.97$); Spain.	Self-Description Quest. (Marsh, 1992); CB: Peer Harassment Screening (Garaigordobil, 2013); Aggression Quest. (Buss & Perry, 1992); School Anxiety Inventory for Primary Education (García-Fernández et al., 2014).	Self-concept and anxiety were negatively related to CV, but positively related to aggressiveness. The psychological regulation could prevent the risk of being a CV. (3)
Authors (year)	Purpose/s	Sample	Design/instruments	Findings/conclusions (theme/s)
Fahy et al. (2016)	Evaluate longitudinal associations between CB involvement and adolescent mental health.	2480 7th graders (44.8 female; 12–13 years); 25 schools; England.	Measure of depressive symptoms, social anxiety symptoms and mental well-being. CB involvement (Ybarra et al., 2007).	CB and potential of CV were risk factors for depressive/anxiety symptoms and below average well-being. (3)
Garaigordobil and Martínez-Valderrey (2016)	Assess the effects of a program (Cyberprogram 2.0)		Adolescents' Premeditated and Impulsive Aggressiveness	Cyberprogram 2.0 could have a positive impact on

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Table 2 (continued)

Authors (year)	Purpose/s	Sample	Design/instruments	Findings/conclusions (theme/s)
Grading et al. (2016)	to prevent and reduce CB on school aggressiveness and violence. Investigate the effectiveness (T1) and sustainability (T2) of the ViSC program (applied for 1 year in Austria) to prevent CV and CB within a randomized control study.	176 8th graders (56.3% female; 13–15 years); 3 schools; Spain. T1:2042 5th-7th graders (47.6% female; $M_{age} = 11.7$); 18 schools. T2: 659 6th-7th graders (47.9% female; $M_{age} = 12.7$); 6 schools.	Quest. (Andreu, 2010); School Violence Revised Quest. (Álvarez-García et al., 2011). Self-reported quest.	different types of school violence and different kinds of aggressive behaviors. (1) The ViSC program was effective in preventing CB and CV, and the effects were sustainable after 6 months. (1)
Govender and Young (2018)	Study the differences in gender, age, grade, and experiences of authoritarian parenting among traditional and CB perpetrators.	272 6th-7th graders (63.6% female; $M_{age} = 12.08$); 4 schools; South Africa.	Adapted version of the Revised Olweus Bully/Victim Quest (Olweus, 2007) and Parenting Practices Quest (Robinson et al., 1995)	Bullying and CB were related to authoritarian parenting. Gender/age were not significantly linked to bullying. Grade was significantly linked to traditional/CB perpetration. (4,5,6)
Holfeld and Leadbeater (2017)	Assess the concurrent and longitudinal associations (1 course) among early adolescents' experiences of school climate and CV in relation to traditional victimization using WITS program.	714 5th-6th graders (52% female; $M_{age} = 11.0$) at the beginning; 638 (52% female; $M_{age} = 11.48$) at the end; 27 schools; Canada.	Social Experience Quest (Desjardins et al., 2013); Development Program School Climate Surveys: Elementary-Middle School (Haynes et al., 1997); CB Behavior and Victimization Experiences for School Child Scale (Holfeld & Leadbeater, 2015).	Students who experienced a better school climate reported less CV within and across time. A safe and supportive school environment could prevent CV inside and outside the school. (1,3)
Knauf et al. (2018)	Detect differences in the social-cognitive and affective reactions of witnesses to school bullying/CB.	486 6th-8th graders (56% female; $M_{age} = 12.95$); 10 schools; Germany.	Self-reported quest. to assess students' witness experiences and Social-Cognitive and Affective Reactions to Bullying.	During CB, moral disengagement was stronger, while feelings of responsibility and defender self-efficacy were weaker. (2,4)
Longobardi et al. (2020)	Investigate the relation between time perspectives and CB/CV.	403 6th-8th graders (56% female; $M_{age} = 12.2$); Italy.	Florence CB/CV Scales (Palladino et al., 2015); Time Perspective Inventory (Zimbardo & Boyd, 2015); Student Perception of Affective Relationship with Teacher (Koomen & Jellesma, 2015); Strength and Difficulties Quest. (Italian teacher version; Marzocchi et al., 2004).	Time perspective and CV/CB showed correlations. Cybervictims reported negative relations with past orientations, but the involvement in active CB was negatively related to past and future orientations. Future orientations could be a protective factor against involvement in CB. (3)
López-Pradas et al. (2017)	Design a cybergossip quest and adapt a CB quest to primary school students and analyze the influence of cybergossip on CB and CV.	866 4th-6th graders (52.9% female; $M_{age} = 11.21$); Spain.	Cybergossip-Q-Primary; Adaptation of the European CB Intervention Project Quest. (del Rey et al., 2015).	Significant relationship between cybergossip and CB was found. (3)
Authors (year)	Purpose/s	Sample	Design/instruments	Findings/conclusions (theme/s)
Machimbarrena and Garaigordobil (2017)	Examine the bullying/CB prevalence and explore the quantity of bullying/CB behavior suffered, perpetrated, and observed in public/private schools.	1993 5th-6th graders (48.8% female; $M_{age} = 10.68$); 25 schools; Spain.	CB: Screening of Peer Harassment (Garaigordobil, 2013).	No differences in bullying/CB between schools for pure-victims, witnesses, pure-bullies, and bully-victims. More bullying/CB were perpetrated, suffered, and observed in public schools. (2,4,6)
Machimbarrena and Garaigordobil (2018)	Analyze bullying and CB prevalence according to students' gender and to explore averages in behaviors suffered, perpetrated, and observed.	1993 5th-6th graders (48.8% female; $M_{age} = 10.68$); 25 schools; Spain.	CB: Screening of Peer Harassment (Garaigordobil, 2013).	Students showed similar levels on witnesses, pure-victims, and pure-bullies in boys/girls. Girls observed more sexual harassment behaviors. Boys showed higher CV levels, behaviors perpetrated, bullied and

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Table 2 (continued)

Authors (year)	Purpose/s	Sample	Design/instruments	Findings/conclusions (theme/s)
Meter and Bauman (2018)	Study the indirect link between moral disengagement about CB and parental monitoring on bullying and victimization via CB involvement.	800 3rd-8th graders (52% female); USA.	Self-built moral disengagement about CB, parental monitoring, CB involvement, CV, CB, traditional victimization, and traditional bullying quest.	observed, and victim-aggressive. (2,4,6) Moral disengagement about CB and parental monitoring affected CB involvement. CB involvement predicted traditional victimization and bullying. (3,4,5)
Moyano et al. (2019)	Assess the mediating role of social integration and relationships about the factors associated with bullying forms (relational, aggressive, CB) suffered by victims.	3407 5th-6th graders (52.4% female; $M_{age} = 11.42$); 42 schools; Spain.	Self-built socio-demographic quest.; self-reported measure to evaluate bullying and CB (Díaz-Aguado et al., 2013); Quality of coexistence: social integration and relationships (Díaz-Aguado et al., 2010).	Social integration and low perception of negative relationships mediated to predict bullying forms, being the first strongly correlated with bullying. School type was related to negative relations/good friends, and both predicted social integration. (4,6)
Muller et al. (2017)	Study the prevalence of CB among elementary school students, identify technological responses employed by cybervictims and examine the differences in the levels of coping resources and styles used between cybervictims and non-cybervictims.	107 5th-6th graders (50,5% female; 10–12 years); 5 schools; Australia.	Children's Coping Scale (Cunningham, 2002); Adapted version of the CB Scale (Menesini et al., 2011); The People in My Life (Cook et al., 1995); Locus of Control Scale for Children (Nowicki & Strickland, 1973); Modified-Rosenberg Self-Esteem Scale (Gray-Little et al., 1997); Checklist of Specific Technological Responses.	13.1% of participants reported single episodes of CV. Technological responses employed by cybervictims included blocking, deleting, and changing passwords. Those who reported one episode of CB had higher levels of self-esteem compared to never or repeated CB. No significant differences were found in coping styles, locus of control and attachment. (2,5)
Navarro et al. (2018)	Verify the differences between groups of cybervictims regarding cyber-relationship motives and coping strategies for handling problems.	1058 5th-6th graders (48,77% female; $M_{age} = 11.08$); 17 schools; Spain.	Spanish CB Quest (Estévez et al., 2010); Coping Strategies (Morales-Rodríguez et al., 2012); The Bullying Involvement Scale (Fitzpatrick & Bussey, 2011); Cyber-relationship motives (Wang & Chang, 2010).	Cybervictims used the Internet to create new relationships, search for anonymity, escape the real world and compensate their lack of social skills. Severe cybervictims used less effective social problem-solving strategies than non-/occasional victims. (2,3)
Authors (year)	Purpose/s	Sample	Design/instruments	Findings/conclusions (theme/s)
Quintana-Orts and Rey (2018)	Study how forgiveness is related to improved mental health after bullying transgressions.	1044 early adolescents (50.47% females; $M_{age} = 13.09$); 6 schools; Spain.	European Bullying Intervention Project Quest. (Ortega-Ruiz et al., 2016); Values in Action Inventory for Youth (Park et al., 2006); Satisfaction with Life Scale (Diener et al., 1985); Suicidal Behavior Quest. (Osman et al., 2001).	Students with a higher level of forgiveness were less likely to report mental health problems after a bullying experience (in both traditional and online form) compared to teenagers with low levels of forgiveness. (4)
Sidera et al. (2020)	Check the victimization of bullying and its links with the perceptions of students of being victims.	4646 3rd-6th graders (49% female; $M_{age} = 10.16$); Spain.	European Bullying Intervention Project Quest. (Ortega-Ruiz et al., 2016); reduced version-European CB Intervention Project Quest. (Ortega-Ruiz et al., 2016); Perception of being a victim/cybervictim.	Victimization and students' perceptions of it were reduced with the school grade, but CV was stable in boys and increased in girls. Boys were more victimized than girls. CV could be related with victimization. (4,6)
Solomontos-Kountouri et al. (2016)	Implement the ViSC program in Cyprus and to investigate its effectiveness within a	1752 7th-8th graders (48.9% female; $M_{age} = 12.6$); 6 schools; Cyprus.	Self-reported scales of one item (CB and CV; Smith et al., 2008); items of bullying/	The program was more effective for 7th than 8th graders. (1,6)

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Table 2 (continued)

Authors (year)	Purpose/s	Sample	Design/instruments	Findings/conclusions (theme/s)
	quasi-experimental longitudinal study.		victimization: verbal (Strohmeier et al., 2013), physical and relational (Crick & Grotpeter, 1995).	
Vivolo-Kantor et al. (2020)	Evaluate the effects of the <i>Dating Matters</i> prevention model on CB, bullying and physical violence.	3301 6th-8th graders (53% female; $M_{age} = 11.93$); 46 schools; USA.	Items from: Illinois Bully Scale (Espelage & Holt, 2001); Sexual Harassment Survey (AAUW Educational Foundation, 2001); to measure physical violence.	The model decreased bullying perpetration and physical violence; CV and CB perpetration on girls; and demonstrated protective effects on all variables. (1,6)
Wang et al. (2018)	Assess the links among school, individual and familiar predictors of suicidal thoughts and behaviors, using data from the Georgia Student Health Survey 2.0.	12,511 6th-8th Asian American graders (50.05% female); 510 schools; USA.	Georgia School Climate Survey 2.0 (La Salle et al., 2017).	Victimization and CV predicted suicidal thoughts and behaviors (more in girls), but school climate (only in boys), parental involvement (only in girls) and gender buffered these relationships. (3,4,5,6)
Wegge et al. (2016)	Analyze the interrelationship between adolescents' social status (popularity) and CB behavior.	154 7th graders (58.2% female; 12–14 years); Belgium.	Sociometric and perceived popularity (self-constructed) and Involvement in traditional bullying and CB (self-constructed).	Bullying was not associated with popularity. CB predicted perceived popularity over time, but not socially measured popularity. (6)
Wright (2016)	Investigate the longitudinal buffering role of different parental mediation strategies between CB victims and psychosocial adjustment difficulties.	568 8th graders (53% female; 13–15 years); 1 school; USA.	CV scale (Wright & Li, 2013); Anxiety Scale for Children (March et al., 1997); Mediation of Technology Usage (Arrizabalaga et al., 2010); UCLA Loneliness Scale (Russell, 1996); Face-to-face victimization Quest. (Wright et al., 2014); Depression Scale (Radloff, 1977).	CV was linked to parental mediation, depression, anxiety and loneliness while such associations were negative for co-viewing mediation and instructive mediation. High levels of these types of mediation made the relationship of CV to depression more negative. (3,5)
Authors (year)	Purpose/s	Sample	Design/instruments	Findings/conclusions (theme/s)
Wright (2017a)	Examine with two studies the early students' attributions and emotional distress based on social context in (1) ambiguous social situations and (2) hypothetical unambiguous victimization scenarios. Thus, it was also examined one year later.	(1) 439 7th-8th graders (50.57% female; $M_{age} = 12.76$). (2) 414 7th-8th graders (212 females; $M_{age} = 12.68$); 1 school; USA.	(1) Face-to-face and cyber ambiguous peer conflicts (Crick & Dodge, 1996); Face-to-face and cyber emotions; Face-to-face and cyber attributions. (2) Emotional distress for face-to-face and cyber vignettes; Face-to-face attributions and cyber vignettes (Wright & Li, 2012). (1–2) Face-to-face relational aggression (Wright et al., 2012); Self-reported CB (Wright & Li, 2013).	Feelings of sadness, anger, hostile, self-blame, and aggressor-blame attributions were more often elicited from face-to-face victimization than cyber victimization. Anger mediated the relationship between attributions and face-to-face and cyber aggression. (3,4)
Wright (2017b)	Assess the mitigating effect of social support from parents, teachers and friends obtained one year later the connection between CV and depression.	131 8th graders (27% female; 13–15 years; cognitive disabilities and/or developmental disorders); USA.	CV scale (Wright & Li, 2013); Perceived Social Support from Parents, Teachers, and Friends (Malecki et al., 2000); and Depression Scale (Radloff, 1977).	High levels of perceived parents and teachers' social support weakened the relationship between CV and depression. (3,5)
Wright (2017c)	Check the links between parental mediation strategies and CB behavior/CV, and cyber-trolling behavior/CV, as well as examine the gender role in these mediations.	68 8th graders (52% female; $M_{age} = 13.48$); 1 school; USA.	Mediation of Technology Usage (Arrizabalaga et al., 2010); and CV scale (Wright & Li, 2013).	Parents' guidance could help reduce the perpetration of CB. The connection between girls' restrictive mediation/CV was more positive than to boys, but it was more negative between guided mediation/CV. (5,6)

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Table 2 (continued)

Authors (year)	Purpose/s	Sample	Design/instruments	Findings/conclusions (theme/s)
Wright and Wachs (2019)	Evaluate the effect of ethnicity in the associations among CV, school-belongingness, and psychological consequences.	416 7th-8th graders (46% female; Latin and white; $M_{age} = 13.89$); 1 school; USA.	Depression Scale (Radloff, 1977); Anxiety Scale for Children (March et al., 1997); School-belongingness (Goodenew, 1993); UCLA Loneliness Scale (Russell, 1996); Face-to-face victimization Quest. (Wright et al., 2014); CV scale (Wright & Li, 2013).	Positive relation into CV with loneliness and depression and anxiety was reinforced by low levels of belongingness. This CV threatens belongingness of the students and their emotional adjustment. (3,6)
Wright and Wachs (2020)	Examine the influence of gender and stereotype traits (femininity and masculinity) in CV behaviors using technologies.	456 8th graders (49.56% female; $M_{age} = 13.66$); 2 schools; USA.	Bem Sex Role Inventory (Bem, 1974); and CV scale (Wright & Li, 2013).	Students with high feminine traits or low levels of both traits had higher levels of CV than students with high masculine traits/both traits. Boys reported main effects of CV types and girls an interaction between CV-techs. (6)
Zhang et al. (2020)	Investigate the trajectories of CB and neuroticism, as well as their associations.	4327 3rd-4th graders; (44.6% female; $M_{age} = 9.94$); 13 schools; China.	Abbreviated Junior Eysenck Personality Quest. (Francis, 1996); adaptation of the Electronic Bullying Quest. (EBQ; Moore et al., 2012).	CB, CV, and neuroticism were correlated at baseline and decreased over time parallelly. Gender was associated to the decreasing of three variables, but age only with CB. (3,6)

Themes: (1) Studies investigating the effectiveness of CB programs; (2) Studies investigating the responses of the students' roles related to CB; (3) Studies investigating the relationship between CB/CV and psycho-social variables; (4) Studies comparing the relationship between bullying and CB; (5) Studies investigating the effects of external factors on the students' responses; (6) Studies comparing students' socio-demographic variables. Instruments references are available in its respective study.

3. Method

This systematic review was registered in PROSPERO (CRD42020214226), and it was conducted using PRISMA guidelines (Moher, Liberati, Tetzlaff, Altman, & ThePRISMA Group, 2009) to promote quality and reliability. The review followed an empirical approach, which delineate specific parameters to select primary data, to provide a consolidated picture (Oakley, 2012). This process ensures data synthesis using impartial lens (Hemingway & Brereton, 2009).

3.1. Data sources and search strategy

In order to provide an extensive review of the literature, both electronic and manual searches were conducted. On the one hand, the electronic search compiled a review across several databases from the beginning of 2016 to the end of 2020: Education Information Resource Center (ERIC), Web of Science, Scopus, Scielo, PsycArticles and PsycINFO. The keywords string incorporated the following terms: "cyberbullying", "cyber bullying", "cyber bullying", "primary school", "middle school", "elementary school", and "high school". The Boolean operators "OR", "AND" and "NOT" (not for "high school") were used. On the other hand, the manual search involved a review of previous CB reviews and the main journals that have published on the topic. All searches were exported to Mendeley® software by two of the authors and reviewed by the other authors to guarantee the reliability of the search process. On the other hand, the manual search was made screening relevant journals publishing about CB, as well as other reviews and meta-analysis on this topic. In this search, articles not found in the electronic search were also included.

3.2. Inclusion and exclusion criteria

The articles' eligibility involved inclusion criteria to guarantee consistency in the purposes of the review (see PRISMA flow diagram in Fig. 1). Only original articles published in English and in peer-review journals from 2016 to 2020, with samples that included elementary and/or middle school students, which focused on CB were selected. The sample focused on children aged six to nine years and early adolescents aged 10–14 years in educational contexts. This last age group (early adolescence) are at higher risk of being involved in CB (e.g., Cole et al., 2016; Holfeld & Leadbeater, 2015).

First, 83 duplicated documents of different databases were removed. In the first level of exclusion, titles and abstracts were scrutinized, and 822 documents were removed based on the following criteria: (a) not original articles (e.g., reviews, meta-analysis, book chapters or questionnaires validations; 120); (b) did not assess CB (e.g., only bullying, crimes, laws, parental control or different Internet uses not-related with CB; 120); (c) including high school students or adults (340) or not including students (e.g., parents,

teachers or nurses; 36); (d) not published in journals indexed in JCR (107); (e) published in 2015 or 2021 (3).

Second, 96 full-text articles were screened. 64 were removed in a second level of exclusion because: (a) lack of relevant information (e.g., students' grade); (b) high school students, teachers or parents included; (c) CB was not included among the variables assessed; or (d) longitudinal studies which started data collection with middle school graders, but finished with high school graders. Finally, 32 studies were included from the electronic search and 9 from the manual search.

3.3. Quality assessment

The whole review process was conducted by several authors and it was evaluated with the PRISMA (2009) checklist. Moreover, the Mixed Methods Appraisal Tool (MMAT; Hong, Fàbregues, Bartlett, Boardman, Cargo, Dagenais et al., 2018) was used to assess the selected articles' quality. The MMAT includes a list of defined items to evaluate the articles included in systematic reviews according to the article type. The scores were set as low (1-2), medium (3) and high (4-5) for quantitative studies (there were no studies with qualitative/mixed designs), based on the tool's matrix (Hong et al., 2018). Each item was scored as Yes (1), Cannot tell (0.5) and No (0). Table 1 shows a summary of this assessment.

3.4. Thematic analysis

To facilitate the analysis of the studies' findings, the authors of this review identified common themes using an inductive lens and following the process defined by Braun and Clarke (2006). It involves data familiarization and coding (during the screening, full-text reading and quality review process), theme searching and review (authors consolidated data to identify themes) and defining and naming themes (with the agreement of all authors after the review of ideas through individual/collaborative writing and reviewing; Creswell & Miller, 2000). From this process, the following themes were extracted to facilitate the analysis of the studies' objectives and results: (1) CB/CV and psycho-social variables; (2) Students' sociodemographic variables; (3) Connections between bullying and CB; (4) Students' roles related to CB; (5) External factors and students' responses; and (6) Effectiveness of CB programs. Some studies were linked to various themes (e.g., evaluating the effectiveness of a CB program and comparing gender/ages).

4. Results and discussion

This systematic literature review sought to assess the current state of literature concerning CB in elementary and/or middle school. After the review process, 43 articles were identified based on the eligibility criteria, as shown in Fig. 1. First, each article's most relevant information was analyzed and discussed using the following items (see in Table 2) to answer the first research question of this review: 'authors' (publication year); 'purpose/s'; 'sample'; 'design/instruments'; 'main findings/conclusions (theme/s of the thematic analysis)'. Then, this information was analyzed and discussed based on these items, and results/conclusions of the articles selected were analyzed and discussed according to the themes extracted to answer the second research question of the review.

4.1. Purpose/s

The studies' main purposes were related to 'the influence of CB/CV on psycho-social variables' (19 articles) and 'the comparison between students' socio-demographic variables' (17 articles). Among the first group, the largest number focused on CB/CV and anxiety (7 articles), depression (6 articles), neuroticism (2 articles) or empathy, in the same line of previous reviews including high school students (Kowalski et al., 2014). Among the second group, students' gender was the most popular (13 articles) (Sun, Fan, & Du, 2016), followed by school grade (7 articles). Only four studies assessed other variables like type of school (2 articles), social status (popularity; Wegge, Vandebosch, Eggermont, & Pabian, 2016) or ethnic background (Wright & Wachs, 2019).

The purposes 'compare the relationship between bullying and CB' (13 articles) and 'investigate the responses of the students' roles related to CB' (13 articles) were also extensively researched. First, the study of the connections between bullying and CB seem to be justified by their links and transference (Görzig & Machackova, 2015). Several studies aimed to compare the transference of bullying behaviors between online and offline contexts (11 articles), and only one studied different bullying forms (relational, aggressive and CB; Moyano, Ayllón, Antoñanzas, & Cano, 2019). Second, several studies explored how students were immersed in different CB situations from different roles (Schultze-Krumbholz, Hess, Pfetsch, & Scheithauer, 2018). Most of them evaluated the bully, victim and witness roles (5 articles), but others only investigated victims (4 articles), witness (3 articles) or bully and victims (Chu, Fan, Liu, & Zhou, 2018b; Escortell, Aparisi, Martínez-Monteaudo, & Delgado, 2020).

Finally, some studies investigated potential solutions to CB: 'the effects of external factors on the students' responses' (9 articles) and 'the effectiveness of CB programs' (10 articles). Some external factors were researched to assess their influence on the way students faced CB situations. Some of these factors were parental mediation/influence (7 articles), school, individual and familiar predictors (2 articles), mediating role of social integration (Moyano et al., 2019) or social context (Wright, 2017a). Conversely, a great variety of programs were conducted on early adolescents such as ViSC (2), WITS (Holfeld & Leadbeater, 2017), Cyberprogram 2.0 (Garaigordobil & Martínez-Valderrey, 2016), 'Dating matters' program (Vivolo-Kantor et al., 2020) or using WhatsApp as tool (2 articles). Previous reviews including high school graders reported the use of other programs, suggesting that intervention and prevention programs can be effective (Couvillon & Ilieva, 2011; Gaffney, Farrington, Espelage, & Ttofi, 2019).

4.2. Sample

Regarding the geographical context where the studies were conducted, USA (12 articles) and Spain (12 articles) were the top countries, followed by Belgium, China, Israel and South Africa (2 articles each). The rest of the studies were conducted in 10 different countries (1 article each) such as Canada (Holfeld & Leadbeater, 2017) or Germany (Knauf, Eschenbeck, & Hock, 2018).

In relation to the percentage of girls who participated, most studies included 40–60% girls (38 articles), except three where the sample included 39% (Chu et al., 2018b), 27% (Wright, 2017b), and 63.6% girls (Govender & Young, 2018). The studies included in this review provided conclusions considering the influence on boys and girls differently or comparing their results between similar samples of both genders.

Concerning the participants' educational stage, 22 studies were conducted only at middle-school level (Delgado & Escortell, 2018; Knauf et al., 2018), 18 were conducted in elementary and middle school (López-Pradas, Romera, Casas, & Ortega-Ruiz, 2017; Meter & Bauman, 2018) and only three studies in 2020 investigated elementary school students. To our knowledge, there are no previous reviews on the impact of CB on elementary and/or middle school students exclusively, even though the impact of social media and new techs in these grades is high (Myers & Cowie, 2019; Tokunaga, 2010). This review included several articles (43 articles) published in the last five years, showing the growing interest at these school stages (elementary and middle school) in comparison with reviews that included them joined with high school (e.g., Kowalski et al., 2014; Tokunaga, 2010; Zych et al., 2016). Future lines of research should focus on these ages.

4.3. Design/instruments

Most studies used a quantitative research approach (23 articles) (e.g., Govender & Young, 2018; Machimbarrena & Garaigordobil, 2017) describing the assessed variables, but not drawing any causal relationship. Additionally, 15 quantitative non-randomized (e.g., Holfeld & Leadbeater, 2017; Wright & Wachs, 2019) and six quantitative randomized controlled trials (e.g., Fahy et al., 2016; Grainger, Yanagida, Strohmeier, & Spiel, 2016) were conducted. Six articles used a longitudinal research design (e.g., Cole et al., 2016; Díaz & Fite, 2019).

Only one study used qualitative methods to assess students' perceptions on a CB prevention program (Cuesta, Hennig, Duque, & Malfasi, 2020). For this reason, the lack of studies using qualitative methodologies at these ages should also be highlighted. Dennehy et al. (2020) performed a review of qualitative studies which concluded that the features of CB identified in young people's characterization can help to develop a deeper insight into CB. Furthermore, it allows to foreground young people's conceptions and subjective experiences of CB (Dennehy et al., 2020; Mishna, 2004). Only 13 studies were reported from 2008 to 2015. None of these studies were included in the present review because of the publication date and/or the students' grade. Future research should use this methodological approach in order to gain a deeper understanding on the students' opinions on this phenomenon.

A wide variety of assessment instruments were used in the different studies. The questionnaires used were the result of mixing different scales based on the research aims. In most cases, questionnaires were self-reported to adapt to specific contexts. Similar instruments were found only in those articles of the same authors or those that were part of the same study (e.g., Machimbarrena & Garaigordobil, 2017; Machimbarrena & Garaigordobil, 2018). Similar results were found in a previous systematic review conducted in adults (Jenaro et al., 2020), where the most frequent scales were used by the same group of researchers. CV scale (Wright & Li, 2013) (6 articles) and Screening for Peer Bullying (Garaigordobil, 2013) (4 articles) were the most widely used scales. The only qualitative study included in this review used two-semi-structured focus groups and students' forum postings in a web-based platform (Cuesta et al., 2020).

4.4. Findings/conclusions on CB/CV and psychosocial variables

Several articles reported the effects of CB or CV as risk factors in the increase of students' anxiety and depressive symptoms in elementary and middle school students (8 articles) (e.g., Cole et al., 2016; Wright, 2017b) which, in turn, could lead to increased levels of withdrawal/loneliness in middle school (Coelho & Romao, 2016; Wright, 2016; Wright & Wachs, 2019) or decrease their well-being (Fahy et al., 2016). Even those elementary students who witnessed CB showed high levels of depressive symptoms and social anxiety (Dumas & Midgett, 2020). Consistent with the previous article, Escortell, Aparisi, et al. (2020) suggest that 10-13-year-old students who are less aggressive and have an adaptive personality structure are at risk of suffering from, engaging in and observing CB. Thus, the improved psycho-emotional adjustment of the youngest students may help to prevent the risk of being victimized over the Internet (Escortell, Delgado, & Martínez-Monteagudo, 2020). In this sense, schools must try to conduct intervention programs to promote students' feelings of competence and empowerment (e.g., transferring autonomy and responsibility from teacher to students or adapting tasks to all students' abilities) to help their adjustment and be able to face CB situations.

Previous results agreed with other studies including higher graders (Calvete et al., 2016; Chu et al., 2018a; Wang et al., 2019). Parents/teachers were pointed as a solution to weaken the CV-depression links in middle school students (Wright, 2017b), since they can offer guidance or advice, acting as counselors and supporters. On the other hand, Díaz and Fite (2019) did not found CV as a risk factor in the increase of students' depression/anxiety in middle school students, but they found it between CV and risk of substance use. A previous meta-analysis reported, CB perpetration and CV have strong positive connections with drug and alcohol use in older students (Kowalski et al., 2014). Therefore, CB prevention at younger grade levels could be helpful to prevent the onset of drug and alcohol use, given evidence that CB involvement may increase the risk of use at higher grade levels. More research should evaluate the links between these variables in primary and middle school students.

Conversely, those cybervictims who lived several CB scenarios significantly decreased their self-esteem and self-concept in elementary and middle school students (Escortell, Delgado, & Martínez-Monteagudo, 2020; Muller, Skues, & Wise, 2017), even in older students (Palermi et al., 2017; Wachs et al., 2020). The effects of CB in students' well-being could lead to the increase of neuroticism in elementary school students (Zhang, Huebner, & Tian, 2020) or suicidal thoughts in early adolescents (Wang, La Salle, Wu, Do, & Sullivan, 2018). These results are in line with previous research including high school graders (DeSmet et al., 2019; Kowalski et al., 2014). Moreover, middle school students' active involvement in CB perpetration was negatively correlated with future orientation (Longobardi et al., 2020). In this sense, school-based prevention efforts may benefit from focusing on students' future orientations to protect against involvement in CB (Nocentini et al., 2010).

Finally, cybervictims in older ages used to use Internet to build new relationships and search anonymity (Peter & Petermann, 2018) instead of loneliness. Middle school cybervictims seemed to have problems with the use of effective social problem-solving strategies, resulting in alienation from social relationships (Navarro, Larranaga, & Yubero, 2018). These results are a relevant to prevent the serious psycho-social consequences of CB found in high school graders (Kowalski et al., 2014), to promote their affective health.

CB prevention in elementary and middle school will help teachers prevent student's psychosocial problems (e.g. depression, anxiety) resulting from CB situations. Therefore, educators should try to integrate in their lessons pedagogical frameworks like cooperative learning (instead of creating competitive environments), which have been found positive to build social relations in school contexts suffering from CB (Hortigüela Alcalá et al., 2019). This type of interventions or programs have been found to improve individuals' prosocial skills and behaviors (DeSmet et al., 2018; Van Ryzin, Roseth, & Biglan, 2020), classroom climates, sense of belonging and the victim's self-esteem, which, in turn, has an impact on the positive evolution of cybervictims (Aizenkot & Kashy-Rosenbaum, 2020; Hortigüela et al., 2019). Additionally, teachers could be supported by psychologists, since they are key agents in the psychological assessment of the students (to identify psychosocial problems), as wells as in the design of interventions according to the students' needs (Diamanduros, Downs, & Jenkins, 2008). All this can lead to better class participation and performance (Kowalski et al., 2014).

4.5. Findings/conclusions on students' sociodemographic variables

Several reported outcomes compared different socio-demographic variables such as gender (13 articles) and grade (7 articles), above all. Some studies showed that middle school girls observed more sexual harassment episodes (Machimbarrena & Garaigordobil, 2018); exhibited more anxiety (Coelho & Romão, 2018), had more suicidal thoughts/behaviors (Wang et al., 2018) or were more victimized (Delgado & Escortell, 2018) than boys. On the other hand, middle school boys were more cybervictimized and involved in more bullying behaviors (Machimbarrena & Garaigordobil, 2018), reported worst links with restrictive mediation or CV (Wright, 2017c) than girls. These results are in line with previous works at different school grades which reported that boys were involved in more bullying behaviors (Sun et al., 2016). However, another systematic review at older ages reported that girls were more cybervictimized than boys (Heiman & Olenik-Shemesh, 2015), indicating that primary and middle school may be a key stage to raise awareness on CB regardless of gender.

These results have several implications for education. It is necessary to pay close attention to boys in upper grades of public elementary and middle schools, because they are more likely to become involved in CB, as perpetrators and victims. Middle school girls seem to suffer more from CB, but an effective program could decrease CV and CB in these victims (Vivolo-Kantor et al., 2020). In any case, it is very important for parents and teachers to understand students' psychosocial well-being through psychosocial assessment or personal interviews; especially girls because they suffer more from CB (Coelho & Romão, 2018; Wang et al., 2018). These assessments can be supported by mental health professionals working along with teachers to address CB scenarios and help students.

4.6. Findings/conclusions on the connections between bullying and CB

Online and face-to-face scenarios were assessed regarding students' feelings. Different bullying forms in middle school were mediated by social integration and low perception of negative relationships (Moyano et al., 2019) or the level of forgiveness related to mental health (Quintana-Orts & Rey, 2018). Moreover, different victimization forms predicted suicidal thoughts and behaviors in middle school students (Wang et al., 2018), in concordance with results reported in higher students (Kowalski et al., 2014), and elicited feelings such as students' sadness or anger, being greater for victimization than CV (Wright, 2017a). Other studies concluded that CV could be related to victimization (Sidera et al., 2020). Elementary students who witnessed CB showed higher levels of anxiety than bullying witnesses (Doumas & Midgett, 2020). Therefore, educators must provide students with opportunities to "open up" and tell them their worries and fears, as Cuesta et al. (2020) or DeSmet et al. (2018) showed, through the implementation of specific interventions facing and understanding CB situations.

Finally, Meter and Bauman (2018) reported that CB predicted victimization and bullying in both elementary and middle school students. Consequently, those studying specific cases of bullying should pay attention to possible situations of CB, and vice versa. Previous systematic reviews conducted in different age groups also showed that there are strong relationships between bullying and CB (Zych et al., 2015).

4.7. Findings/conclusions on students' roles related to CB

The students' role in CB scenarios showed a great variety of outcomes. Firstly, Machimbarrena and Garaigordobil (2018) showed that all elementary and middle school students reported similar levels of pure-victim/bully and witness. The influence of CB roles could

have an impact on social anxiety and students' withdrawal in middle school (Coelho & Romão, 2018). CB emerged influenced by social reinforcement goals in cyberbullies and witnesses; and social self-concept and learning goals in middle school cybervictims (Delgado, Escortell, Martínez-Monteagudo, Ferrández-Ferrer, & Sanmartín, 2019) who suffered behaviors such as blocking, deleting and changing passwords (Muller et al., 2017). These findings are consistent with the results of Romera, Cano, García-Fernández, and Ortega-Ruiz (2016), who reported that higher-grade bullies manifested the need to be socially recognized. So, educators should try to develop interpersonal and social skills such as empathy and assertiveness during the lessons in order to improve students' communication and relationships and thus prevent conflicts related to bullying or CB (Moyano et al., 2019).

According to the relation between the roles and bullying/CB, previous studies showed that traditional bullying and CB seem to be correlated (Görzig & Machackova, 2015), including high school students too (Lozano-Blasco, Cortés-Pascual, & Latorre-Martínez, 2020). In line with this idea, middle school students who perpetrated or suffered bullying were more likely to be involved in CB/CV (Athanasíades, Baldry, Kamariotis, Kostouli, & Psalti, 2016), especially for bullies (Coelho & Romão, 2018). Casas, del Rey & Ortega-Ruiz (2013), consistent with this idea, informed that there are multiple relationships between predictive variables of bullying and specific variables that predict CB. However, Chu et al. (2018b) showed that bullies and victims maintained their roles in online and offline contexts but changed their roles in the other contexts (bullies suffered CB and vice versa). High school students also showed this trend (Lozano-Blasco et al., 2020), but traditional bullying seemed to decrease with age (not for CB) (Jenaro, Flores, & Frías, 2018). These results indicate that it seems necessary to conduct more anti-bullying programs in middle school students than in high schoolers. Moreover, middle school CB tended to be more suffered, observed, and perpetrated than bullying (Machimbarrena & Garaigordobil, 2017). These results support the idea that CB strengthened moral disengagement and weakened responsibility and self-efficacy more than bullying (Knauf et al., 2018). Therefore, pedagogical frameworks like Teaching for Personal and Social Responsibility, which was created to improve responsibility on students at risk (Hellison, 2011), can help students develop responsibility preventing behavior conflicts and violence. In this sense, while Romero-Abrio, León-Moreno, Musitu-Ferrer, and Villarreal-González (2019) found that academic self-concept was related with CV in higher school grades, Escortell, Delgado, and Martínez-Monteagudo (2020) found a direct and negative relationship between CV and self-concept in middle school (10-12-year-old). Going deeper into this school stage (10-13-year-old), Escortell, Aparisi, et al. (2020) confirmed that the extraversion trait is an explanatory factor for being a victim and openness is a protective factor against being a cyberbully. Agreeableness was found to be a positive predictor of being a cyberbullying victim. Thus, the explanatory factors for being a victim and a victimized bully were verbal aggression and anger. Therefore, educators should try to promote openness and decrease aggressiveness in their classes. For example, programs describing bullying/CB situations and their consequences in different roles (victim, aggressor or bystander) can help students express feelings and improve their behaviors in response to them (e.g., Garaigordobil & Martínez-Valderrey, 2016).

Consistent with the previous subsection, CB and bullying roles seem to be related, although it is not clear if the students maintain their roles in and out of the online contexts. Teachers and parents of elementary and middle school graders should pay attention to any bullying situation and find if there is a CB scenario connected to it to address both (Meter & Bauman, 2018; Zych, 2015).

4.8. Findings/conclusions on external factors and students' responses

One supportive element to prevent CB is the influence of external factors such as parents' mediation or teachers' interventions. Middle school parental mediation reported contradictory outcomes: parental mediation reduced CB perpetration (Wright, 2017c) and positively impacted students' depression (Wright, 2016; 2017b) or suicidal thoughts/behaviors (Wang et al., 2018), while other studies showed that an authoritarian parental style (Govender & Young, 2018) and their monitoring (Meter & Bauman, 2018) negatively affected CB. The reason could be that parental influence decreases in early adolescence (Sasson & Mesch, 2017). Teacher interventions reported better results, showing that they were an effective support to decrease CB (Wright, 2017b) along with peers' mediation (Wright, 2016; 2017c). Similar results were found in Elsaesser, Russell, Ohannessian & Patton's (2017) review including high school graders, reinforcing the idea that parental mediation could provide emotional warmth to support students' disengagement from online activities.

Parental and teacher interventions and peers' mediation could be considered protective factors and key elements in the prevention and fight against CB (e.g., to accept bullying; Carter, van der Watt, & Esterhuyse, 2020). On the one hand, teachers and parents organized efforts against CB appear to be a feasible way to reduce it. Nevertheless, an authoritarian parental style and student monitoring should not take place in middle school contexts, because they could have a negative effect on CB, making it worse. On the other hand, tasks and interventions reinforcing social support among groupmates can generate positive relations, prosocial behaviors, and interpersonal skills (DeSmet et al., 2018; Van Ryzin et al., 2020), which can help decrease CB.

4.9. Findings/conclusions on effectiveness of CB programs

Related to teachers and other students' influence, a potential solution to prevent or improve CB/CV scenarios could be the implementation of school programs (Da Silva et al., 2016). Previous systematic reviews (e.g., Couvillon & Ilieva, 2011; Gaffney et al., 2019) also suggested that CB intervention and prevention programs were effective. Moreover, the ViSC program reported positive effects in other school levels, although it was particularly effective in lower grades such as middle school (Solomontos-Kountouri, Gradinger, Yanagida, & Strohmeier, 2016). Therefore, improvements in these scenarios could support safe class climates (Aizenkot and Kashy-Rosenbaum, 2018, 2020). Moreover, positive class climates could prevent CV even out of the school context in both elementary and middle school students (Holfeld & Leadbeater, 2017), because the students could reduce violent and aggressive behaviors (Garaigordobil & Martínez-Valderrey, 2016) and increase their intention to be a positive witness, thus improving their quality of life

(DeSmet et al., 2018). Future studies should assess the effectiveness of these programs at older ages where other programs have reported similar results in relation to their effectiveness to prevent CB, such as No Trap (Palladino, Nocentini, & Menesini, 2016)! or ConRed (Ortega-Ruiz, Rey, & Casas, 2012). Anyway, the positive influence of programs on the CB prevention at early ages (Gaffney et al., 2019) highlight that they can help to avoid these types of aggressions, when students begin to use electronic devices and social media.

CB programs have been found useful for the prevention and reduction of CB in elementary and middle school students. Schools and teachers could use scientifically sound programs such as ViSC (Solomontos-Kountouri et al., 2016; Grading et al. (2016), Cyber-program 2.0 (Garaigordobil & Martínez-Valderrey, 2016) or Dating Matters (Vivolo-Kantor et al., 2020) to prevent and reduce CB and students' permanence in CB behaviors. In this sense, it is essential to teach conflict resolution skills and develop students' empowerment (Cuesta et al., 2020). Additionally, teachers should promote a positive class climate as protective factor to prevent CV, even out of the school context.

5. Conclusions

In conclusion, several reviews on CB including middle and high school students have been conducted, but there are no previous reviews on CB including elementary and middle school students specifically. Students at these ages begin to socialize with their equals and to have access to technology and, consequently, to be at risk of CB. Studies conducted on these ages have reported similar results to previous reviews including middle and high school students: influence of CB/CV on psycho-social variables such as depression or anxiety, strong links between CB and bullying scenarios, roles of CB and their links to bullying, influence of external factors or programs to prevent CB, and socio-demographic variables such as gender or school type. However, some attitudes varied from older samples based on students' gender/age, and similar CB programs were not found in adolescents. Elementary/middle school teachers or educators should take CB into account to prevent potential risks and guarantee students' psycho-social health and avoid future CB conflicts. Moreover, the links between bullying and CB could help to transfer the benefits of these programs between both contexts. Protective factors, such as specific pedagogical approaches (e.g., Cooperative Learning or Teaching for Personal and Social Responsibility) or programs, as well as the joined work of different agents (e.g. psychologists, teachers, parents, peers), should be considered to promote a positive evolution on CB prevention. Finally, this review shows a lack of qualitative studies to report results on the students' perceptions of CB scenarios, which could improve the quality of the conclusions on this topic. More research on this theme is needed from short-age students to consolidate positive social behaviors.

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