

Bullying in the Digital Age: A Critical Review and Meta-Analysis of Cyberbullying Research Among Youth

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Although the Internet has transformed the way our world operates, it has also served as a venue for cyberbullying, a serious form of misbehavior among youth. With many of today's youth experiencing acts of cyberbullying, a growing body of literature has begun to document the prevalence, predictors, and outcomes of this behavior, but the literature is highly fragmented and lacks theoretical focus. Therefore, our purpose in the present article is to provide a critical review of the existing cyberbullying research. The general aggression model is proposed as a useful theoretical framework from which to understand this phenomenon. Additionally, results from a meta-analytic review are presented to highlight the size of the relationships between cyberbullying and traditional bullying, as well as relationships between cyberbullying and other meaningful behavioral and psychological variables. Mixed effects meta-analysis results indicate that among the strongest associations with cyberbullying perpetration were normative beliefs about aggression and moral disengagement, and the strongest associations with cyberbullying victimization were stress and suicidal ideation. Several methodological and sample characteristics served as moderators of these relationships. Limitations of the meta-analysis include issues dealing with causality or directionality of these associations as well as generalizability for those meta-analytic estimates that are based on smaller sets of studies ($k < 5$). Finally, the present results uncover important areas for future research. We provide a relevant agenda, including the need for understanding the incremental impact of cyberbullying (over and above traditional bullying) on key behavioral and psychological outcomes.

Keywords: cyberbullying, bullying, perpetration, victimization, general aggression model

As more people turn to the Internet for school, work, and social use, so too do more people turn to the Internet to take out their frustrations and aggression. One form of cyber aggression has been gaining the attention of both researchers and the public in recent years: cyberbullying. Cyberbullying is typically defined as aggression that is intentionally and repeatedly carried out in an electronic context (e.g., e-mail, blogs, instant messages, text messages) against a person who cannot easily defend him- or herself (Kowalski, Limber, & Agatston, 2012; Patchin & Hinduja, 2012). Many researchers have noted that cyberbullying is occurring at widespread rates among youth and adults, with some studies showing nearly 75% of school-age children (Juvonen & Gross, 2008; Katzer, Fetchenhauer, & Belschak, 2009) experiencing this

form of aggression at least once in the last year. The experience of cyberbullying has been linked with a host of negative outcomes for both individuals and organizations (e.g., schools), including anxiety, depression, substance abuse, difficulty sleeping, increased physical symptoms, decreased performance in school, absenteeism and truancy, dropping out of school, and murder or suicide (Beran & Li, 2005; Mitchell, Ybarra, & Finkelhor, 2007; Privitera & Campbell, 2009; Ybarra, Diener-West, & Leaf, 2007).

Our purpose in the current article is threefold: (a) to provide a narrative review of the extant research on cyberbullying among youth,¹ including a look into the prevalence and antecedents of this behavior and associated outcomes; (b) to synthesize the relationships among cyberbullying, cybervictimization, and meaningful behavioral and psychological variables with meta-analytic techniques; and (c) to critique the existing research, noting areas where findings conflict and gaps remain, thereby allowing us to provide

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¹ Although research has been conducted on cyberbullying in the workplace, we focus on adolescents and young adults herein. First, the majority of the research under review has focused on this particular group of individuals. Second, because so little research has examined cyberbullying in the workplace, we do not know whether the predictors/consequences of cyberbullying are similar across the different samples.

future researchers with directions where additional attention is needed.

Electronic Communication and the Importance of Studying Cyberbullying

There is no question that the Internet and related technologies have revolutionized the way that our world operates (Li, Smith, & Cross, 2012; Ybarra, Diener-West, & Leaf, 2007). The popularity of the Internet among school-age children and adolescents has become apparent to most, as nearly all youth between 12 and 17 use the Internet, and 68% of school pupils use the Internet at school (Hitlin & Rainie, 2005; Lenhart, 2010). Further, youth spend an average of about 17 hours per week on the Internet, with some spending more than 40 hours per week online (Center for Digital Future at the USC Annenberg School, 2010). Although most youth spend time communicating with their friends online, including forging new online friendships (Katzer et al., 2009), online interpersonal interactions can be particularly valuable for those who experience anxiety in face-to-face interactions.

Although the Internet has certainly provided many benefits, it may be responsible for a host of negative outcomes as well (Holfeld & Grabe, 2012). Among youth who venture online, almost a third report being contacted by someone they did not know through the Internet, and many report that this contact made them feel uncomfortable (Kowalski, Giumetti, Schroeder, & Reese, 2012). Other research has found a link between duration of Internet use and psychiatric symptoms, with those reporting more Internet use also experiencing more depression, obsessive compulsion, and anxiety (Kelleci & İnal, 2010; Madden & Jones, 2008). The question of directionality with respect to this association clearly bears scrutiny, but the association appears robust. Furthermore, the Internet has provided some with an avenue through which to commit various counterproductive behaviors, such as cyber-hacking (i.e., using the Internet to gain access to information or resources illegally), cyber-stalking (i.e., using the Internet to spy on or watch another person), and various forms of cyber aggression including cyberbullying (i.e., using the Internet to harm another person; Kowalski, Limber, & Agatston, 2012). Additionally, some individuals may develop "pathological technology use" (PTU; Gentile, Coyne, & Bricolo, 2013). PTU refers to obsessive and addictive behaviors in response to technological media, such as the Internet or gaming, that resemble behaviors characteristic of addictions to alcohol or drugs.

Certain features of online communications, including reproducibility, lack of emotional reactivity, perceived uncontrollability, relative permanence, and 24/7 accessibility, make it more likely for online misbehavior to occur (Kiesler, Siegel, & McGuire, 1984; Pearson, Andersson, & Porath, 2005). With regard to reproducibility, the core issue is that a person can easily copy all of his or her friends on a message or forward gossip to his or her entire address book. This reproducibility may make it easy for deviant individuals to harm others and to repeat the harm over and over again with the click of a button. Communications over the Internet also feature a lack of emotional reactivity. When people communicate face-to-face, they provide many verbal and nonverbal cues about how they are feeling. For example, frowns or eyebrow raises are common nonverbal cues that are used when a conversation has upset the receiver. If such a cue is accurately perceived by the

message sender, the sender might soften his or her message or seek clarifying feedback. In an online context, communicators do not have this instant emotional reactivity, and they might more easily offend others in their communications (Kowalski, Giumetti, et al., 2012; Kowalski, Limber, & Agatston, 2012).

There is also a perception of uncontrollability on the Internet. Many modes of communicating online do not have a moderator to intervene if an interaction becomes aggressive, whereas in a face-to-face context, other people might be more likely to step in. Additionally, online communications, especially those on discussion boards or blogs, feature relative permanence because the messages can remain online indefinitely or until someone erases them, perhaps after downloading them. Finally, online communications feature 24/7 accessibility that makes it possible to send and receive harmful messages at all hours of the day, which may make it seem as though one cannot escape (Kowalski, Limber, & Agatston, 2012). Each of these features might help to explain why cyberbullying is becoming more of a problem in today's society.

Defining Cyberbullying

As noted earlier, most researchers agree that cyberbullying involves the use of electronic communication technologies to bully others. However, as will be seen, assessments of the prevalence of cyberbullying have proven difficult because there is a lack of consensus regarding the more specific parameters by which cyberbullying should be defined (Olweus, 2013; P. K. Smith, del Barrio, & Tokunaga, 2012; Ybarra, Boyd, Korchmaros, & Oppenheim, 2012). Table 1 presents an expansive although not exhaustive list of research in the field and reports on both the assessment methods and prevalence rates of cyberbullying across varying samples.² As noted in the table, although there are commonalities across operational definitions, they differ in terms of specificity versus generality. Whereas some simply define cyberbullying as bullying that occurs via the Internet or mobile phones, others are more specific in terms of the taxonomy of technology, with clear implications for measurement, as discussed later.

Conceptualizing cyberbullying is compounded by the fact that cyberbullying can take so many different forms and occur through so many different venues. Willard (2007) has created a taxonomy of types of cyberbullying that includes flaming (i.e., an online fight), harassment (i.e., repetitive, offensive messages sent to a target), outing and trickery (i.e., soliciting personal information from someone and then electronically sharing that information with others without the individual's consent), exclusion (i.e., blocking an individual from buddy lists), impersonation (i.e., posing as the victim and electronically communicating negative or inappropriate information with others as if it were coming from the victim), cyber-stalking (i.e., using electronic communication to stalk another person by sending repetitive threatening communications), and sexting (i.e., distributing nude pictures of another individual without that person's consent).

The media through which cyberbullying can occur are equally diverse, including instant messaging, e-mail, text messages, web pages, chat rooms, social networking sites, digital images, and online games. Which of these media is the most frequently used

² Table 1 includes only published, empirical studies in which cyberbullying was assessed.

Table 1
Cyberbullying Prevalence Estimates and Characteristics of Existing Studies

Study	Conceptualization		Measurement		Time parameter	Sample characteristics				Prevalence	
	Concept	Operational definition	Single item(s)	Multi-item		Qualitative	N	Age or grade	Location	% V	% P
Agaston et al. (2007)	Cyberbullying	Using the Internet or other digital technologies such as cellular phones and personal digital assistants to be intentionally mean or to harass others		✓	✓	148	12–17 years	Southeastern U.S.	—	—	—
Akbulut & Erisli (2011)	Cyberbullying	Involvement in flaming, harassment, cyber-stalking, denigration, masquerade, exclusion, outing, and trickery		✓ ^a	Lifetime/none provided	254	18–23 years	Turkey	24.1–81.1 ^a	5.5–42.8 ^a	—
Allen (2012)	Cyberbullying	Bully[ing] or harass[ment] by someone from school using text messages	✓	✓	Past couple of months	820 (survey); 68 (interviews/ focus groups)	14–19 years	Northeastern U.S.	3.2	1.0	—
Almeida et al. (2012)	Cyberbullying	Cyberbullying by mobile phone and the Internet		✓ ^a	Past couple of months	1,751	11–20 years	Portugal	5.6–6.3 ^{ab}	4.3–4.4 ^{ab}	2.5–2.6 ^{ab}
Ang & Goh (2010)	Cyberbullying	Cyberbullying behavior including broadcasting, online actions targeted at the person, and deception		✓	Since the start of school year (11 months earlier)	396	12–18 years	Singapore	—	18.9	—
Ang et al. (2011)	Cyberbullying	Cyberbullying behavior including broadcasting, online actions targeted at the person, and deception		✓	Since the start of school year (11 months earlier)	710	Mean of 14.6 years	Singapore and Malaysia	—	—	—
Aoyama, Barnard-Brak, & Talbert (2011)	Cyberbullying	Cyberbullying [via] text message, e-mail, and [the] Internet . . . including name-calling, social exclusion, [and] rumor spreading		✓	Last 6 months	133	Grades 9–12	Southwestern U.S.	9.8 ^b	10.5 ^b	12.8 ^b

(table continues)

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics			Prevalence				
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Aoyama, Saxon, & Fearon (2011)	Cyberbullying	When another student or several other students say mean and hurtful things or make fun of him or her or call him or her mean and hurtful names via e-mail, text messages, instant messages (IM) and/or online; completely ignore or exclude him or her from their group of friends or leave him or her out of things on purpose online; tell lies or spread false rumors about him or her to try to make other students dislike him or her online; do other hurtful things like that online		✓ ^a		Last 3 months	463	Middle and high school	Southwestern U.S.	17.1–30.7 ^b	—	—
Aoyama et al. (2012)	Cyberbullying	Post[ing] name-calling messages to Internet bulletin boards or blogs . . . [or] be[ing] mean to some peers using the Internet (Study 1); send[ing] mean or nasty [e-mail/text] messages to someone . . . [or] put[ting] down someone online by sending or posting cruel messages, gossip, rumors, or other harmful materials (Study 2)		✓ ^a		Lifetime/none provided (Study 1); Last 6 months (Study 2)	487 (Study 1); 275 (Study 2)	13–15 years (Study 1); mean of 16.5 years (Study 2)	Japan and southwestern U.S.	7.0 ^b (Japan, Study 1); 11.5–24.6 ^b (U.S., Study 2); 5.0–9.4 ^a (Japan, Study 2)	8.0 ^b (Japan, Study 1); 10.3–21.4 ^a (U.S., Study 2); 4.3–5.0 ^b (Japan, Study 2)	18.0 ^b (Japan, Study 1)
Aricak et al. (2008)	Cyberbullying	Cyberbullying on the Internet and via cell phones		✓		Lifetime/none provided	269	12–19 years	Turkey	5.9 ^b	35.7 ^b	11.9 ^b
Barlett & Gentile (2012)	Cyberbullying	Measurement approach unclear		✓		Last year	493 (Study 1); 181 (Study 2)	Mean of 19.4 years	Midwestern U.S.	—	—	—
Bauman (2010)	Cyberbullying	Measurement approach unclear		✓		Current school year	221	Grades 5–8	Southwestern U.S.	3.0 ^b	1.5 ^b	8.6 ^b

Table 1 (continued)

Study	Conceptualization		Measurement		Time parameter	Sample characteristics				Prevalence		
	Concept	Operational definition	Single item(s)	Multi-item		Qualitative	N	Age or grade	Location	% V	% P	% V/P
Bauman & Pero (2010)	Cyberbullying	Measurement approach unclear		✓		52	Grades 7–12	Southwestern U.S.	6.0 (deaf); 0.0 (hearing) ^b	0.0 (deaf); 10.0 (hearing) ^b	3.0 (deaf); 5.0 (hearing) ^b	
Bennett et al. (2011)	Electronic aggression	Electronic hostility, electronic intrusiveness, electronic humiliation, and electronic exclusion		✓		437	18–22 years	U.S.	92.0	—	—	
Beran & Li (2005)	Cyber-harassment/ cyberbullying	When a student, or several students, says mean and hurtful things or makes fun of another student or calls him or her mean and hurtful names, completely ignores or excludes him or her from their group of friends or leaves him or her out of things on purpose, tells lies or spreads false rumors about him or her, sends mean notes and tries to make other students dislike him or her, and other hurtful things like that . . . [that] happen repeatedly, and it is difficult for the student being harassed to defend himself or herself . . . [and] two students [are not] of about equal strength or power	✓			432	12–15 years	Canada	57.7	25.5	—	
Beran & Li (2007)	Cyberbullying	Harassing behaviors involving technology	✓			432	12–15 years	Canada	57.7	25.5	—	

(table continues)

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics				Prevalence			
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Beran et al. (2012)	Cyber-harassment	Repeatedly doing one or more of the following to another person for whom it was difficult to defend him/herself: (1) saying mean and hurtful things, teasing, making fun, or calling him/her mean and hurtful names; (2) ignoring or excluding him/her; (3) telling lies or spreading false rumors about him/her; or (4) trying to make other people dislike him/her . . . us[ing] technology	✓			Lifetime/none provided	1,368	Mean of 21.1 years	U.S. and Canada	13.8 (high school); 8.6 (college)	8.0 (high school); 4.1 (college)	—
Berson et al. (2002)	Cyber-misconduct	The exchange of suggestive or threatening e mail messages	✓			Lifetime/none provided	10,800	12–18 years	Online recruitment	15.0	3.0	—
Bossler & Holt (2010)	On-line harassment	Someone harassing you in a chat room, Internet relay chat, or instant messaging	✓			Last year	573	College	Southeastern U.S.	18.8	—	—
Brighi, Guarini, et al. (2012)	Cyberbullying	Bully[ing] via a mobile phone or the Internet		✓		Last 2 months	2,326	11–21 years	Italy	12.8	—	—
Brighi, Melotti, et al. (2012)	Cyberbullying	Bully[ing] via a mobile phone or the Internet	✓			Lifetime/none provided	5,862	Grades 8, 10, and 12	Italy, Spain, and United Kingdom	9.9	—	—
Calvete et al. (2010)	Cyberbullying	Bully[ing] via the use of the Internet and cell phones		✓		Lifetime/none provided	1,431	12–17 years	Spain	—	44.1	—
Cassidy et al. (2012)	Cyberbullying	Measurement approach unclear		✓		Lifetime/none provided	17	Not reported	Canada	—	—	—
Cetin et al. (2012)	Cyberbullying	Measurement approach unclear		✓		Lifetime/none provided	258	15–18 years	Turkey	—	—	—
Cetin, Peker, et al. (2011)	Cyberbullying	Measurement approach unclear	✓			Lifetime/none provided	350	Mean of 15.2 years	Turkey	—	—	—
Cetin, Yaman, & Peker (2011)	Cyberbullying	Cyber forgery, cyber verbal bullying, [and] hiding identity		✓		Lifetime/none provided	404	14–19 years	Turkey	—	—	—
Cheng et al. (2011)	Cyberbullying	Spreading rumors online, criticizing others online, and posting disgraceful photos online without permission		✓		Last 6 months	860 (scale development stage), 3,941 (scale validation stage)	12–18 years	China	—	—	—

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Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics				Prevalence			
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Coyne et al. (2009)	Griefing	Intentional, persistent, unacceptable behavior that disrupts a resident's ability to enjoy Second Life and which may have negative consequences for residents both in Second Life and First (or Real) life. Mostly, this behavior is directed at a resident who cannot easily defend him or herself	✓			Last year	86	Mean of 37.1 years	8 countries	95.0	20.0	—
Cross et al. (2009)	Cyberbullying	[Bullying via] Internet or mobile phone		✓		Current school term	7,418	8–14 years	Australia	6.6	3.5	—
D'Antona et al. (2010)	Cyberbullying	Mean or hurtful text messages	✓			Lifetime/none provided	835	Grades 3–5	Northeastern U.S.	6.3	—	—
Déhue et al. (2008)	Cyberbullying	Bullying on the Internet or via text messages		✓		Current school year	1,211	Mean of 12.7 years	Netherlands	22.9	17.3	—
Déhue et al. (2012)	Cyberbullying	Doing nasty and mean things to someone else using a computer or cell phone . . . [with a] lack of power on the part of the victim, . . . anonymity of the bully, and the exclusion of jokes		✓		Current school year	1,184	10–14 years	Netherlands	13.8 ^b	7.7 ^b	8.2 ^b

(table continues)

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics				Prevalence			
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Dempsey et al. (2011)	Cyber-aggression	Sending a student a text message or instant message that was mean or that threatened that student; posting a comment on a student's web space wall that was mean or that threatened that student; sending an e-mail that was mean or that threatened that student; creating a web page about a student that had embarrassing information and/or photos		✓		Last 30 days	1,672	Grades 6–8	Southeastern U.S.	—	10.0	—
Dempsey et al. (2009)	Cyber victimization	Peer aggression involving instant messaging, text messaging, personalized websites, web posts, and e-mail bullying . . . via Internet and cell phone	✓	✓		Last 30 days	1,684	11–16 years	Southern U.S.	14.0	—	—
Didden et al. (2009)	Cyberbullying	Bullying . . . via Internet and cell phone	✓	✓ ^a		Last 3 months	114	12–19 years	Netherlands	4.0–7.0 ^{ab}	0.0–4.0 ^{ab}	3.0–5.0 ^{ab}
Dilmac (2009)	Cyberbullying	The use of information and communication technologies to support deliberate, repeated, and hostile behavior by an individual or group, that is intended to harm others	✓			Lifetime/none provided	666	18–22 years	Turkey	35.7 ^b	3.0 ^b	19.5 ^b
Dooley et al. (2010)	Cyberbullying	Bullying via the Internet or mobile phone		✓		Last 3 months (Australia); last 2 months (Austria)	7,489	10–15 years	Australia and Austria	—	—	—
Dooley et al. (2012)	Cyberbullying	Bullying via the Internet or mobile phone		✓		Most recent school term	516	10–16 years	Australia	—	—	—
Erdur-Baker (2010)	Cyberbullying	Bullying via the Internet or cell phone		✓		Last semester	276	14–18 years	Turkey	—	—	—
Erdur-Baker & Kavşut (2007)	Cyberbullying	Bullying via the Internet or cell phone		✓ ^a		Lifetime/none provided	228	14–19 years	Turkey	3.1–30.1 ^a	4.4–28.3 ^a	—

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics				Prevalence			
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Erdur-Baker & Tanrikulu (2010)	Cyberbullying	Bullying via the Internet or cell phone		✓		Past semester	165	10–14 years	Turkey	—	—	—
Erenatâi et al. (2012)	Cyberbullying	Bullying [via cell phone (short messages (SMS), clips/ pictures and calls) or] via e-mail, chat, instant messaging (IM), and websites		✓		Last few months	1,667	15–19 years	Lithuania	29.3	—	—
Estévez et al. (2010)	Cyberbullying	Bullying via the Internet, cell phones, photos, or videos		✓		Lifetime/none provided	1,431	12–17 years	Spain	7.4 ^b	25.0 ^b	22.8 ^b
Fanti et al. (2012)	Cyberbullying	Sending . . . a threatening or harassing e-mail, instant message, message in a chat room or social networking sites, and short text message (SMS)		✓		Lifetime/none provided	1,416	11–14 years	Cyprus	—	—	—
Finn (2004)	Online harassment	Repeated use of e-mail and instant messaging to insult, harass, threaten, or send inappropriate material such as pornography		✓ ^a		During tenure at current university	339	Mean of 20.3 years	Northeastern U.S.	9.6–58.7 ^a	—	—
Fleming et al. (2006)	Online bullying	Exposure to bullying [online]				Lifetime/none provided	692	13–16 years	Australia	36.8	—	—
Fredstrom et al. (2011)	Electronic victimization	Bullying [via e-mailing, chat rooming, text messaging, phone calling, online posting, or picture/video clip	✓			Last year	802	Grade 9	Southeastern U.S.	27.1	—	—

(table continues)

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics				Prevalence			
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Goebert et al. (2011)	Cyberbullying	Receiving] a threatening or mean text message; receiving] a threatening or mean e-mail; hav[ing] embarrassing, threatening or mean information posted about them on a website; hav[ing] a dating partner go through their cell phone to check on calls or text messages; and hav[ing] a partner go through their personal website to check up on them			✓	Last year	677	Grades 9–12	Hawaii	56.1	—	—
Gradinger, Strohmeier, Schiller, et al. (2012)	Cyber-victimization	Be[ing] insulted or hurt by receiving mean calls, text messages, e-mails, chat contributions, discussion board contributions, instant messages, videos or photos		✓		Last 2 months	665	Mean of 11.6 years	Austria	—	—	—
Gradinger et al. (2009)	Cyberbullying	Often us[ing] the mobile phone or the computer to send mean text messages, e-mails, videos, or photos to others	✓			Lifetime/none provided	761	14–19 years	Austria	7.1	5.3	—
Gradinger, Strohmeier, & Spiel (2012)	Cyberbullying	Insult[ing] or hurt[ing] other students by sending mean text messages, e-mails, videos, or photos to them	✓			Last 2 months	1,461	10–15 years	Austria	10.4	6.9	—
Hay & Meldrum (2010)	Cyberbullying	[Be]ing] the target of "mean" text messages; sent threatening or hurtful statements or pictures in an e-mail or text message; and made fun of on the Internet		✓		Last year	426	10–21 years	Southeastern U.S.	—	—	—

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics				Prevalence			
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Hay, Meidrum, & Mann (2010)	Cyberbullying	[Being] the target of "mean" text messages; sent threatening or hurtful statements or pictures in an e-mail or text message; and made fun of on the Internet	✓	✓	Last year	424	Mean of 15.0 years	Southeastern U.S.	—	—	—	—
Hemphill et al. (2012)	Cyberbullying	Bully[ing] another student using technology, such as mobile telephones, the Internet, computers, answering machines, or cameras	✓	✓	Last year	696	11–14 years (time 1); 14–16 years (time 2)	Australia	—	15.0	—	—
Hinduja & Patchin (2007)	Cyberbullying	[Being] ignored by others, disrespected by others, called names, threatened, made fun of by others, picked on by others, scared for safety, and [having] rumors spread by others	✓	✓	Lifetime/none provided	1,388	6–17 years	Online recruitment	34.4	—	—	—
Hinduja & Patchin (2008)	Cyberbullying	Bothering someone online, teasing in a mean way, calling someone hurtful names, intentionally leaving persons out of things, threatening someone, and saying unwanted sexually-related things to someone	✓	✓	Last 6 months	1,378	<18 years	Online recruitment	34.6	16.8	—	—
Hinduja & Patchin (2010)	Cyberbullying	Online aggression [via] computer text messages, MySpace or similar site[s], e-mail, instant message[s], chat room[s], or other web pages	✓	✓	Last 30 days	1,963	10–16 years	U.S.	29.4	21.8	—	—

(table continues)

Table 1 (continued)

Study	Conceptualization		Measurement			Sample characteristics				Prevalence		
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Ages or grade	Location	% V	% P	% V/P
Hofield & Grabe (2012)	Cyberbullying	The intentional and repeated harm of others through the use of computers, cell phones, and other electronic devices	✓			Lifetime/none provided, last year, and last 30 days	383	Mean of 13.5 years	Northern U.S.	17.0 (lifetime); 16.0 (last year)	11.0 (lifetime); 9.0 (last year)	—
Huang & Chou (2010)	Cyberbullying	Ill-intended behaviors in cyberspace (i.e., e-mails, instant messengers, chat rooms, online polls, web forums, weblogs, and cell-phone text messages) [that] include threats, harassment, humiliation, insults, and any other emotional put-downs by means of works, fake pictures, peeping-Tom videos, or any combination of digital content		✓		Lifetime/none provided	545	Grades 7–9	Taiwan	34.9	20.4	—
Hunt et al. (2012)	Cyberbullying	Other kids say[ing] nasty things to me by SMS, threaten[ing] me over the phone, send[ing] me nasty e-mails, harass[ing] me over the phone, say[ing] nasty things about me on websites, computer viruses on purpose, say[ing] nasty things about me on an instant messenger or chat room, and mak[ing] prank calls to me		✓		Lifetime/none provided	943	8–16 years	Australia	—	—	—

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics				Prevalence			
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Jose et al. (2012)	Cyberbullying	Send[ing] a mean text message to someone [or] bully[ing] others online		✓		Last month	1,774	11–16 years	New Zealand	—	—	—
Juononen & Gross (2008)	Cyberbullying	Anything that someone does that upsets or offends someone else, including name-calling, threats, sending embarrassing/private pictures, and sharing private information without permission . . . via e-mail, instant messaging, cell phone text messaging, in a chat room, blog, personal profile site, and/or message boards		✓		Last year	1,454	12–17 years	Online recruitment	72.0	—	—
Katzer et al. (2009)	Cyberbullying	Bullying in Internet chat rooms		✓ ^a		Lifetime/none provided	1,700	Mean of 14.1 years	Germany	4.3–44.0 ^b	—	—
Kessel Schneider et al. (2012)	Cyberbullying	Us[ing] the Internet, a phone, or other electronic communications to bully, tease, or threaten you	✓			Last year	20,406	Grades 9–12	Northeastern U.S.	15.8	—	—
Kite et al. (2010)	Cyberbullying	Bullying behavior on both MySpace and instant messenger sites		✓ ^a		Lifetime/none provided	588	Grades 7–8	Northeastern U.S.	10.0	6.0–10.0 ^b	—
Klomek et al. (2008)	Cyberbullying	Us[ing] e-mail or Internet to be mean to you	✓			Last 4 weeks	2,341	13–19 years	Northeastern U.S.	7.3	—	—
König et al. (2010)	Cyberbullying	Flaming, harassment, denigration, impersonation, outing/trickery, exclusion and cyber-stalking		✓		Last 6 months	473	11–17 years	Online recruitment (German forum)	—	79.3	—
Kowalski & Fedina (2011)	Cyberbullying	Bully[ing] through e-mail, instant messaging, in a chat room, on a website, or through a text message sent to a cell phone		✓ ^c		Past couple of months	42	10–20 years	U.S.	21.4	5.8	—

(table continues)

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics					Prevalence		
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Kowalski & Limber (2007)	Electronic bullying	Bully[ing] through e-mail, instant messaging, in a chat room, on a website, or through a text message sent to a cell phone		✓ ^c		Past couple of months	3,767	Grades 6–8	Southeastern and northwestern U.S.	11.1 ^b	4.1 ^b	6.8 ^b
Kowalski & Limber (2013)	Cyberbullying	Bully[ing] through e-mail, instant messaging, in a chat room, on a website, or through a text message sent to a cell phone		✓ ^c		Past couple of months	931	11–19 years	Northeastern U.S.	14.2 ^b	16.8 ^b	18.6 ^b
Kowalski, Morgan, & Limber (2012)	Cyberbullying	Bully[ing] through e-mail, instant messaging, in a chat room, on a web page, or through a text message sent to a cell phone	✓			Past couple of months	4,531	11–19 years	U.S.	10.9 ^b	4.5 ^b	6.4 ^b
Lam & Li (2013)	E-Bullying	Teas[ing], call[ing] someone bad names, say[ing] mean things about someone, say[ing] you are going to hit/hurt someone, threaten[ing] someone, [or] mak[ing] up something about someone to make others not like him/her anymore using e-mails, texting, short messages, on a website such as Renren, etc.		✓		Last 7 days	484	11–16 years	China	—	—	—
Law, Shapka, Domenc, & Gagné (2012)	Cyberbullying/online aggression	Mean things, rumors, or gossip being said through the Internet websites, e-mail, or text messaging and . . . embarrassing pictures or video clips of yourself or people you know being sent or posted on the Internet		✓	✓	Lifetime/none provided	733	10–18 years	Canada	—	—	—

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics				Prevalence			
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Law, Shapka, Hymel, et al. (2012)	Cyberbullying	Mean things, rumors, or gossip being said through the Internet websites, e-mail, or text messaging and . . . embarrassing pictures or video clips of yourself or people you know being sent or posted on the Internet	✓	✓	Lifetime/none provided	Lifetime/none provided	17,551 ¹	14–18 years ^d	Canada	8.0	6.0	—
Lenhart (2007)	Cyberbullying	Receiving threatening messages; having . . . private e-mails or text messages forwarded without consent; having an embarrassing picture posted without permission; or having rumors . . . spread online	✓	✓	Lifetime/none provided	Lifetime/none provided	935	12–17 years	U.S.	32.0	—	—
Lester et al. (2012)	Cyberbullying	Mean and hurtful text (SMS) messages (text messages, pictures or video clips) and mean and hurtful messages on the Internet (e-mail; pictures, webcam or video clips; chat rooms; MSN messenger or another form of instant messenger; social networking sites like MySpace; Internet game; web log/blog or page/website)	✓	✓	Previous school term	Previous school term	1,782	Mean of 12 (time 1); mean of 14 (Time 2)	Australia	—	—	—
Li (2006)	Cyberbullying	Cyberbullying [via e-mail, chat room, cell phone	✓ ^c	✓	Lifetime/none provided	Lifetime/none provided	264	Grades 7–9	Canada	16.9	25.3	—

(table continues)

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics				Prevalence			
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Li (2007a)	Cyberbullying	Harassing using technology such as e-mail, computer, cell phone, video cameras, etc. [that] occurs when people say mean and hurtful things or make fun of another person or calls him/her mean and hurtful names, completely ignore or exclude him/her from their group of friends or leaves him/her out of things on purpose, tells lies or spreads false rumors about him/her, sends mean notes and tries to make other students dislike him/her, and other hurtful things like that . . . [and] it is difficult for the person being bullied to defend himself or herself . . . [and] two people [are not] of about equal strength or power		✓ ^c		Lifetime/none provided	461	Grade 7	Canada and China	28.9	17.8	—
Li (2007b)	Cyberbullying	Cyberbullying [via] e-mail, chat room, cell phone		✓ ^c		Lifetime/none provided	177	Grade 7	Canada	24.9	14.5	—

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics				Prevalence			
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Li (2008)	Cyberbullying	Harassing using technology such as e-mail, computer, cell phone, video cameras, etc. [that] occurs when people say mean and hurtful things or make fun of another person or calls him/her mean and hurtful names, completely ignore or exclude him/her from their group of friends or leaves him/her out of things on purpose, tells lies or spreads false rumors about him/her, sends mean notes and tries to make other students dislike him/her, and other hurtful things like that . . . [and] it is difficult for the person being bullied to defend himself or herself . . . [and] two people [are not] of about equal strength or power		✓ ^c		Lifetime/none provided	354	11–15 years	Canada and China	29.5	10.5	—

(table continues)

Table 1 (continued)

Study	Conceptualization		Measurement		Time parameter	Sample characteristics			Prevalence		
	Concept	Operational definition	Single item(s)	Multi-item		Qualitative	N	Age or grade	Location	% V	% P
Li (2010)	Cyberbullying	Includes but is not limited to sending angry, rude, vulgar messages about a person to an online group or to that person electronically; or sending harmful, untrue, or cruel statements about a person to other people or posting such material online; or pretending to be someone else and sending or posting material that makes that person look bad; or sending or posting material about a person that contains sensitive, private, or embarrassing information, including forwarding private messages or images, or cruelly excluding someone from an online group . . . [that] might occur at home or at school, through the Internet network or a cell phone	✓		Lifetime/none provided	269	Grades 7–12	Canada	—	—	—
MacDonald & Roberts-Pittman (2010)	Cyberbullying	Sending or posting harmful or cruel text or images using the Internet or other digital communication devices (direct quote from Willard, 2007)		✓ ^c	Since starting college	439	Mean of 23.0 years	Midwestern U.S.	21.9	8.6	—

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics				Prevalence			
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Machmutow et al. (2012)	Cyber-victimisation	[Cyberbullying behavior] involving only the bully and the victim (i.e., text messages, MSN, Facebook, Netlog, etc.); involving content (message, picture or video) . . . sent to groups of people; or involving content . . . posted on the Internet	✓	✓		Last 4 months	765	Mean of 13.2	Switzerland	—	—	—
Marsh et al. (2010)	Text bullying	[Bullying via] texting	✓			Current school year	1,169	Mean of 15.7	New Zealand	11.0	7.0	—
Melander (2010)	Cyber harassment	Measurement approach unclear		✓		n/a	39	18–23 years	Midwestern U.S.	—	—	—
Menesini et al. (2012)	Cyberbullying	Nasty text messages; phone pictures/ photos or videoclips of violent scenes; phone pictures/ photos or videoclips of intimate scenes; silent/prank phone calls; nasty or rude e-mails; insults on websites; insults on instant messaging; insults in a chat room; insults on a blog; and unpleasant pictures/photos on websites	✓ ^a			Past couple of months	707	11–21 years	Italy	3.9–44.5 ^a	2.7–36.6 ^a	—
Menesini, Nocentini, & Calussi (2011)	Cyberbullying	Nasty text messages; phone pictures/ photos/video of violent scenes; phone pictures/ photos/video of intimate scenes; silent/prank phone calls; nasty or rude e-mails; insults on websites; insults on instant messaging; insults in chat rooms; insults on blogs; unpleasant pictures/photos on websites	✓ ^a			Last 2 months	1,092	11–18 years	Italy	4.5–47.1 ^a	0.0–38.5 ^a	—

(table continues)

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics				Prevalence			
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Menesini, Nocentini, & Camodeca (2013)	Cyberbullying	Nasty text messages; phone pictures/photos/videos of intimate scenes; insults on websites; insults on instant messaging; insults in a chat rooms; [and] insults on blog		✓		Last 2 months	390	14–18 years	Italy	—	—	—
Mesch (2009)	Cyberbullying	Someone spreading rumors online about you; someone posting an embarrassing picture online without your permission; someone sending a threatening e-mail, instant message, or text to you; someone taking a private e-mail, instant message, or text message you sent them and forwarding it to someone else or posting it; and having been contacted by a stranger		✓		Lifetime/none provided	935	12–17 years	U.S.	40.0	—	—
Mishna et al. (2010)	Cyberbullying	The use of e-mail, cell phones, text messages, and Internet sites to be mean to, make fun of, or scare people		✓		Last 3 months	2,186	Grades 6, 7, 10, and 11	Canada	49.5	33.7	—
Mishna et al. (2012)	Cyberbullying	Calling someone names; threatening; spreading rumors; sending a private picture without consent; pretending to be someone else; receiving or sending unwanted sexual text or photos; or being asked to do something sexual		✓		Last 3 months	2,186	Grades 6, 7, 10, and 11	Canada	23.8 ^b	8.0 ^b	25.7 ^b
Mishna et al. (2009)	Cyberbullying	Measurement approach unclear		✓		Lifetime/none provided	38	Grades 5–8	Canada	—	—	—

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics					Prevalence		
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Mitchell et al. (2011)	Online victimization	Using the Internet to bother or harass . . . or to spread mean words or pictures . . . and [to] ask . . . sexual questions . . . or try to get you to talk online about sex when you did not want to talk about those things	✓	✓		Lifetime/none provided and last year	2,051	10–17 years	U.S.	6.0 (past year); 9.0 (lifetime)	—	—
Monks et al. (2012)	Cyberbullying	Measurement approach unclear	✓			Last school term	220	7–11 years	England	20.5	5.0	—
M. Moore et al. (2012)	Cyberbullying	Aggressive forum posts (i.e., verbal insults or attacks directed at an individual or someone associated with the individual)		✓		n/a	26	—	Not reported	—	—	—
P. Moore et al. (2012)	Electronic bullying	Bullying through e-mail, instant messaging, in a chat room, on a website, or through a text message sent to a cell phone	✓			Past couple of months	855	Mean of 13.0 years	Southeastern U.S.	20.5	13.9	—
National Childrens Home & Tesco Mobile (2005)	Text bullying	Bullying or threat via e-mail, Internet chat room, or text	✓			Lifetime/none provided	770	11–19 years	United Kingdom	20.0	11.0	—
Navarro et al. (2013)	Cyberbullying	Cyberbullying (as defined by Tokunaga, 2010) [via] the Internet	✓			Last 6 months	1,068	10–12 years	Spain	24.6	—	—
Navarro et al. (2012)	Cyberbullying	Cyberbullying (as defined by Tokunaga, 2010) [via] the Internet	✓			Last 6 months	1,127	10–12 years	Spain	24.2	—	—

(table continues)

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics				Prevalence			
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
O'Moore (2012)	Cyberbullying	Bullying through text messages, pictures or video clips via mobile phone cameras, e-mail, chat rooms, instant messaging (IM) or websites (blogs, personal websites, personal polling sites, or social networking sites) . . . [that] can happen when text messages/pictures/clips/e-mails/messages etc. . . are sent to you, but also when text messages/pictures/clips/e-mails/messages etc. are sent to others, about you or harassment that uses technological means to mess with someone, such as the phone or the Internet ^e	✓			Past couple of months	3,004	12–16 years	Ireland	9.8 ^b	4.4 ^b	4.1 ^b
Ortega, Elipe, & Calmaestra (2009)	Cyberbullying	A type of nuisance or harassment that means to mess with someone, such as the phone or the Internet ^e		✓ ^c		Last 2 months	830	12–18 years	Spain	5.1 ^b	8.4 ^b	8.6 ^b
Ortega, Elipe, Mora-Merchán, et al. (2009)	Cyberbullying	Involves the use of mobile phones (texts, calls, video clips) or the Internet (e-mail, instant messaging, chat rooms, and websites) or other forms of ICT to deliberately harass, threaten, or intimidate someone		✓		Last 2 months	1,671	12–17 years	Spain	5.0	—	—
Parris et al. (2012)	Cyberbullying	Measurement approach unclear		✓		Lifetime/none provided	20	15–19 years	Southeastern U.S.	—	—	—

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics				Prevalence			
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Patchin & Hinduja (2006)	Cyberbullying	Behavior that can include bothering someone online, teasing in a mean way, calling someone hurtful names, intentionally leaving persons out of things, threatening someone, and saying unwanted, sexually related things to someone [online]		✓ ^c		Last 30 days	384	9-17 years	Online recruitment	29.4	10.7	8.0
Patchin & Hinduja (2010)	Cyberbullying	Receiv[ing] an upsetting e-mail from someone you know; receiv[ing] an instant message that made you upset; hav[ing] something posed on your MySpace that made you upset; be[ing] made fun of in a chat room; receiv[ing] an upsetting e-mail from someone you did not know (not spam); hav[ing] something posted about you on another Web page that made you upset; something has been posted about you online that you did not want others to see; be[ing] picked on or bullied online; be[ing] afraid to go on the computer		✓		Last 30 days	1,963	10-16 years	U.S.	29.4	21.8	—

(table continues)

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics				Prevalence			
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Pachin & Hinduja (2011)	Cyberbullying	Post[ing] something online about another person to make others laugh; send[ing] someone a computer text message to make them angry or to make fun of them; hav[ing] taken a picture of someone and posted it online without their permission; post[ing] something on MySpace or similar site to make them angry or to make fun of them; send[ing] someone an e-mail to make them angry or to make fun of them		✓		Last 30 days	1,963	10–16 years	U.S.	—	21.5	—
Paul et al. (2012)	Cyberbullying	Measurement approach unclear		✓	✓	Lifetime/none provided	30	Mean of 11.9 years	England	—	—	—
Pergolizzi et al. (2009)	Cyberbullying	The use of the Internet, cell phones and other technologies to bully, harass, threaten, or embarrass someone	✓			Lifetime/none provided	587	Grades 7–8	Multiple regions of U.S.	27.9	15.2	—
Perrin et al. (2010)	Cyberbullying	Send[ing] nasty or threatening e-mails, nasty messages on the Internet/to mobile phone and mean or nasty comments or pictures sent to websites/other students' mobile phones		✓		Last 3 months	1,694	Mean of 13.8 years	Switzerland and Australia	—	—	—

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics				Prevalence			
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Perren & Gutzwiller-Helfenfinger (2012)	Cyberbullying	Sending] nasty or threatening e-mails; nasty messages on the Internet/mobile phone; and mean or nasty comments or pictures sent to websites/other students' mobile phones		✓		Last 3 months	564	12–19 years	Online recruitment (German social networking site)	—	—	—
Popovic-Citic et al. (2011)	Cyberbullying	Harassment (i.e., repeatedly sending offensive, rude, and insulting messages through chat rooms, e-mails, text messaging or any other online form of communication), denigration (i.e., sending or posting cruel rumors about a person in order to damage his or her reputation or friendships), and outing (i.e., having someone's secret or embarrassing information online)		✓ ^a		Since the start of school year (no information provided on time elapsed in school year)	387	11–15 years	Serbia	19.4–25.6 ^b	8.5–11.6 ^a	—
Pomari & Wood (2010)	Cyber aggression	[Aggression via] text messages, e-mails, [and] Internet chat rooms/forums		✓		Last 6 months	339	Mean of 13.3 years	United Kingdom	56.2	31.5	—

(table continues)

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics				Prevalence			
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Pure & Metzger (2012)	Cyberbullying/ online aggression	Bully[ing] . . . through text messaging, pictures/photos or video clips, phone calls, e-mails, chat rooms, instant messaging, [and] websites (including blogs, video sites like YouTube, and social networking sites like Facebook) . . . sent to you . . . [or] sent to others, about you	✓			Lifetime/none provided	380	18–34 years	Western U.S.	18.7	—	—
Raskauskas (2010)	Cyberbullying	Bully[ing] by text messages	✓			Since the start of school year (5–6 months earlier)	1,530	11–18 years	New Zealand	43.0	—	—
Raskauskas & Stoltz (2007)	Electronic bullying	Electronic bullying [via] text messages, websites or chat rooms, and taking or distributing someone's picture without permission		✓		Current school year and last 30 days	84	13–18 years	Location unspecified	48.8	21.4	—
Riebel et al. (2009)	Cyberbullying	Harassment (i.e., sending] threatening, insulting or other discomfoting messages in the Internet or on your cell phone), denigration (i.e., spread[ing] rumors or insults . . . throughout the Internet or on other people's cell phones), outing and trickery (i.e., pass[ing] on private e-mails, chat messages or pictures . . . in order to expose [someone], and exclusion (i.e., excluding] . . . [someone] from chats or online games)		✓		Last 2 months	1,987	6–19 years	Online and magazine recruitment (both German-based)	5.4	4.0	—

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics					Prevalence		
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Rivers & Noret (2010)	Cyberbullying	Nasty or threatening text messages or e-mails	✓	✓		Current school term	Approximately 2,500 per year	11–13 years	England	13.0–16.4 (across 5 years)	—	—
Şahin (2012)	Cyberbullying	Measurement approach unclear	✓	✓		Lifetime/none provided	389	Secondary school	Turkey	—	—	—
Şahin et al. (2010)	Cyberbullying	Measurement approach unclear	✓	✓		Lifetime/none provided	300	Secondary school	Turkey	—	—	—
Sakellariou et al. (2012)	Cyberbullying	Threatening or hurtful e-mails, SMS messages, images via the Internet or mobile camera phone, or messages via the Internet sent . . . by other students	✓ ^a	✓ ^a		Lifetime/none provided	1,530	9–18 years	Australia	4.8–11.5 ^a	4.2–11.5 ^a	V
Salmivalli & Pöyhönen (2012)	Cyberbullying	Sending mean or hurtful messages, calls, or pictures . . . by cell phone or through the Internet	✓			Past couple of months	17,627	8–15 years	Finland	2.0	1.0	—
Sbarbaro & Enyeart Smith (2011)	Cyberbullying	Posting mean or hurtful comments . . . online, post[ing] a mean or hurtful picture online, post[ing] a mean or hurtful video online, creat[ing] a mean or hurtful web page, spread[ing] rumors . . . online, threaten[ing] to hurt . . . [someone] through a cell phone text message, threaten[ing] to hurt . . . [someone] online, [and] pretend[ing] to be . . . [someone] online and act[ing] in a way that was mean or hurtful		✓ ^c		Lifetime/none provided and last 30 days	106	Grades 7–9	Southwestern U.S.	34.0 (lifetime); 11.3 (last 30 days)	43.4 (lifetime); 17.9 (last 30 days)	—
Schenk & Fremouw (2012)	Cyberbullying	Cyberbullying [via] text messaging, Internet, picture/video messaging, phone calls, and masquerading		✓ ^c		Since starting college	799	18–24 years	Southeastern U.S.	8.6	—	—

(table continues)

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics					Prevalence		
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Schoffstall & Cohen (2011)	Cyber aggression	[Being] mean to someone using e-mails, chat rooms, and social networking sites		✓ ^a		Lifetime/none provided	192	8–12 years	Location unspecified	—	15.1–22.9 ^a	—
Schulze-Krumbholz & Schethauer (2009b)	Cyberbullying	Bullying using e-mail, mobile phones, and Internet in general		✓		Lifetime/none provided	71	Mean of 14.1 years	Germany	15.5	16.9	9.9
Sengupta & Chaudhuri (2011)	Cyberbullying	Rumor spreading, receiving threats, embarrassing information posted about them, and forwarding private messages		✓		Lifetime/none provided	935	12–17 years	U.S.	>25.0	—	—
Ševčíková & Šmahel (2009)	Online harassment	[Being] mocked, humiliated, [harassed,] or hurt on the Internet	✓			Lifetime/none provided	2,215	12–88 years	Czech Republic	10.1 ^b	0.9 ^b	4.8 ^b
Ševčíková et al. (2012)	Cyberbullying	Behavior where the aggressor(s) abuses the Internet to carry out intentional, repetitive and hostile harm to others			✓	Lifetime/none provided	16	15–17 years	Online recruitment (Czech Republic-based site)	—	—	—
Slonje et al. (2012)	Cyberbullying	Bullying through electronic means such as: mobile phone calls, text messaging, picture/video clip, e-mail, chat rooms, websites and instant messaging		✓ ^c		Last 2–3 months	759	9–16 years	Sweden	10.6	9.6	—
P. K. Smith et al. (2008)	Cyberbullying	Cyberbullying through text messaging; pictures/photos or video clips; phone calls; e-mail; chat rooms; instant messaging; and websites		✓		Past couple of months	92 (Study 1); 533 (Study 2)	11–16 years	England	22.2 (Study 1); 17.3 (Study 2)	12.4 (Study 2)	—
Snell & Englander (2010)	Cyberbullying	Bullying via the Internet or text messages		✓		Lifetime/none provided	213	College	Northeastern U.S.	Approximately 10.0–41.0 ^a	—	—
Sourander et al. (2010)	Cyberbullying	When someone repeatedly picks on another person through e-mail or text messages or when someone posts something online about another person they don't like		✓ ^c		Last 6 months	2,215	13–16 years	Finland	4.8 ^b	7.4 ^b	5.4 ^b

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics				Prevalence			
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Spears et al. (2009)	Cyberbullying	Measurement approach unclear		✓ ^a	✓	Lifetime/none provided	20	12–18 years	Australia	—	—	—
Staudé-Müller et al. (2012)	Online victimization	Harassment, sexual harassment, flaming, cyber-flaming, stalking, denigration, impersonation, outing and trickery, and exclusion		✓ ^a		Lifetime/none provided	9,760	10–50 years	Online recruitment (German-based site)	22.1–81.5 ^a	—	—
Steffgen et al. (2011)	Cyberbullying	[Cyberbullying via] text message, picture/video clip, phone call, e-mail, websites/chat room, or instant messaging		✓ ^c		Current school year	2,070	12–24 years	Luxembourg	3.0 ^b	3.6 ^b	1.4 ^b
Strohmeier et al. (2011)	Cyber-victimization	Bullying by cell phone or through the Internet . . . [by] receiving [mean or hurtful messages, calls, or pictures	✓			Past couple of months	4,957	9–12 years	Finland	—	—	—
Sumter et al. (2012)	Online victimization	Harassment [and] bullying online		✓		Last 6 months	1,016–1,762 (across 4 time points)	12–19 years	The Netherlands	—	—	—
Topcu & Erdur-Baker (2010)	Cyberbullying	Measurement approach unclear		✓		Lifetime/none provided	358 (Study 1); 339 (Study 2)	13–21 years	Turkey	—	—	—
Topcu & Erdur-Baker (2012)	Cyberbullying	Measurement approach unclear		✓		Last 6 months	795	13–18 years	Turkey	—	—	—
Topcu et al. (2008)	Cyberbullying	Measurement approach unclear		✓ ^a		Lifetime/none provided	183	14–15 years	Turkey	3.3–26.2 ^a	8.7–25.1 ^a	—
Turner et al. (2011)	Internet harassment	Us[ing] the Internet to bother or harass . . . or to spread mean words or pictures	✓			Last year	2,999	6–17 years	U.S.	2.7	—	—
Twyman et al. (2010)	Cyberbullying	Measurement approach unclear	✓			Last school year	104	11–17 years	Southeastern U.S.	—	—	—
Tynes et al. (2010)	Online victimization	General online victimization, sexual online victimization, individual online racial discrimination, and vicarious online racial discrimination		✓		Lifetime/none provided	476	14–19 years	Midwestern U.S.	—	—	—

(table continues)

Table 1 (continued)

Study	Conceptualization		Measurement		Time parameter	Sample characteristics				Prevalence	
	Concept	Operational definition	Single item(s)	Multi-item		Qualitative	N	Age or grade	Location	% V	% P
Vandebosch & Van Cleemput (2008)	Cyberbullying	Internet and mobile phone practices . . . intended by the sender to hurt; [that are] part of a repetitive pattern of negative offline or online actions; and [are] performed in a relationship characterized by a power imbalance	✓	✓	n/a	279	10–18 years	Location unspecified	—	—	—
Vannucci et al. (2012)	Cyberbullying	Nasty text messages, phone and Internet pictures/photos or video clips of violent or intimate scenes, nasty or rude e-mails, [and] insults in chat rooms	✓	✓	Last 2 months	211	14–20 years	Italy	—	—	—
Varjas et al. (2009)	Cyberbullying	Send[ing] a threatening or harassing e-mail, instant message, message in a chat room, and short text message (SMS)	✓	✓	Lifetime/none provided	427	Grades 6–8	Southeastern U.S.	—	—	—
Varjas et al. (2010)	Cyberbullying	Measurement approach unclear	✓	✓	Lifetime/none provided	20	15–19 years	U.S.	—	—	—
Vazsonyi et al. (2012)	Cyberbullying	Say[ing] or do[ing] hurtful or nasty things to someone . . . on the Internet or by mobile phone calls, texts or image/video texts	✓	✓	Last year	25,142	9–16 years	25 European countries	—	—	—
Wachs (2012)	Cyberbullying	Bullying that includes the use of information and communication technologies	✓	✓	Last year	518	11–17 years	Germany	5.0	6.2	4.2
Wachs & Wolf (2011)	Cyberbullying	[Cyberbullying involving] harassment, denigration, outing, or exclusion	✓	✓	Last 2 months	833	11–17 years	Germany	11.5	22.3	—

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics				Prevalence			
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Wachs et al. (2012)	Cyberbullying	An aggressive, intentional act carried out by a group or individual, using electronic forms of contact, repeatedly and over time against a victim who cannot easily defend him- or herself (direct quote from P. K. Smith et al., 2008, p. 376)		✓		Last year	518	Grades 5–10	Location unspecified	5.4	3.9	—
Wade & Beran (2011)	Cyberbullying	Calling people names, imitating someone online, spreading rumors about someone else online, threatening someone, sending unwanted sexual content to others, sending private pictures of someone to others, and asking someone to do something sexual		✓		Last 3 months	529	10–13 and 15–17 years	Canada	21.9	29.7	—
Walrave & Heirman (2011)	Cyberbullying	Bullying over the Internet or mobile phone		✓		Lifetime/none provided	1,318	12–18 years	Belgium	34.2	21.2	—
Wang, Iannotti, & Luk (2010)	Cyberbullying	Bullying using computers and . . . cell phones		✓		Lifetime/none provided	6,939	Mean of 14.4 years	U.S.	9.9	—	—
Wang, Iannotti, Luk, & Nansel (2010)	Cyberbullying	Being bullied by others using computers, e-mail messages, . . . pictures, [and] cell phones		✓		Past couple of months	7,475	Grades 6–10	U.S.	10.1	—	—
Wang et al. (2011)	Cyberbullying	[Bullying] using computers or using cell phones		✓		Past couple of months	7,313	Mean of 14.2 years	U.S.	10.0 ^b	8.5 ^b	13.8 ^b

(table continues)

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics			Prevalence				
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Werner et al. (2010)	Internet aggression	Us[ing] the Internet to threaten or embarrass someone; e.g., by posting or sending messages about them for other people to see; tell[ing] others to block instant messages from someone you don't like or are mad at; us[ing] the Internet to play a joke or annoy someone you were mad at; mak[ing] rude or nasty comments about someone else online	✓	✓	Last 30 days	330	Grades 6–8	Northwestern U.S.	—	—	—	—
Williams & Guerra (2007)	Internet bullying	[Telling] lies about some students through e-mail or instant messaging	✓		Since the start of school year (administered in spring term)	1,519	Grades 5, 8, and 11	Midwestern U.S.	—	9.4	—	—
Wolak et al. (2007)	Online harassment	Bothering or harassing [others] online and . . . us[ing] the Internet to threaten or embarrass [others] by posting or sending messages about [others] for other people to see	✓	✓	Last year	1,499	10–17 years	U.S.	9.0	—	—	—
Ybarra (2004)	Internet harassment	Bothering or harassing [others] while online and . . . post[ing] or send[ing] messages about [others] for other people to see	✓		Last year	1,501	10–17 years	U.S.	6.5	—	—	—

Table 1 (continued)

Study	Conceptualization		Measurement			Sample characteristics				Prevalence		
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Ybarra, Diener-West, & Leaf (2007)	Internet harassment	Receiv[ing] rude or nasty comments from someone while online; be[ing] the target of rumors spread online, whether they were true or not; and receiv[ing] threatening or aggressive comments while online	✓	✓		Last year	1,588	10–15 years	U.S.	35.0	—	—
Ybarra, Espelage, & Mitchell (2007)	Internet harassment	Mak[ing] rude comments or mean comments to anyone online; spread[ing] rumors about someone, whether they were true or not; [and] mak[ing] aggressive or threatening comments to anyone online	✓	✓		Last year	1,588	10–15 years	U.S.	34.0	21.0	14.3
Ybarra & Mitchell (2004a)	Internet/online aggression	Making rude or nasty comments to someone on the Internet and using the Internet to harass or embarrass someone with whom [you are] mad	✓	✓		Last year	1,501	10–17 years	U.S.	4.0 ^b	12.0 ^b	3.0 ^b
Ybarra & Mitchell (2007)	Internet harassment	Us[ing] the Internet to harass or embarrass someone [you] are mad at and . . . mak[ing] rude or nasty comments to someone else online	✓	✓		Last year	1,500	10–17 years	U.S.	—	29.0	—
Ybarra et al. (2006)	Internet harassment	Bothering or harassing [others] online and . . . us[ing] the Internet to threaten or embarrass [others] by posting or sending messages about [others] for other people to see	✓	✓		Last year	1,500	10–17 years	U.S.	9.0	—	—

Table 1 (continued)

Study	Conceptualization		Measurement		Sample characteristics				Prevalence			
	Concept	Operational definition	Single item(s)	Multi-item	Qualitative	Time parameter	N	Age or grade	Location	% V	% P	% V/P
Yilmaz (2011)	Cyberbullying	Posting mean or hurtful comments online; posting a mean or hurtful picture online; posting a mean or hurtful video online; creating a mean or hurtful web page; spreading rumors online; threatening through a cell phone text message; threatening to hurt online; [and] pretending to be someone online and acting in a way that was mean or hurtful		✓		Lifetime/none provided	756	Grade 7	Turkey	17.9	6.4	—

Note. Whereas not all researchers used the term "cyberbullying," each of these studies measured aspects of the broad cyberbullying construct presented here. Text in brackets was added to make the definition clearer. Dashes indicate that the variable was not assessed in the study. V = victims; P = perpetrators; V/P = victim/perpetrators; ICT = information and communication technologies; SMS = short message service; n/a = not available.

^a Denotes prevalence rates differ by venue. ^b Denotes categories are mutually exclusive. ^c Denotes a multi-item measurement approach was used, but prevalence rates were based on single item measures. ^d Study 2 is not included because prevalence data were not reported. ^e Based on a Spanish-English translation conducted by the third author of the current paper.

depends on the particular study being reviewed and the most frequently used method of digital communication among sample participants at the time. *Katzer et al. (2009)*, in an investigation of cyberbullying victimization among 1,700 fifth through 11th grade male and female students in Germany, found that chat rooms were used as an avenue of communication at least once a week by 69% of the adolescents surveyed, and 35% of the adolescents had been victimized while chatting. *Juvonen and Gross (2008)* found that the most prevalent venues for cyberbullying among American students ages 12 to 17 were message boards (26%) and instant messaging (20%). *Kowalski and Limber (2007)* found instant messaging (66.6%) to be the most frequently used venue for cyberbullying. Given the rise of social networking sites, these sites will likely emerge as primary venues for victimization and perpetration in the not too distant future.

Cyberbullying Versus Traditional Bullying

A logical question to ask when investigating cyberbullying is the degree to which our knowledge of traditional bullying carries over to this newer mode of bullying. Cyberbullying shares with traditional bullying three primary features: It is an act of aggression; it occurs among individuals among whom there is a power imbalance; and the behavior is often repeated (*Hunter, Boyle, & Warden, 2007; Kowalski, Limber, & Agatston, 2012; Olweus, 1993, 2013; P. K. Smith, del Barrio, & Tokunaga, 2012*). The aggressive nature of cyberbullying is discussed later in this article, although few would question that cyberbullying is an aggressive action. As with traditional bullying, the power imbalance with cyberbullying can take any of a number of forms: physical, social, relational, or psychological (*Dooley, Pyzalski, & Cross, 2009; Monks & Smith, 2006; Olweus, 2013; Pyzalski, 2011*). Of importance, the fact that one person is more technologically savvy than another can create a power imbalance. Furthermore, the anonymity inherent in many cyberbullying situations may create a sense of powerlessness on the part of the victim (*Dooley et al., 2009; Vandebosch & Van Cleemput, 2008*).

In spite of the similarities between traditional bullying and cyberbullying, the two behaviors are distinct from each other in critical ways. Perpetrators of cyberbullying often perceive themselves to be anonymous. Research on deindividuation (*Diener, 1980; Postmes & Spears, 1998*) shows that people will say and do things anonymously that they would not say or do in face-to-face interactions. This anonymity significantly opens up the pool of potential perpetrators of cyberbullying, compared to traditional bullying. For example, individuals who cyberbully do not have to worry whether their physical stature is greater than that of their victim.

Anonymity has another adverse effect. In face-to-face bullying, people can observe the impact their behavior has on the victim. For some perpetrators, the recognition that they have hurt their victim is enough to deter further bullying behavior. With cyberbullying, there is no direct way for perpetrators to know the effect of their behavior on the victim. Thus, chances for empathy and remorse are significantly reduced (*Sourander et al., 2010*).

Cyberbullying and traditional bullying also differ in the accessibility of the victim. Traditional bullying occurs most frequently at school during the school day (*Nansel et al., 2001*). Individuals who engage in cyberbullying, on the other hand, can perpetrate

cyberbullying behavior 24 hours a day, 7 days a week. At any time during the day or night, they can create websites, send text messages, or post messages about others on the Internet. Additionally, because of the nature of the venues through which cyberbullying occurs, it has a much greater potential audience than traditional bullying. For example, thousands of people may view insulting posts online, whereas only a dozen may view a bullying incident at school.

Because of the nature of the technology used to cyberbully, the "reward for engaging in cyberbullying is often delayed compared to traditional bullying" (*Vannucci, Nocentini, Mazzoni, & Menesini, 2012, p. 185; see also Dooley et al., 2009*). Individuals who cyberbully cannot see the immediate effects of their bullying on the victim. Any response that may be offered by the victim may be delayed as a function of when the victim becomes aware of the cyberbullying (e.g., checks the text message, views the website). This timing issue suggests that perhaps there are different motives behind the two types of bullying behavior. That is, motives for perpetrating cyberbullying may be more intrapersonal, whereas those for traditional bullying may be more interpersonal. In other words, although empirical research is needed to investigate this suggestion, the rewards for engaging in cyberbullying may be tied more to performing the action than to witnessing the consequences of that action or to having other "bystanders" witness the effects of one's aggressive behaviors on another individual.

In addition to investigating these conceptual differences, researchers have empirically tested the overlap between involvement in traditional bullying and cyberbullying. *P. K. Smith et al. (2008)* found that many victims of cyberbullying were also victims of traditional bullying (see also *Gradinger, Strohmeier, & Spiel, 2009; Kowalski, Morgan, & Limber, 2012; Privitera & Campbell, 2009; Kessel Schneider, O'Donnell, Stueve, & Coulter, 2012*), and they found a similar correspondence between perpetrators of cyberbullying and perpetrators of traditional bullying. Additionally, *Hinduja and Patchin (2008)* found that individuals who had perpetrated cyberbullying within the previous 6 months were 2.5 times more likely to also perpetrate traditional bullying than were those who had not been involved with cyberbullying. Similarly, individuals who were victims of traditional bullying within the previous 6 months were 2.5 times more likely to also be victims of cyberbullying. *Sourander et al. (2010)* found positive associations between traditional bullying and cyberbullying, traditional victimization and cybervictimization, and traditional bully/victim status and cyberbullying victimization and cyberbully/victim status. Similarly, *Olweus (2012)* noted a high correspondence between involvement in traditional bullying and cyberbullying. Indeed, on the basis of these results, *Olweus (2013, p. 767)* stated, "to be cyberbullied or to cyberbully others seems to a large extent to be part of a general pattern of bullying, where use of the electronic media is only one possible form." As a number of studies have been conducted on the relationship between cyber- and traditional bullying perpetration and victimization, meta-analytic correlations can be computed to approximate the population-level relationship between these variables. These meta-analytic results are described below.

Not all researchers, however, have found such strong relationships between the two types of bullying. For instance, *Varjas, Henrich, and Meyers (2009)* found cybervictimization and cyberperpetration to be highly correlated but found neither of these to be

strongly related to other types of bullying. Thus, the overlap may be determined by the specific venue in which the cyberbullying occurs. In other words, individuals who traditionally bully may be more likely to perpetrate certain kinds of cyberbullying, thinking that they may be more anonymous (e.g., via instant messaging) and be more likely to be targets of cyberbullying via other venues. For example, perpetrators of cyberbullying who are retaliating for traditional bullying victimization may use social media to increase the probability of publicly humiliating the traditional bullying perpetrator. Future research is needed to investigate this relationship further. Additionally, researchers have found that the two forms of bullying do not overlap entirely. Specifically, there appears to be a small group of youth (~10%–15%) who experience cyberbullying victimization or perpetration but do not experience bullying in traditional ways (Olweus, 2012; Raskauskas, 2010; Raskauskas & Stoltz, 2007).

Prevalence

Of late, researchers have debated whether the incidence of cyberbullying is on the rise or whether it has leveled out. Some, such as Slonje and Smith (2008), have suggested that, with changing types of technology, cyberbullying prevalence rates are increasing. Even more recently, however, Olweus (2012; see also Olweus, 2013) argued that the incidence of cyberbullying has not increased over the last few years. Whether rates are staying the same or slightly increasing is difficult to determine, as prevalence rates of cyberbullying victimization/perpetration are highly variable across studies, related in large part to the manner in which cyberbullying is defined (for a more detailed discussion of this issue, see Olweus, 2013), differences in the ages and locations of the individuals sampled, the reporting time frame being assessed (e.g., lifetime, 2 months, 6 months), and the frequency rate by which a person is classified as a perpetrator or victim (e.g., at least once, several times a week). As an example, in one survey of 655 teens age 13–18, 15% reported having ever been cyberbullied (10% via cell phone). Seven percent indicated that they had ever cyberbullied another online (5% by cell phone; Cox Communications, 2009). In the Fight Crime telephone surveys, 17% of 6- to 11-year-olds had been cyberbullied within the past year; 36% of 12- to 17-year-olds had been cyberbullied in the prior year (Fight Crime: Invest in Kids, 2006). Hinduja and Patchin (2009) surveyed middle school students and found that 9% had been cyberbullied in the last 30 days, 17% in their lifetime. Eight percent had cyberbullied others in the last 30 days, 18% in their lifetime. Similarly, in a survey of 3,767 students in Grades 6 through 8, Kowalski and Limber (2007) found that 18% had been cyberbullied at least once within the previous 2 months; 11% had cyberbullied others within the 2 months prior to completing the survey. Additional studies examining the prevalence of cyberbullying can be found in Table 1.

In general, prevalence estimates for cyberbullying victimization range between approximately 10 and 40% (e.g., Lenhart, 2010; O'Brennan, Bradshaw, & Sawyer, 2009; Pontzer, 2010). Two studies are noteworthy, however. Juvonen and Gross (2008) stated that 72% of their respondents reported being victimized. However, Juvonen and Gross (2008) did not specifically use the term cyberbullying, instead asking participants the extent to which they had experienced "mean things" online, which they defined as "any-

thing that someone else does that upsets or offends someone" (p. 499). Additionally, Aftab (2011) found, based on responses to her online survey at wired-safety.org, that 53% of adolescents age 12–13 are victims of cyberbullying (see also Raskauskas & Stoltz, 2007). In spite of this variance in prevalence across studies, the fact remains that cyberbullying is a serious problem confronting youth today.

Country of Origin

The problem of cyberbullying is not limited to particular cultures but rather can be found throughout the world (T. Smith, 2012). However, much work remains to be done in the area of cross-cultural examinations of bullying and cyberbullying. Much of the cross-cultural research conducted on "bullying" can be found by indexing the term "peer victimization" rather than bullying. One reason is that the broader term (i.e., peer victimization) allows for cross-cultural variations in the behavior of interest. For example, countries that use more inclusive definitions of bullying (e.g., including physical, verbal, and relational bullying) often show higher prevalence rates than countries that use more restrictive definitions (e.g., including only physical and verbal bullying; Cross, Li, P. K. Smith, & Monks, 2012; P. K. Smith, Cowie, Olafsson, & Liefoghe, 2002). P. K. Smith et al. (2002) suggested that one way to avoid conceptual confusion regarding bullying is to inquire about specific bullying experiences that participants have experienced. The same is true with cyberbullying. Participants who are asked whether they have ever been cyberbullied often report slightly different experiences than they do when asked if they have been bullied via instant messaging, by e-mail, or on a web page, and so on. Although little research has examined cross-cultural differences in cyberbullying, studies examining cross-cultural differences in aggression indicate that Australia and many European countries tend to be less aggressive than the United States (Bergeron & Schneider, 2005), suggesting that there may be similar differences when it comes to cyberbullying. Because prevalence rates may vary depending on the country in which cyberbullying is studied, this variable will be examined as a moderator in the meta-analysis that follows.

Measurement of Cyberbullying

Some have noted that the cyberbullying research domain has a measurement problem (Menesini & Nocentini, 2009; Menesini, Nocentini, & Calussi, 2011; Rivers, 2013). Part of the reason for the added attention to the issue of measurement is the wide-ranging prevalence rates for the occurrence of cyberbullying, as noted above. Beyond their differences in sample characteristics (e.g., age, gender, country of origin), studies also differ on a number of important factors with regard to measurement, and these differences may influence prevalence rates and relationships among measured variables. Some of these factors include the nature of the items utilized in the cyberbullying measure, whether a definition of bullying is provided, and whether traditional bullying is also measured (David-Ferdon & Hertz, 2007; Kowalski, Limber, & Agatston, 2012). Each of these factors is described below.

Nature of Items

A key goal when measuring any construct is to ensure that the measure is capturing the full conceptual domain of the construct of interest while not measuring things outside the purview of the construct domain (Murphy & Davidshofer, 2005). To obtain this content-related and construct validity, one must first define the domain of interest and then develop and test behaviorally based items that map onto that definition. As noted earlier, for cyberbullying, the definition contains four components: (a) intentional aggressive behavior that (b) is carried out repeatedly, (c) occurs between a perpetrator and victim who are unequal in power, and (d) occurs through electronic technologies. Many of the existing measures of cyberbullying are missing one or more components of this definition. For example, the measure employed by Williams and Guerra (2007) covers intentional aggression but not the repeated nature, because they consider responses of 1–2 times as experiencing cyberbullying, whereas this may have only been a onetime occurrence (and arguably not cyberbullying). Others have blurred the line between intentional behavior and ambiguous behavior. For example, Hinduja and Patchin (2007) included “ignored” and “disrespected” as two items in their measure. Even though these behaviors might be unintentional on the part of the perpetrator, the victim might perceive them as being aggressive. Future research in this area will benefit from a more construct-driven measurement approach that contains items that tap into the full range of cyberbullying behaviors.

Existing measures of cyberbullying generally fall into two categories: single-item measures or multi-item checklists (see Table 1 for a summary of the measurement approach from studies in the review). Of the single-item measures, many have included a definition of cyberbullying and then simply asked participants to indicate how often they have experienced this behavior (e.g., Hinduja & Patchin, 2008; Mesch, 2009; Williams & Guerra, 2007; Wolak, Mitchell, & Finkelhor, 2007). Single-item measures are seen as advantageous over longer scales because they tend to be more cost-efficient and practical and allow for faster administration (Solberg & Olweus, 2003). Other researchers have noted that a single-item measure is sufficient in research domains that have a single referent that is easy to recognize and understand (Menesini & Nocentini, 2009). However, recent research also suggests that use of a single-item measure may have some drawbacks. More specifically, Vaillancourt et al. (2010) found that measurement sensitivity was lower when using the global, single-item questions of the Olweus Bully/Victim Questionnaire compared to a series of questions asking about specific forms of bullying (e.g., verbal, social, physical, and cyber). That is, prevalence rates are likely to be lower when using a single, global item to assess overall bullying behavior than when using multiple specific items to assess different forms of bullying behavior (see also Gradingier, Strohmeier, & Spiel, 2010). Because prevalence rates vary based on whether cyberbullying is measured with a single versus multiple items, relationships among cyberbullying and other variables may also vary based on this issue. Thus, this variable will be examined as a moderator in the meta-analysis.

Multiple-item measures are the other main measurement technique employed by cyberbullying researchers (see, e.g., Hinduja & Patchin, 2008; P. K. Smith et al., 2008; Ybarra et al., 2008). Many of these measures take the form of a checklist of behaviors, and

participants are asked to indicate the frequency of their occurrence. Proponents of the multi-item measurement format note that these scales tend to be more reliable, can cover complex constructs more fully (thus making it more valid for predictions), and also allow for summing to a total score (Menesini et al., 2011). A key limitation, however, is that not all cyberbullying behaviors are included in each study, and often the behaviors included differ from one another in severity, making it challenging to interpret a summed or average score on these scales. For example, Menesini et al. (2011) tested 10-item measures of cyberbullying and cybervictimization for severity (i.e., the degree to which an item is a strong or weak example of cyberbullying) and discrimination (i.e., the degree to which an item can distinguish between different levels of cyberbullying), finding that silent/prank phone calls were low in severity and discrimination and that nasty or rude e-mails and insults on websites were high in both severity and discrimination. These results highlight the need for authors to examine measures of cyberbullying with confirmatory factor analysis and item-response theory to determine the factor structure and item characteristics and to refine their measures before conducting a study.

Another important consideration is how responses might differ for a global evaluation (single item) versus a single specific behavior (as in a multiple-item scale with several different behaviors). People may be less willing to respond honestly to the global evaluation because they do not want to label themselves as a bully or a victim, but they may indicate that they have indeed experienced several specific bullying behaviors in the past. This issue is noted in the traditional bullying literature (Menesini, Modena, & Tani, 2009; Menesini, Nocentini, & Fonzi, 2007), as well as in the cyberbullying literature (Ybarra et al., 2012).

Another point in favor of multi-item measurement has to do with reliability of measurement. When holding other factors constant, increasing the number of items in a measure has the effect of increasing the reliability of that measure (Murphy & Davidshofer, 2005). One major concern of using unreliable measures is that a scale cannot be valid if it is not reliable. In addition to being less reliable, single-item measures tend to be more prone to random error. Random error (e.g., response tendencies such as acquiescence, extreme responding, and social desirability) is present in virtually every measure, but this unreliability is exacerbated in a single-item measure because of limitations in our ability to detect it. With multi-item measures, researchers can sum or average the items together and reduce some of this error. Researchers are also able to determine the scale’s reliability and then take action to remove sources of unreliability (e.g., by removing poorly functioning items).

Research with multi-item measures has begun to provide information on the factor structure of cyberbullying. Dempsey, Sulkowski, Nichols, and Storch (2009) showed that cybervictimization is a distinct construct from other forms of traditional bullying victimization (i.e., overt and relational). Other research by Menesini et al. (2011) demonstrated that cyberbullying and cybervictimization could be represented equally well with a two-factor model (phone vs. computer-based or written messages vs. pictures/telephone calls) or a single-factor model. Recent work by Law and colleagues (Law, Shapka, Domene, & Gagné, 2012; Law, Shapka, Hymel, Olson, & Waterhouse, 2012) found that adolescents did not differentiate their responses in terms of the role played in cyberbullying (victim or bully) but rather the medium through

which it occurred (messages vs. pictures vs. websites created). These results provide further evidence for the contention that those who cyberbully also tend to be cybervictims. Additionally, these studies provide preliminary evidence of a multifactorial structure of cyberbullying measures.

In sum, researchers should be aware that single-item measurement of cyberbullying comes with many serious limitations and should choose their measurement approach carefully. Future research on cyberbullying may be well suited to the use of multi-item behavioral checklists that share a response scale (e.g., 1 to 5: *never; only once or twice; two or three times per month; once or twice per week; several times per week*) and utilize the same reporting time frame (e.g., past 6 months). Additionally, further work is needed that utilizes structural equation modeling and confirmatory factor analysis to determine the factor structure (i.e., the core features) of cyberbullying and how the features map onto the main components of the cyberbullying definition (Law, Shapka, Hymel, et al., 2012; Menesini et al., 2011).

Provision of a Bullying Definition

Another way in which cyberbullying studies have differed from one another is whether a definition of bullying (or cyberbullying) is provided along with the measure or whether the word "bully" is mentioned at all. Many studies have utilized a measure of cyberbullying that does not provide a definition or use the word "bully" (see, e.g., Dempsey et al., 2009; Hay & Meldrum, 2010; Williams & Guerra, 2007), with the goal of avoiding the issue of labeling students as "bullies" or "victims" or of perhaps missing some participants whose experiences differ from the definition. Other studies have included a definition of bullying or cyberbullying, often in an attempt to mirror measurement of traditional bullying with the Olweus Bully/Victim Questionnaire (e.g., Dehue, Bolman, Völlink, & Pouwelse, 2012; Monks, Robinson, & Worlidge, 2012; Vandebosch & Van Cleemput, 2009).

The impact of providing a definition on prevalence rates of cyberbullying has received recent research attention.³ Ybarra et al. (2012) randomly assigned participants to complete one of four versions of a survey to measure cyberbullying victimization prevalence: The first included both a definition and the word "bully"; the second included only a definition; the third included only the word "bully"; and the final version contained neither a definition nor the word "bully." All groups then indicated the extent to which they experienced seven different forms of bullying. Results indicated that prevalence rates of bullying victimization were highest in the group that was presented with neither the definition nor the word "bully." Additionally, results were similar between the "bully"-term-only survey and the definition-only survey. Because relationships between cyberbullying and other variables might also vary based on inclusion of a definition of (cyber)bullying or the word "bully," this variable will also be included as a moderator in the meta-analysis.

Comeasurement of Traditional Bullying

One final measurement issue is whether a given study has also measured traditional bullying. Depending on the purpose of a given study, many have measured both cyberbullying and traditional bullying (e.g., Bauman & Pero, 2011; Dooley, Gradinger,

Strohmeier, Cross, & Spiel, 2010; Ybarra, Diener-West, & Leaf, 2007), whereas other studies have measured only cyberbullying (e.g., Goebert, Else, Matsu, Chung-Do, & Chang, 2011; Huang & Chou, 2010; MacDonald & Roberts-Pittman, 2010; Şahin, 2012). Because traditional bullying is occurring at higher rates than cyberbullying (Olweus, 2012, 2013), one potential issue is that, if a study measures only cyberbullying and not also traditional bullying, reports of the frequency of cyberbullying may be inflated. A possible reason is that participants may be drawing on their memory of experiences with all forms of bullying when responding to the measure of cyberbullying, and, without a place to report these experiences, some of these experiences may show up in the measure of cyberbullying (Gradinger et al., 2010; Kowalski & Limber, 2013). This measurement feature may also affect the prevalence of reported cyberbullying or cybervictimization.

The ideal way to examine the independent effects of cyberbullying over and above traditional bullying would be for studies to conduct a hierarchical regression analysis with traditional bullying entered in the first step and cyberbullying entered in the second step as predictors of an outcome. This procedure would allow researchers to examine the incremental variance accounted for by cyberbullying beyond that accounted for by traditional bullying. Given that few studies report these types of analyses, a meta-analysis of such an effect size was not possible, and we suggest that future research be conducted with such analyses. In the meta-analysis below, we treat co-measurement of traditional bullying as a categorical moderator to determine the extent to which including a measure of traditional bullying moderates the relationships between cyberbullying or cybervictimization and other variables.

Theoretical Background

A theoretical basis is essential not only for uncovering the influential factors involved in a cyberbullying event but also for designing assessment measures and interventions that effectively target personal and environmental factors involved in cyberbullying victimization and perpetration. As noted in previous reviews (e.g., Slonje, Smith, & Frisé, 2012), the cyberbullying literature to date lacks a solid theoretical foundation. Whereas several previous studies on (cyber)bullying have utilized social information processing (Crick & Dodge, 1994) or social cognitive (Bandura, 1986) theories to help organize and understand the phenomenon of (cyber)bullying, the general aggression model (GAM) may help us understand the personal and situational factors at play. This model provides a comprehensive framework that integrates domain-specific theories of aggression (Anderson & Bushman, 2002; see Figure 1), and it has been utilized in previous research on bullying behaviors (e.g., Gullone & Robertson, 2008; Vannucci et al., 2012). In this article, the GAM will be used to explain factors related to both victimization and perpetration, as victims and perpetrators are often one and the same person in cyberbullying situations (e.g., bully/victims). The GAM relies heavily on cogni-

³ In a seminal review article, Olweus (2013) discussed in extensive detail the issue of how cyberbullying should be defined and measured, particularly in relation to traditional bullying. Olweus (2013) suggested "it is necessary and beneficial to place cyberbullying in proper context (with traditional bullying) and to have a more realistic picture of its prevalence and nature" (p. 768).

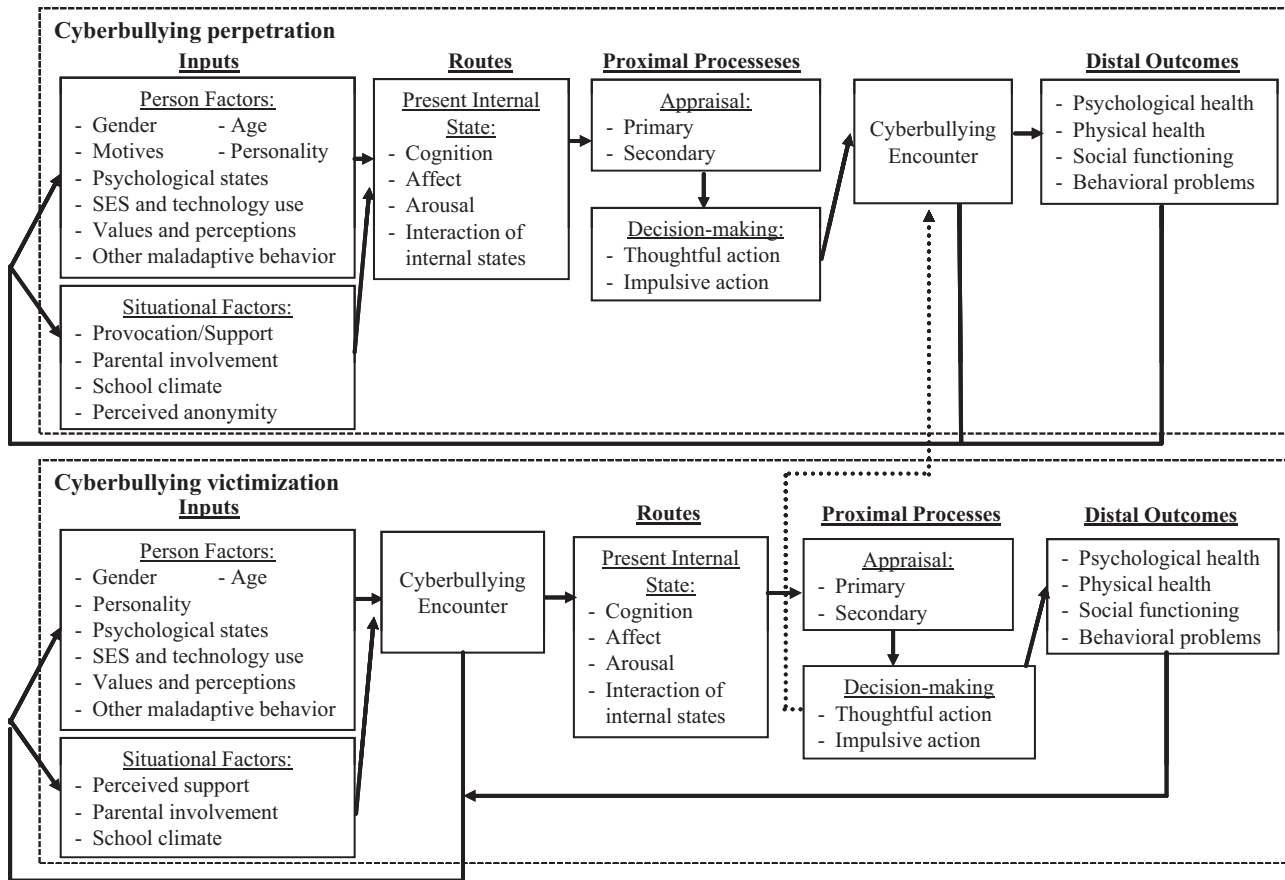


Figure 1. View of a cyberbullying encounter through the general aggression model. The dashed line indicates how a victim of cyberbullying might become a perpetrator of cyberbullying. SES = socioeconomic status.

tive knowledge structures (i.e., scripts and schemas) and centers around three areas of emphasis: person and situational inputs; cognitive, affective, and arousal routes that influence the present internal state; and the appraisal and decision-making processes that lead to outcome behaviors (Anderson & Bushman, 2002). In the sections that follow, each of these areas is discussed within the context of cyberbullying victimization and perpetration.

Knowledge Structures

Knowledge structures consist of associated information that has been stored in semantic memory. These structures encompass the scripts and schemas one depends on to understand and behaviorally navigate through daily situations. In an overarching sense, knowledge structures can be considered the personality characteristics that an individual brings to any given social situation (Anderson & Bushman, 2002). In a cyberbullying context, the parties involved have a number of different knowledge structures. Specifically, victims, perpetrators, and bystanders enter cyberbullying situations with varying backgrounds, experiences, attitudes, desires, personalities, and motives that intersect to determine the course of the interaction. These knowledge structures define the individual input variable of personality and help to determine situations toward which individuals will be drawn. Thus, knowl-

edge structures are the foundation upon which inputs in the GAM rest.

Inputs

Initially, the GAM focuses upon factors associated with the individual and the situation that influence aggressive behavior. Person factors include personality traits, attitudes, motives, gender, beliefs, values, long-term goals, behavioral scripts, and any other consistent characteristics the individual brings to the situation. Situational factors, on the other hand, are characteristics of the environment and include, but are not limited to, aggressive cues, provocation, sources of frustration, drugs, external sanctions, and incentives. Situational factors also include the degree to which the social situation restricts or offers an opportunity to act aggressively. Each of the aforementioned person and situational factors influences an individual's cognition, affect, and level of arousal, predisposing to aggressive behavior (Anderson & Bushman, 2002). In regard to cyberbullying, the technological media through which such actions are perpetrated present numerous situational factors that differ from traditional bullying and are essential to consider. Person and situational factors theorized to be inputs in perpetration and/or victimization (see Figure 1) of the GAM process for cyberbullying are described below.

Person Factor 1: Gender. Research on traditional bullying has consistently shown that boys engage in bullying to a greater degree than girls (Olweus & Limber, 2010), and the aggression is more often of a direct nature (whereas girls more frequently engage in indirect types of aggression; Dilmac, 2009). Cyberbullying is a form of indirect aggression, which might lead one to conclude that girls would be more likely than boys to experience cyberbullying as both victims and perpetrators. Although some research supports this hypothesis (e.g., Kowalski & Limber, 2007), other research has found no statistically significant difference between girls and boys in rates of cyberbullying perpetration or victimization (e.g., Hinduja & Patchin, 2008; Slonje & Smith, 2008; P. K. Smith et al., 2008; Ybarra & Mitchell, 2004a). Still other research finds that boys are more likely than girls to perpetrate cyberbullying, but that there are no gender differences in victimization rates between males and females (Li, 2006). Other studies have found that boys are more likely than girls to perpetrate cyberbullying, but girls are more likely to be the targets of cyberbullying (Sourander et al., 2010). One final group of investigators suggests that gender differences depend on the venue by which the cyberbullying is occurring; for example, girls seem to be targeted via e-mail more frequently than boys (Hinduja & Patchin, 2008), whereas boys are bullied through text messaging more often than girls (Slonje & Smith, 2008; see also Juvonen & Gross, 2008; P. K. Smith et al., 2008).

Person Factor 2: Age. Research on traditional bullying shows that prevalence rates of bullying peak during middle school, as youth work to establish their place in the social hierarchy (Varjas et al., 2009). Likewise, cyberbullying is particularly prevalent among middle school children (Kowalski, Limber, & Agatston, 2012); however, even among middle school children, there are developmental variations. For example, Williams and Guerra (2007) found that cyberbullying increases after fifth grade and peaks during eighth grade (see also Hinduja & Patchin, 2008). However, other researchers suggest that age differences depend on the method by which the cyberbullying occurs. Specifically, P. K. Smith et al. (2008) observed that text messaging, picture bullying, and instant messaging were less common with younger than older youth.

More recently, research has examined cyberbullying among college students (Kowalski, Giumetti, et al., 2012). In one study, Kowalski, Giumetti, et al. (2012) found that over 30% of college student respondents indicated that their first experience with cyberbullying was in college. Even including those who had been cyberbullied in middle and high school, 43% of the respondents indicated that the majority of the cyberbullying they had experienced had occurred during college.

Person Factor 3: Motives. Little research has examined people's motives for engaging in cyberbullying (Law, Shapka, Domene, & Gagné, 2012). However, the relationship between traditional bullying and cyberbullying discussed earlier suggests that some individuals may engage in cyberbullying as a way of retaliating for traditional bullying victimization (Dooley et al., 2009; Hemphill et al., 2012; Raskauskas & Stoltz, 2007) or previous involvement with cyberbullying as either victim or perpetrator (Dilmac, 2009; Kowalski, Morgan, & Limber, 2012). Others may engage in cyberbullying to demonstrate technological skill, for fun, or to feel powerful. Grading, Strohmeier, and Spiel (2012) found the most common motive was anger.

Person Factor 4: Personality. An obvious variable that may be related to the perpetration of cyberbullying is empathy. Ang and Goh (2010) distinguished cognitive empathy (i.e., the ability to understand the emotions of others) from affective empathy (i.e., the ability to experience and share the emotions of others). Among individuals with low affective empathy, both boys and girls with low cognitive empathy reported engaging in more cyberbullying behaviors than did those with high cognitive empathy. Among girls with high affective empathy, low and high levels of cognitive empathy resulted in similar levels of cyberbullying behaviors. Thus, the role of cognitive empathy appears to be important in predicting cyberbullying behaviors (see also Steffgen, König, Pfetsch, & Melzer, 2011). Another relevant personality trait is narcissism, a core feature of which is exploitativeness, or taking advantage of others for personal gain. This feature has been linked with both traditional bullying and cyberbullying perpetration (Ang, Tan, & Mansor, 2011; Fanti, Demetriou, & Hawa, 2012).

On the cyberbullying victimization side, several personality variables have been identified as possible predictors. For example, Hunt, Peters, and Rapee (2012) identified a negative relationship between social intelligence and both traditional victimization and cybervictimization (see also Schultze-Krumbholz & Scheithauer, 2009b). Additionally, a number of studies identified a positive association between hyperactivity (or features of attention-deficit/hyperactivity disorder) and cybervictimization (Dooley et al., 2010; Dooley, Shaw, & Cross, 2012; Feldman, 2011). A number of other personality variables may play a role in making an individual more susceptible to cyberbullying or cybervictimization, and we encourage future research that helps to uncover such variables.

Person Factor 5: Psychological states. Individuals who perpetrate and are victims of cyberbullying also score higher in depression and anxiety and lower on measures of self-esteem, perhaps accounting for the lower academic performance of those involved with cyberbullying (Kowalski & Limber, 2013; Kowalski, Limber, & Agatston, 2012). Compared to youth not involved with Internet harassment, online aggressors have lower school commitment, dislike school more, and report lower grades (Ybarra & Mitchell, 2004a; see also Kowalski & Limber, 2013). However, although Beran and Li (2007) did not find evidence that perpetrators of cyberbullying missed school more or reported lower grades than did those not involved with cyberbullying, they did find that perpetrators reported problems with concentration. One issue with these correlations, however, is that, whereas problems such as depression and anxiety may be predictors of involvement in cyberbullying, they may also be consequences of the behavior.

Person Factor 6: Socioeconomic status and technology use. Isolated studies have examined additional predictors of cyberbullying perpetration, including socioeconomic status (SES) and standards of Internet/technology use. Wang, Iannotti, and Nansel (2009) found a positive relationship between SES and cyberbullying perpetration. An obvious explanation for this is that individuals from higher SES levels typically have more frequent access to technology. Not surprisingly, perceived technological expertise also bears a direct relationship with cyberbullying perpetration (Walrave & Heirman, 2011; Ybarra & Mitchell, 2004a). This latter finding is likely confounded with Internet use. Individuals who spend more time on the Internet will (a) develop greater expertise with the use of technology and (b) probabilistically be more likely to become involved with cyberbullying as victim or perpetrator

due to the time spent online (Didden et al., 2009). Support for this was found by Ybarra and Mitchell who noted that almost 40% of cyberbully/victims reported spending at least 3 hours a day online, whereas individuals not involved with online harassment (11.1%) spent less time (see also Twyman, Saylor, Taylor, & Comeaux, 2010). Additionally, several recent studies have found a link between cyberbullying victimization and perpetration and risky online behaviors (e.g., Bauman, 2010; Erdur-Baker, 2010; Walrave & Heirman, 2011). Individuals who reported giving out personal information to unknown people online or giving their password to a friend were more likely to be victims and perpetrators of cyberbullying.

Person Factor 7: Values and perceptions. Williams and Guerra (2007) observed a positive relationship between participants' moral approval of bullying and their involvement in perpetrating not just cyberbullying but also physical and verbal bullying. Walrave and Heirman (2011) observed that individuals who perpetuate cyberbullying also tend to minimize the impact of their behavior on others. As with other types of aggressive behavior, perpetrators may engage in moral disengagement whereby they reframe their aggressive actions as more benign in intent, as less harmful in their consequences, or as emanating from reprehensible conduct on the part of the victim (Almeida, Correia, Marinho, & Garcia, 2012; Bandura, 1999; Bandura, Barbaranelli, Caprara, & Pastorelli, 1996; Bauman, 2010; Lazuras, Barkoukis, Ourda, & Tsorbatzoudis, 2013). Previous research with traditional bullying has found that perpetrators are more likely than victims or those not involved in bullying to engage in moral disengagement (Menesini et al., 2003). Thus, to the extent that individuals have a tendency to morally disengage, one would expect them to be more likely to perpetrate cyberbullying as well.

Extending Bandura's (1986) placement of moral disengagement within a social context, Bauman (2010) noted that "the technological world in which youth socialize may be a social context that promotes moral disengagement" (p. 808). In one of the few studies to date to examine moral disengagement and cyberbullying, Pornari and Wood (2010) found that, indeed, moral disengagement positively predicted cyberbullying perpetration but not victimization. High levels of moral justification increased the likelihood that participants reported engaging in cyberbullying, whereas high levels of hostile attributional bias increased the odds of being a victim of cyberbullying. Almeida et al. (2012) found that moral justification was related to cyberbullying perpetration, but only among youth in seventh through ninth grades. For youth in tenth through 12th grades, moral justification was not differentially related to victim or perpetrator status.

Values and perceptions influencing victimization warrant additional research attention. Just as perpetrators may justify their own actions by making negative aspersions to the character of the victim, so, too, victims may come to believe that they deserve their victimization status. This justification then alters the knowledge script with which the victim approaches social interactions.

Person Factor 8: Other maladaptive behavior. Individuals who engage in cyberbullying also more frequently engage in other maladaptive behaviors than do those not involved with cyberbullying. For example, in one study, online bully/victims and bullies reported significantly more frequent alcohol and tobacco use within the previous year than did individuals not involved with Internet harassment (Ybarra & Mitchell, 2004a). Ybarra and

Mitchell also found that online bully/victims and bullies reported more frequent problem behaviors including purposely damaging property, experiencing police contact, physically assaulting a non-family member, and taking something that did not belong to them within the past year than did victims and individuals not involved in Internet harassment. Truancy, poor grades, and fighting have been linked to cybervictimization (Hinduja & Patchin, 2008).

Situational Factor 1: Provocation and perceived support. Provocation can take a number of different forms including insults, verbal and/or physical aggression, and bullying. Thus, given the pattern of relationships observed with moral justification and the perpetration of cyberbullying, it is hardly surprising that involvement in traditional bullying also appears to be related to involvement in cyberbullying (Hemphill et al., 2012; Rivers & Noret, 2010; Twyman et al., 2010; Vandebosch & Van Cleemput, 2009; Ybarra & Mitchell, 2004a). In a mapping of the relationship between traditional bullying and cyberbullying with over 4,500 sixth through 12th graders, Kowalski, Morgan, and Limber (2012) found that higher rates of involvement in traditional bullying as victim and perpetrator were tied to higher rates of involvement in cyberbullying as victim and perpetrator, respectively. Of importance, the estimates in the path analyses hinted at involvement in traditional bullying more often preceding involvement in cyberbullying than vice versa.

Conversely, perceived support from peers and others may be negatively associated with cyberbullying perpetration and victimization. Fanti et al. (2012) found that ratings of social support from friends were associated with a decreased likelihood of engaging in cyberbullying (see also Calvete, Orue, Estévez, Villardón, & Padilla, 2010). Support may also play a buffering role on the victimization side, as several studies have found that perceptions of support from peers are negatively related to reports of cybervictimization (Ubertini, 2011; Williams & Guerra, 2007).

Situational Factor 2: Parental involvement. An additional situational variable is parental involvement. Compared to those not involved in Internet harassment, people who engaged in Internet harassment reported weaker emotional bonds with their parents (defined as how well they get along, caregiver trust, discussing problems with caregiver when they are sad or in trouble, and frequency of having fun together), more frequent discipline by their parents, and less frequent parental monitoring of online activities (Ybarra & Mitchell, 2004a). Similar findings were reported by Wang et al. (2009), who found an inverse relationship between levels of parental support and involvement in cyberbullying as a perpetrator. Conversely, the prospect of punishment from parents acts as a deterrent to cyberbullying perpetration (Hinduja & Patchin, 2013).

On the cybervictimization side, researchers have identified a negative relationship between parental control of technology and cybervictimization (Aoyama, Utsumi, & Hasegawa, 2012). Additionally, others have found that parental discussions about online behavior and knowledge of the general whereabouts of their children are associated with less frequent cybervictimization (Taiariol, 2010; Wade & Beran, 2011).

Situational Factor 3: School climate. Perceived support does not have to originate just with parents. Williams and Guerra (2007) found that individuals who perceive themselves as connected to their school and who perceive the climate as being trusting, fair, and pleasant report less perpetration of verbal and physical bully-

ing as well as cyberbullying (see also Calmaestra-Villen, 2011; Cappadocia, 2009; Taiariol, 2010). Inhospitable school climates can create frustration and discomfort among some students, and in response to these feelings, students may act aggressively through cyberbullying. Likewise, because of the greater propensity for cyberbullying perpetration, negative school climates may increase susceptibility to online victimization, particularly among students.

Situational Factor 4: Perceived anonymity. One additional input factor related to the perpetration of cyberbullying is perceived anonymity. Kowalski and Limber (2007) observed that just under 50% of their middle school respondents who had been victims of cyberbullying did not know the identity of the perpetrator. Ybarra, Diener-West, and Leaf (2007) noted that 12.6% of victims of frequent Internet harassment did not know the identity of the person who was harassing them. As noted earlier, perceived anonymity on the part of perpetrators opens up the pool of individuals who might consider engaging in cyberbullying. Additionally, perceived anonymity leads to a disinhibition effect that leads people to say and do things anonymously that they would not consider saying and doing in face-to-face interactions.

Routes

According to the GAM, the person and situational inputs discussed above influence social, cognitive, emotional, and behavioral outcomes via three direct routes: cognition, affect, and arousal. This process is consistent with the cyberbullying perpetration GAM (see Figure 1); however, in the GAM for cybervictimization, these three routes are experienced after the occurrence of a cyberbullying encounter. This intermediary step is introduced because, whereas both person and situational factors can increase an individual's susceptibility to becoming victimized, until the cyberbullying event has occurred, the internal states of cyberbullying victims will not be influenced. Nevertheless, we posit that the same three internal states serve as routes for both cyberbullying GAM models (see Anderson & Bushman, 2002).

In both the cyberbullying perpetration and victimization GAMs, after taking into account person and situational inputs and internal states, an individual then engages in appraisal and decision-making processes. This stage of the GAM is labeled as proximal processes in Figure 1.

Proximal Processes

As stated by Anderson and Bushman (2002, p. 40), "Results from the inputs enter into the appraisal and decision processes through their effects on cognition, affect, and arousal." These processes can be either short term (i.e., proximal) or long term (i.e., distal). The proximal processes stage in the GAM focuses on appraisal and decision-making processes within a cyberbullying situation and differs from the longer term negative outcomes researchers typically think of when the word outcome is used (e.g., depression, anxiety, behavioral problems). These longer term negative behavioral and psychological outcomes may occur if an individual is exposed to cyberbullying encounters repeatedly as a victim or perpetrator, to be discussed further in the Distal Outcomes section below. The proximal processes included here consist of appraisal and decision-making processes, both automatic and controlled, that influence behavioral decisions.

After undergoing an appraisal process, individuals engage in either thoughtful or impulsive responses. For instance, if a cyberbullying encounter is perceived as stressful on the basis of the internal state of the victim, and an individual does not have sufficient resources (cognitive, emotional, or otherwise) to deal with the situation, he or she may then engage in an impulsive (i.e., automatic) response to the situation, such as sending a cyberbullying message back to the perpetrator. If, on the other hand, the individual feels there are sufficient resources available, he or she may give a more thoughtful (i.e., controlled) behavioral response. As such, differences in reappraisal strategies may account for variations in behavioral responses. That is, it may help explain why some individuals do nothing or call for help when a person cyberbullies them, whereas others respond by engaging in cyberbullying in response to victimization. The same appraisal and decision-making stages also apply to the cyberbullying perpetration GAM. Noteworthy, the original GAM posited by Anderson and Bushman (2002) does not consider more introspective actions and ways of coping with the situation, as well as more distal outcomes of the cyberbullying encounter. Obtaining a broader understanding of the appraisal process may provide insight into additional outcomes that may be associated with a cyberbullying encounter (such as seclusion or self-inflicted harm). Cyberbullying researchers have begun to examine some of these more distal outcomes, as is discussed below.

Distal Outcomes

The experience of traditional bullying and cyberbullying is associated with a number of negative outcomes for victims and perpetrators in regard to psychological and physical health, social functioning, and behavior.⁴ Studies have linked cyberbullying involvement as victim and/or perpetrator to tobacco, alcohol, and drug use (Ybarra & Mitchell, 2004a); mental health symptomatology of anxiety and depression (Didden et al., 2009; Perren, Dooley, Shaw, & Cross, 2010; Ybarra & Mitchell, 2004a); decreased self-esteem and self-worth (Didden et al., 2009); low self-control (Vazsonyi, Machackova, Ševčíková, Šmahel, & Cerna, 2012); suicidal ideation (Hinduja & Patchin, 2010; Schenk & Fremouw, 2012); poor physical health (Kowalski & Limber, 2013); increased likelihood of self-injury (Kessel Schneider et al., 2012); and loneliness (Şahin, 2012).

Additionally, victims of cyberbullying are much more likely than nonvictims to be victims of traditional bullying (Hinduja & Patchin, 2008; Katzer et al., 2009; Kowalski, Morgan, & Limber, 2012). Ybarra and Mitchell (2004b) found that aggressor/targets of cyberbullying tend to have poor emotional bonds with their parents. Still other research found that bully/victims of cyberbullying are much more likely to think that it is acceptable to retaliate after being cyberbullied than are nonvictims (O'Brennan et al., 2009).

Finally, both victims and perpetrators of cyberbullying are more likely than nonvictims to experience impaired performance at

⁴ We have used the term "outcomes" to refer to behavioral and psychological phenomena that are traditionally thought to result from perpetrating cyberbullying or cybervictimization. However, it should be noted that because all of the studies included in the meta-analysis were cross-sectional, no causal claims can be made; rather, the variables are simply correlated.

school and in the workplace (Holfeld & Grabe, 2012; Kowalski, Limber, & Agatston, 2012; Vazsonyi et al., 2012). In a school setting, victims and perpetrators of cyberbullying are more likely to be absent from school, receive low grades, and experience poor concentration (Beran & Li, 2005, 2007; Vazsonyi et al., 2012). Ybarra, Diener-West, and Leaf (2007) found that students being harassed online also tended to have more detentions and suspensions, incidences of truancy, and weapon carrying.

Differing Paths by Bully/Victim Status

The path that an individual takes through the stages of the GAM may differ depending on whether he or she is a victim or perpetrator, as noted in Figure 1. However, one of the useful things about applying this model to cyberbullying is that it can help to explain how a cybervictim can become a cyberbully (as indicated by the dashed line in the figure).

Cyberperpetration. The path to a cyberbullying encounter for a perpetrator starts with person and situational factors. These factors affect the present internal state of the individual, perhaps activating hostile thoughts, negative affect, and heightened arousal. The present internal state is also linked with appraisal and decision processes. For example, the individual may appraise the situation as one in which an aggressive response is appropriate and decide to engage in an impulsive action by quickly sending a nasty text message to another individual. Alternatively, if the individual appraises the situation as not demanding an immediate, impulsive action, he or she may decide that a more thoughtful action is appropriate and decide to create a webpage that berates another individual. This cyberbullying behavior can feed into the person and situational inputs, perhaps reinforcing an aggressive personality, and provoking another individual to engage in a similar encounter. Additionally, engaging in these types of encounters over time may be linked with distal outcomes, such as decreased popularity among one's peer group or decreased performance in school, which can in turn affect individual and situational factors (e.g., by resulting in maladaptive behavior such as drug use or influencing one's values).

Cybervictimization. The path to a cyberbullying encounter for a victim also starts with person and situational factors. This combination of person and situational factors might predispose a young boy, for example, to become a cybervictim. After he receives a cyberbullying message, this encounter creates a number of possible internal states, such as worried thoughts, negative affect, and heightened arousal, and the cyberbullying encounter can also influence person and situational factors (e.g., higher anxiety and a more negative school climate). The present internal state is linked with appraisal and decision processes, and perceptions of the encounter as stressful and beyond personal control may lead to an impulsive action to drink alcohol or skip school or a more controlled response, such as plotting revenge against the original perpetrator in a face-to-face context. The victim's response can then feed back into person and situational factors (e.g., previous engagement in maladaptive behavior and provocation, respectively), which may affect future encounters with cyberbullying perpetration or cybervictimization.

Whereas the GAM provides a viable theoretical foundation for the cyberbullying perpetration and victimization processes, studies examining the relations between cyberbullying and both inputs and

outcomes have reported a range of correlations for each effect (e.g., $r = .03$ to $r = .51$ for the relationship between cyberbullying victimization and depression), suggesting that results may be sample specific. Therefore, to further summarize extant cyberbullying research, we conducted a series of meta-analyses on the available studies, as described below.

The Current Study

In reviewing the literature on cyberbullying, we identified numerous correlates of cyberbullying perpetration (CB), including 10 risk factors that might demonstrate a positive relationship with CB (e.g., normative beliefs about aggression and risky online behavior; see Table 2 for a complete list), five protective factors that might be negatively related to CB (including empathy and parental monitoring), and seven variables that might be thought of as outcomes of cyberbullying perpetration (including academic achievement and depression). Additionally, we identified a number of correlates of cyberbullying victimization (CV), including nine risk factors that might be positively related to CV (including hyperactivity and moral disengagement; see Table 3 for a complete list), seven variables that might be thought of as protective factors, in that they will be negatively related to CV (including empathy and parental monitoring), and 13 variables that might be thought of as outcomes of experiencing CV (including drug and alcohol use and suicidal ideation). Therefore, the first research question to be addressed by the meta-analysis pertains to the strength of the relationships between each of the behavioral and psychological variables identified above and CB or CV.

In addition to exploring the constellation of behavioral and psychological correlates of CB/CV, we sought to understand whether these relationships are moderated by measurement features or sample characteristics. We asked in particular, whether the size of CB/CV relationships is affected by the publication status of the manuscript; the time parameter provided with the measure of CB/CV; grade level, gender composition, or country of origin of the sample; whether CB/CV is measured with one item versus multiple items; whether a definition for bullying/cyberbullying or the word "bully" is provided; and whether traditional bullying/victimization is also measured.

Meta-Analysis Method

Literature Search

Four methods were used to search for relevant studies. First, we performed searches of 14 databases: Academic Search Complete, Business Source Complete, Communication & Mass Media Complete, Criminal Justice Abstracts, Education Research Complete, Family Studies Abstracts, HealthSource: Nursing/Academic Edition, Human Resources Abstracts, MEDLINE, PsycARTICLES, PsycINFO, SocINDEX, Social Sciences Full Text, Pro-Quest Dissertations and Theses Full-text, and Web of Science. The search terms included variants of online behavior (cyber* or Internet or net or web* or online or chat or electronic), and variations on perpetration or victimization (harass* or bully* or victim* or perpetr*). We also used the following limiters to exclude any studies dealing with stalking or sexual victimization (NOT sex*, NOT stalk*). Additionally, in a separate search, we added terms for

Table 2
Results of the Primary Meta-Analyses for Cyberbullying Perpetration

Measure	<i>N</i>	<i>k</i>	<i>r</i> ⁺	CI [95%]	<i>Q</i>	<i>I</i> ²
Risk factors						
1. Cybervictimization	147,434	91	0.51	[0.48, 0.55]	7,732.52***	98.8%
2. Traditional bullying	136,105	70	0.45	[0.41, 0.48]	4,952.13***	98.6%
3. Traditional victimization	126,264	61	0.21	[0.18, 0.23]	987.41***	93.8%
4. Age	52,105	31	0.05	[0.03, 0.08]	203.01***	84.7%
5. Frequency of Internet use	6,764	12	0.20	[0.12, 0.28]	118.35***	89.9%
6. Moral disengagement	3,549	7	0.27	[0.20, 0.34]	20.81**	66.4%
7. NOBAG	6,454	7	0.37	[0.24, 0.48]	145.08***	95.2%
8. Anger	5,088	5	0.20	[0.17, 0.22]	13.86**	63.9%
9. Risky online behavior	3,114	5	0.23	[0.20, 0.26]	42.06***	88.1%
10. Narcissism	2,126	3	0.22	[0.18, 0.26]	0.56	0.0%
Protective factors						
11. Empathy	5,031	5	-0.12	[-0.14, -0.09]	0.78	0.0%
12. Parental monitoring	1,567	5	-0.07	[-0.13, -0.03]	17.86**	72.0%
13. Perceived support	8,619	5	-0.04	[-0.06, -0.02]	11.30*	55.8%
14. School climate	7,079	4	-0.12	[-0.14, -0.10]	3.93	0.0%
15. School safety	3,486	4	-0.13	[-0.16, -0.10]	5.55	27.9%
Outcomes						
16. Depression	19,820	16	0.15	[0.11, 0.19]	101.48***	84.2%
17. Self-esteem	21,342	15	-0.10	[-0.13, -0.07]	51.61***	70.9%
18. Anxiety	5,295	8	0.16	[0.07, 0.25]	64.87***	87.7%
19. Loneliness	18,012	8	0.09	[0.04, 0.13]	53.37***	85.0%
20. Drug and alcohol use	6,801	6	0.27	[0.22, 0.31]	18.27**	67.2%
21. Academic achievement	8,155	6	-0.09	[-0.18, -0.01]	83.45***	92.8%
22. Life satisfaction	3,417	3	-0.11	[-0.14, -0.08]	16.02***	81.3%

Note. Fixed effects analyses are reported for analyses with $k < 5$ effect sizes, whereas those with $k > 5$ are based on random effects analysis. r^+ = observed correlation corrected for sampling error; k = number of independent associations; CI = confidence interval; Q = Cochran's (1954) measure of homogeneity; I^2 = Higgins and Thompson's (2002) measure of heterogeneity; NOBAG = normative beliefs about aggression.

* $p < .05$. ** $p < .01$. *** $p < .001$.

various outcomes of interest (depress* or esteem* or anxi* or lonel* or satis* or stress or somatic or symptom* or health). Second, we searched the reference lists of existing reviews of cyberbullying (e.g., Slonje, Smith, & Frisé, 2013; Tokunaga, 2010; von Marées & Petermann, 2012). Third, we searched the in-press or online first sections of the following journals: *Aggressive Behavior*; *British Journal of Developmental Psychology*; *Computers in Human Behavior*; *Cyberpsychology, Behavior, and Social Networking*; *Developmental Psychology*; *European Journal of Developmental Psychology*; *Journal of Adolescence*; *Journal of Adolescent Health*; *Journal of School Psychology*; *Journal of School Violence*; *Journal of Youth and Adolescence*; *New Media & Society*; *School Psychology International*; *School Psychology Quarterly*; *School Psychology Review*. Fourth and finally, we contacted active researchers for unpublished studies or conference presentations. We identified a total of 1,365 studies in the initial search.

Inclusion and Exclusion Criteria

To be included in this meta-analysis, studies had to meet the following criteria: (a) the article must have been an empirical study (i.e., review or conceptual articles, articles reporting the results of an intervention, and qualitative studies were excluded); (b) it must have included a self-report measure of CB or CV and a measure of one of the predictors or outcomes mentioned below; (c) CB or CV must have been measured with at least one item on an ordinal/interval scale (i.e., studies with "yes/no" measures were excluded); (d) the measure must have asked participants to report general experiences with bullying in the past (rather than in regard to a

specific incident or a hypothetical situation); (e) participants in the study must have been students in middle school, high school, or college (rather than educators or parents). We did not restrict the time range in which studies had to be conducted, and we included studies that had been published or were in-press as of October 2012.

Pearson's r was used as a measure of effect size to indicate both the direction and strength of the relationships between CB/CV and predictors/outcomes. CB/CV measures included Internet harassment, text message bullying/victimization, measures of CB/CV adapted directly from traditional bullying measures (e.g., Olweus Bully/Victim Questionnaire; see Katzer et al., 2009; Kowalski & Limber, 2007; Slonje et al., 2012), and many new measures of CB/CV (e.g., the Cyberbullying Questionnaire of Ang & Goh, 2010; the Cyberbullying Scale of Erdur-Baker & Kavşut, 2007; the Personal Experiences Checklist of Hunt et al., 2012; the Cyberbully Survey of Li, 2007b; the Cyberbullying Scale of Menesini et al., 2011; the Berlin Cyberbullying/Cybervictimization Questionnaire of Schultze-Krumbholz & Scheithauer, 2009a; and the Youth-Reported Internet Harassment Survey of Ybarra, Diener-West, & Leaf, 2007). We obtained correlations of CB/CV with a variety of variables including risk factors (e.g., anger, moral disengagement, normative beliefs about aggression, frequency of Internet use, risky online behavior), protective factors (e.g., parental monitoring, school climate, school safety), cyberbullying outcomes (e.g., academic achievement, anxiety, depression, drug/alcohol use, life satisfaction, and self-esteem), demographic variables (e.g., gender, country of origin, school grade level), and

Table 3
Results of the Primary Meta-Analyses for Cyberbullying Victimization

Measure	Cyberbullying victimization					
	<i>N</i>	<i>k</i>	<i>r</i> ⁺	CI [95%]	<i>Q</i>	<i>I</i> ²
Risk factors						
23. Traditional victimization	164,280	81	0.40	[0.37, 0.42]	2,936.01***	97.2%
24. Traditional bullying	128,642	61	0.25	[0.23, 0.28]	1,100.04***	94.5%
25. Age	52,782	32	0.01	[-0.01, 0.04]	180.96**	82.3%
26. Frequency of Internet use	5,427	12	0.17	[0.11, 0.22]	33.96**	64.7%
27. Social anxiety	13,408	9	0.15	[0.10, 0.19]	34.01***	73.5%
28. Moral disengagement	2,655	5	0.15	[0.11, 0.18]	6.89	27.4%
29. Risky online behavior	3,300	5	0.18	[0.14, 0.21]	44.29***	88.7%
30. Anger	3,211	4	0.20	[0.16, 0.23]	0.63	0.0%
31. Hyperactivity	10,560	3	0.11	[0.09, 0.13]	0.28	0.0%
Protective factors						
32. Social intelligence	3,849	6	-0.08	[-0.15, -0.02]	14.54*	58.7%
33. School safety	3,975	5	-0.22	[-0.24, -0.19]	5.85	14.5%
34. Parental monitoring	2,771	5	-0.06	[-0.10, -0.02]	15.16**	67.0%
35. Perceived support	5,569	5	-0.08	[-0.11, -0.06]	16.29**	69.3%
36. Empathy	5,928	4	0.02	[-0.01, 0.04]	15.92**	74.9%
37. School climate	7,079	4	-0.11	[-0.14, -0.09]	7.61	47.4%
38. Parental control of technology	1,751	3	-0.01	[-0.06, 0.04]	8.54*	64.9%
Outcomes						
39. Depression	55,929	30	0.24	[0.21, 0.27]	236.15***	87.3%
40. Self-esteem	29,201	21	-0.17	[-0.21, -0.13]	206.36***	89.8%
41. Anxiety	7,450	14	0.24	[0.18, 0.31]	97.37***	85.6%
42. Academic achievement	9,118	9	-0.06	[-0.13, 0.01]	79.51***	88.7%
43. Loneliness	16,653	8	0.24	[0.15, 0.33]	174.35***	95.4%
44. Life satisfaction	5,315	7	-0.21	[-0.28, -0.14]	35.78***	78.8%
45. Drug and alcohol use	5,975	6	0.15	[0.08, 0.21]	28.25***	80.4%
46. Conduct problems	11,234	4	0.19	[0.18, 0.21]	3.71	0.0%
47. Emotional problems	9,614	3	0.18	[0.16, 0.20]	1.54	0.0%
48. Prosocial behaviors	10,560	3	-0.05	[-0.06, -0.03]	8.01*	62.5%
49. Somatic symptoms	2,354	3	0.19	[0.15, 0.23]	9.78**	69.3%
50. Stress	1,519	3	0.34	[0.29, 0.38]	23.58***	87.3%
51. Suicidal ideation	2,995	3	0.27	[0.24, 0.31]	11.98**	75.0%

Note. Fixed effects analyses are reported for analyses with $k < 5$ effect sizes, whereas those with $k > 5$ are based on random effects analysis. r^+ = observed correlation corrected for sampling error; k = number of independent associations; CI = confidence interval; Q = Cochran's (1954) measure of homogeneity; I^2 = Higgins and Thompson's (2002) measure of heterogeneity.

* $p < .05$. ** $p < .01$. *** $p < .001$.

involvement in traditional forms of bullying perpetration or victimization (TB and TV, respectively).

Sample of Studies

After coding the studies meeting the inclusion criteria (i.e., 131 studies), we created an independent set of effect sizes, ensuring that each correlation from a given sample was represented only once in the analysis. For longitudinal studies that reported correlations among study variables for several different measurement occasions, we took the arithmetic mean of the correlations across all years reported. Therefore, because all of the included studies were cross-sectional, results of the meta-analysis are best thought of as associations, rather than causal claims. Additionally, to avoid undue influence, findings that were reported across multiple publications were included only once within the analysis. This resulted in 137 unique data sets providing 736 independent effect sizes. Out of the 131 papers, 102 (77.9%) were published journal articles, 20 (15.3%) were unpublished master's theses or doctoral dissertations, 7 (5.3%) were book chapters, and 2 (1.5%) were unpublished data sets that were provided by study authors. See the

References section for a list of the studies used in the meta-analysis.

Coding of Studies

We coded the following pieces of information from each paper identified for inclusion in the meta-analysis: effect sizes, sample size, the number of items in each measure, and the reliability of each measure. Additionally, based on prior research on CB, the following moderator variables were also coded for each study: percent of sample that was female (as a continuous variable); publication status (published vs. unpublished); school grade level of the sample (middle school only, middle and high school, high school only, college); country of origin for the sample (North America vs. Europe/Australia vs. Asia); reporting time frame provided with CB/CV measurement (none provided; within the previous 3 months; more than 3 months ago); whether the measure of CB/CV contained a single item or multiple items; whether a CB definition or the word "bully" was provided with the measure of CB/CV; and, finally, whether TB or TV was also measured. Whereas many studies reported using a multi-item measure to

assess CB/CV, it was clear upon further investigation that in some cases only one of these items measured CB/CV prevalence (i.e., other items assessed constructs such as the venue through which CB occurred or who perpetrated the CB). Therefore, we coded studies that utilized a single item to assess the frequency of CB/CV behavior as utilizing single-item measures and those containing more than one item as employing multi-item measures.

A handful of studies did not indicate the specific mean age of the sample or the number of females in the sample, and so these data fields were left blank. In the final meta-analytic data set, the total amount of data missing on moderator variables was minimal (0.7%). Thus, we dealt with missing data by using listwise deletion in the moderator analyses (Pigott, 2009).

All articles were coded by the second author of this article. In addition, a random sample of 42 studies (i.e., 33% of the studies) was coded for the moderator variables outlined above by the third author in order to determine interrater agreement. Interrater agreement (κ) ranged from .70 to 1.00, with the average $\kappa = .92$. In cases where ratings were not in agreement, the two raters discussed the articles and came to consensus.

Meta-Analytic Procedure

We conducted the meta-analysis using effect sizes that were transformed using Fisher's Z_r and using study weights with $\omega = n - 3$ (see Lipsey & Wilson, 2001). Effect sizes were then transformed back into correlations when reporting the results of the analyses for ease of interpretation. The analyses were completed in SPSS, and we utilized the SPSS macros provided by Daniel Wilson for computing the mean effect size and examining moderators (see Lipsey & Wilson, 2001, Appendix D). Prior to conducting the main analyses, we checked for outliers on effect size variables. No statistical outliers were found on the effect size variables, so the full data set was used in subsequent analyses.

For the effect size and moderator analyses, we used a mixed-effects model because we assumed that the variance beyond participant-level sampling error was composed partly of identifiable factors (i.e., the identified moderators above) and partly of random sources that could not be identified (Lipsey & Wilson, 2001). Additionally, researchers have demonstrated that meta-analyses conducted with fixed effects models tend to make considerably more Type I errors than if the analysis had been run with a random effects model (of which mixed effects models are a member; Hunter & Schmidt, 2004). Additionally, the confidence intervals for the mean effect size estimates are likely to be too narrow with fixed effects models, thus exaggerating the level of accuracy in the results (Hunter & Schmidt, 2004). However, results of random effects meta-analysis are reliable only when the number of independent samples is greater than five (Hedges & Vevea, 1998). Therefore, a fixed effects model was utilized for effect sizes based on five or fewer samples. In estimating the random effects variance component for the mixed-effects model when conducting moderator analyses, we used the restricted maximum likelihood method, as this method of estimation typically provides more accurate estimates than other commonly used approaches (Lipsey & Wilson, 2001; Viechtbauer, 2005).

The first step in the meta-analyses involved calculating weighted mean effect sizes with 95% confidence intervals and testing for homogeneity of effect size distributions. Then, we

conducted a series of moderator analyses to determine how effect sizes might differ depending on a predetermined set of study characteristics (as outlined above). We used the SPSS macros and formulas from Lipsey and Wilson (2001) to test the significance of the categorical moderators using an analog to analysis of variance and weighted regression analysis to test the significance of the continuous moderator variable (i.e., proportion of females in the sample).

Meta-Analysis Results

Tables 2 and 3 display mean weighted effect sizes (r^+), sample size (N), number of independent correlation coefficients (k), and total homogeneity statistics (Q and I^2) for predictor/outcome relationships with CB and CV. Additionally, visual displays of effect sizes can be seen in Figures 2 and 3 as forest plots. The results can be interpreted with the aid of Cohen's (1992) guidelines for correlations (.10 = small or weak; .30 = medium or moderate; .50 = large or strong). As seen in Table 2, experiencing CV strongly positively related to being a perpetrator of CB ($r = .51$). Additionally, being a perpetrator of bullying in traditional ways (e.g., face-to-face in school or other contexts) was moderately positively related to being a perpetrator of CB ($r = .45$), as suggested by several previous researchers (e.g., Kowalski, Morgan, & Limber, 2012), but CB had a smaller relationship with traditional victimization ($r = .21$). Other moderately (or near moderately) sized relationships were uncovered as predictors of engagement in CB, including normative beliefs about aggression ($r = .37$) and moral disengagement ($r = .27$). Small positive relationships were found for risky online behavior ($r = .23$), narcissism ($r = .22$), frequency of Internet use ($r = .20$), and anger ($r = .20$). Small negative relationships were found between CB perpetration and school safety ($r = -.13$), empathy ($r = -.12$), school climate ($r = -.12$), and parental monitoring ($r = -.07$), highlighting the small, but significant protective role of each of these variables. Finally, results indicate that there was a very small negative relationship between CB perpetration and perceived support ($r = -.04$).

In terms of outcomes, being a perpetrator of CB was nearly moderately associated with drug and alcohol use ($r = .27$).⁵ Somewhat smaller relationships were found for anxiety ($r = .16$) and depression ($r = .15$). Perpetrators of CB were also more likely to report low life satisfaction ($r = -.11$), self-esteem ($r = -.10$), and academic achievement ($r = -.09$) and higher levels of loneliness ($r = .09$), but each of these relationships was small in magnitude. Somewhat surprisingly, there was only a very weak

⁵ Because traditional bullying and cyberbullying co-occur for some individuals, although certainly not all, one issue that researchers must address is the extent to which negative effects purported to result from cyberbullying are, indeed, attributable to cyberbullying and not to involvement with traditional bullying. Olweus (2012, p. 534) summed up this issue well when he stated, "Reporting about or researching negative effects of cyberbullying should not be done without taking the possible, co-existing negative effects of traditional bullying into account in one way or another. And if the research is focused on bullying, it is quite essential to study the phenomenon in a context of bullying (and not without context or in a context of being victimized or exposed to negative or aggressive behaviour more generally)." One way to determine the unique effects of cyberbullying above and beyond traditional bullying is to conduct hierarchical linear regressions on data sets that measure involvement in both types of bullying.

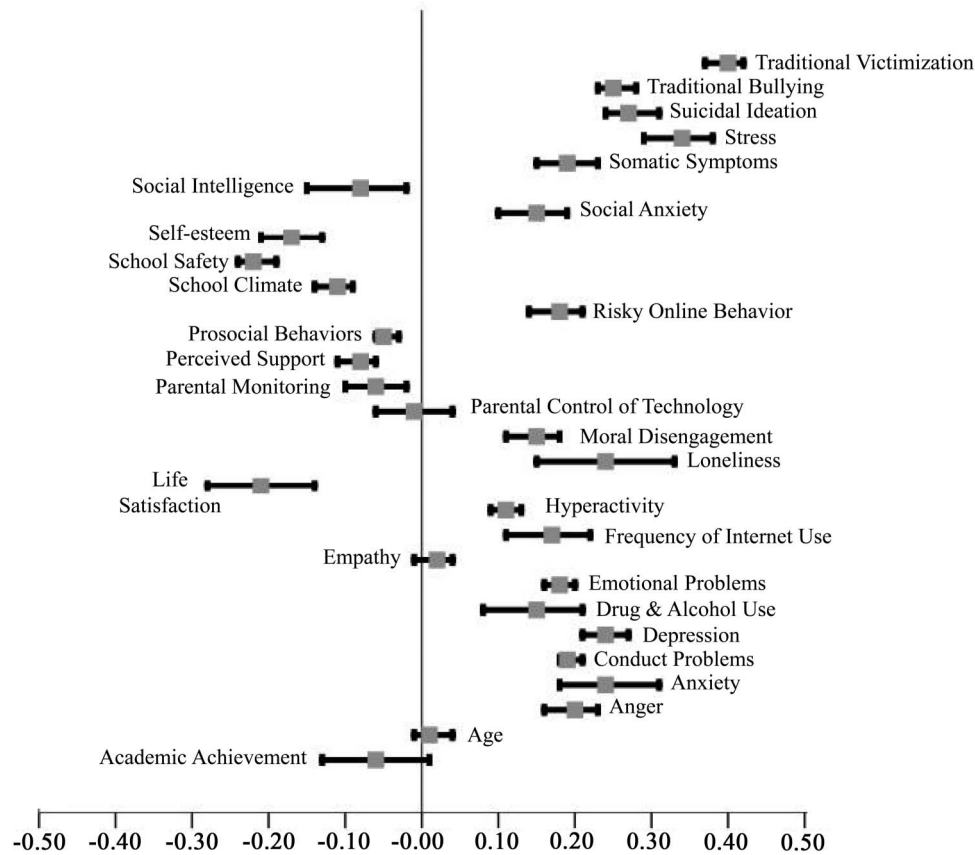


Figure 2. Forest plot for meta-analytic correlates of cyberbullying perpetration, displaying r^+ and 95% confidence intervals.

positive relationship between age and CB ($r = .05$). Confidence intervals did not include zero for any of the aforementioned relationships, indicating that each effect size was significantly different from zero.

As shown in Table 3, the strongest predictor of CV was TV ($r = .40$), indicating that youth who are bullied face-to-face are also likely to be bullied online. It also appears that individuals who are cybervictims are more likely to engage in perpetrating traditional bullying ($r = .25$). Similar to CB perpetration correlates, other risk factors for experiencing CV include anger ($r = .20$), risky online behavior ($r = .18$), frequency of Internet use ($r = .17$), social anxiety ($r = .15$),⁶ moral disengagement ($r = .15$), and hyperactivity ($r = .11$). Each of these effect sizes is small in strength.

A number of protective factors for CV were also identified in the meta-analysis, including school safety ($r = -.22$), school climate ($r = -.11$), social intelligence ($r = -.08$), perceived support ($r = -.08$), and parental monitoring ($r = -.06$). Each of these effect sizes was significantly different from zero. In contrast, the relationships between CV and empathy ($r = .02$), age ($r = .01$), and parental control of technology ($r = -.01$) were nonsignificant.

Individuals who reported high levels of CV also tended to report high levels of stress ($r = .34$), suicidal ideation ($r = .27$), depression ($r = .24$), anxiety ($r = .24$), loneliness ($r = .24$), somatic symptoms ($r = .19$), conduct and emotional problems ($r = .19$ and

$r = .18$, respectively), and drug and alcohol use ($r = .15$), as well as reduced life satisfaction ($r = -.21$), self-esteem ($r = -.17$), and prosocial behaviors ($r = -.05$). The association between CV and academic achievement ($r = -.06$) was nonsignificant.

Results of Moderator Analyses

With the exception of four variables in the CB meta-analyses and seven variables in the CV analyses, there was significant between-study variability in the effect size distributions (as indicated by a significant Q and a large I^2 ; see Tables 2 and 3), suggesting the presence of moderators. When there were sufficient data (i.e., $k \geq 3$ in each subgroup; Borenstein, Hedges, Higgins, & Rothstein, 2009), the analog to analysis of variance (ANOVA) was conducted to examine the impact of the seven categorical moder-

⁶ Social anxiety was considered as a risk factor and anxiety an outcome for the following reasons. Social anxiety deals with nervousness/shyness in interactions with other people. Anxiety, on the other hand, deals with general feelings of nervousness. In our conceptualization, those experiencing social anxiety would appear timid and might be the target of greater amounts of cyberbullying; thus, it was labeled a risk factor. With regard to anxiety, we felt that one possible reaction to experiencing cybervictimization is to feel frightened of the bully or, from the bully's perspective, be worried about being retaliated against by the victim. Therefore, we conceptualized anxiety as an outcome of a bullying encounter.

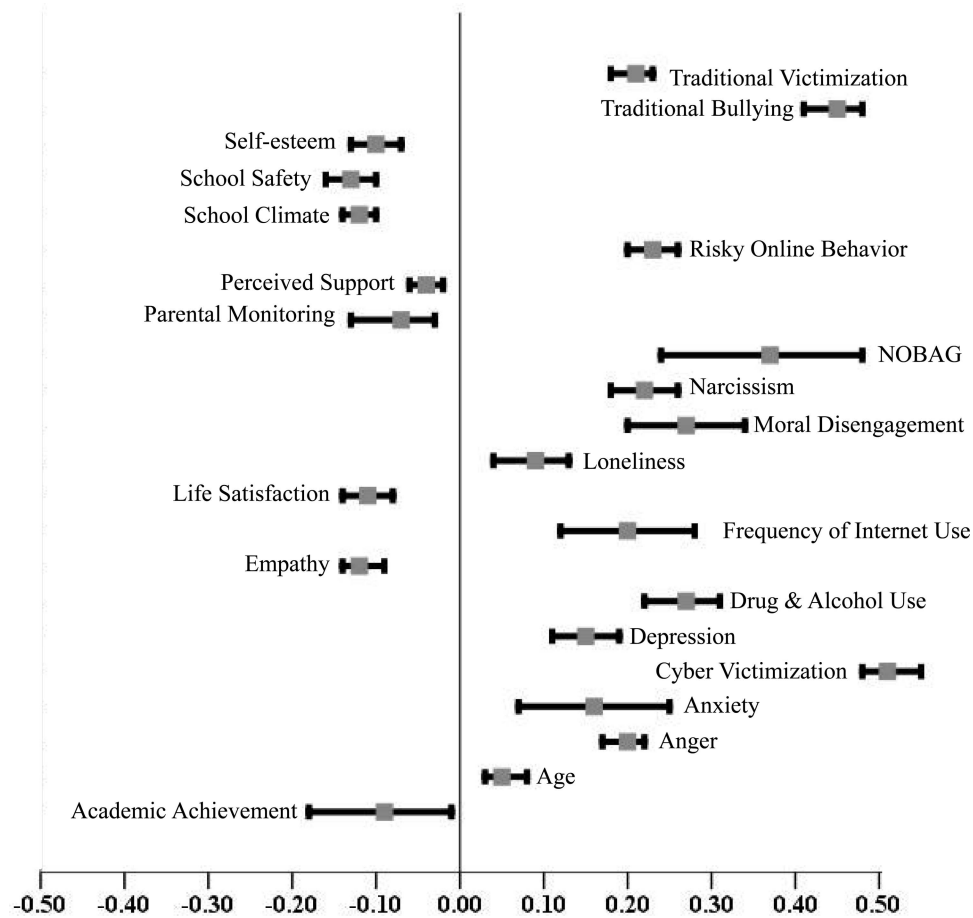


Figure 3. Forest plot for meta-analytic correlates of cyber victimization, displaying r^+ and 95% confidence intervals. NOBAG = Normative Beliefs about Aggression.

ator variables (publication status, reporting time frame, grade level, country of origin, single- vs. multiple-item measurement, provision of a bullying definition or the word “bully,” and co-measurement of traditional bullying). Additionally, weighted regression analyses were conducted to examine the moderating role of gender when the number of samples was greater than 10 (Borenstein et al., 2009), as smaller numbers of studies are likely to produce unstable results. Out of the 51 possible relationships examined in the current meta-analyses, 28 of these relationships could not be tested for moderation as they did not meet the minimum samples criteria, as noted above (these include the following relationships from Tables 2 and 3: 8–15, 20, 22, 28–38, and 45–51). This left 23 possible relationships to explore with the moderator analyses below.

Sufficient data for 17 constructs were available to examine the moderating role of publication status (including the following variables from Tables 2 and 3: 1–4, 16, 17, 23–27, 39–44). Results of mixed effects ANOVA revealed that publication status did not moderate any of the available relationships. In addition to examining publication status as a moderator, we further explored the possible impact of publication bias in several ways. First, we included unpublished works in our meta-analyses (including dissertations, theses, and unpublished data sets), which comprised

16.8% of the total number of effect sizes. Second, we did not restrict our analyses to the primary variables studied in each article but rather included many other correlates and covariates that may not have been part of the original study hypotheses (e.g., frequency of Internet use, age). Finally, following the procedures outlined in Sowislo and Orth (2013), we tested for publication bias to see whether effect sizes based on unpublished data differed significantly from effect sizes based on published studies for all meta-analyses where at least 10 studies were available (14 variables had sufficient data, as shown in Tables 2 and 3). Results of independent samples *t* tests revealed that there were no significant differences in effect sizes between published and unpublished studies (all *ps* > .10). Therefore, publication bias does not appear to be an issue with this study.

Next, we examined the moderating role of reporting time frame. Results of a mixed effects ANOVA revealed that reporting time frame did not moderate any of the relationships among the 12 constructs for which data were available (including variables 1–5, 17, 23–26, 39, and 40 from Tables 2 and 3). The remaining five moderator variables are discussed in the sections that follow.

Grade level. Given the small number of studies that examined college students ($k = 8$) or a combination of high school and college students ($k = 4$), these samples were left out of this

moderator analysis. The remaining categories included samples that contained middle school students only ($k = 41$), middle school and high school students ($k = 42$), or high school students only ($k = 38$). There were sufficient data to examine 11 constructs with mixed effects ANOVA (these include variables 1–4, 17, 23–25, and 39–41 from Tables 2 and 3). Results revealed no moderating effect of grade level for the relationships between CV and depression, self-esteem, anxiety, age, and TB, nor between CB and self-esteem, age, TV, TB, and CV. Significant between-group Q statistics were found for the relationship between CV and TV ($Q_{BG} = 6.31, p < .05$). Table 4 presents the results of this moderator analysis. Namely, for CV, a lower weighted average correlation was found with TV for middle school ($r^+ = .37$) and high school ($r^+ = .36$) samples than for samples containing both middle school and high school students ($r^+ = .46$). However, it should be noted that the confidence intervals (CIs) overlap for these different groups, suggesting a relatively low level of heterogeneity in these effect sizes and indicating that the differences between these weighted average correlations, while significant, are relatively small in magnitude.

Country of origin. Given the small number of studies that were conducted in Asia in our sample of studies ($k = 7$; see Table 1), effect sizes from this region were left out of this moderator analysis. Additionally, because the number of effect sizes was relatively small for samples from Australia, we aggregated Europe and Australia into one group ($k = 68$) for comparison with North American samples (containing studies from the United States or Canada; $k = 56$). There were sufficient data to examine 15 constructs with mixed effects ANOVA (including variables 1–4, 6, 16, 17, 19, 23–26, 39, 40, and 43 from Tables 2 and 3). No moderating effect was found for the relationships between CV and depression, age, and frequency of Internet use, nor between CB and depression, loneliness, moral disengagement, age, TB, and CV. As shown in Table 5, significant between-group Q statistics were found for the relationship between CV and loneliness (mean difference = .23, $Q_{BG} = 7.50, p < .01$), TB (mean difference = .10, $Q_{BG} = 13.02, p < .01$), self-esteem (mean difference = .08, $Q_{BG} = 7.29, p < .01$), and TV (mean difference = .08, $Q_{BG} = 5.45, p < .05$). Additionally, significant between-group Q s were found between CB and TV (mean difference = .08, $Q_{BG} = 8.13, p < .01$) and self-esteem (mean difference = .07, $Q_{BG} = 7.13, p < .01$). For all of these relationships, the effect sizes were smaller in

European/Australian samples than in North American samples. However, it should be noted that the CIs overlap for all factors except for the relationship between CV and traditional bullying.

Single- vs. multiple-item measurement. Sufficient data were available for 15 constructs to examine the moderating role of number of items (including variables 1–4, 16, 17, 21, 23–25, 27, and 39–42 from Tables 2 and 3). We compared studies that utilized a single item to measure frequency of CB/CV ($k = 36$) to studies that utilized multiple items to index CB/CV ($k = 98$). Results of mixed effects ANOVA revealed no moderating effect for the relationships between CV and depression, self-esteem, anxiety, academic achievement, age, TV, and TB. With the exception of anxiety, these constructs were also not significant when their relations were examined with CB. As shown in Table 6, significant variability was explained by the moderating role of number of items in CV measures and CB (mean difference = .15, $Q_{BG} = 11.64, p < .01$) and social anxiety (mean difference = .09, $Q_{BG} = 4.52, p < .05$), but confidence intervals overlap for social anxiety. In both cases, the relationships were smaller when CV was measured with a single item.

Provision of a (cyber)bullying definition or the word “bully.” For the next moderator analysis, we compared studies that provided a bullying or cyberbullying definition or the word “bully” with the measurement of CB/CV ($k = 73$) to those studies that included neither a definition nor the word “bully” ($k = 60$). Mixed effects ANOVA could be conducted on 18 constructs with sufficient data (these included the following variables from Tables 2 and 3: 1–6, 16, 17, 19, 23–26, 39–41, 43, and 44). No significant moderating role was found for the relationships between CV and depression, loneliness, self-esteem, anxiety, life-satisfaction, frequency of Internet use, TV, and TB, nor between CB and depression, loneliness, self-esteem, moral disengagement, frequency of Internet use, and TB. The moderator did explain significant variability in the relationships between CV and age (mean difference = .05, $Q_{BG} = 4.07, p < .05$), as well as the relationships between CB and CV (mean difference = .09, $Q_{BG} = 7.92, p < .01$), TV (mean difference = .06, $Q_{BG} = 5.34, p < .05$), and age (mean difference = .05, $Q_{BG} = 3.99, p < .05$; see Table 7). In each case, providing a definition or the word “bully” with the measurement of CB/CV resulted in smaller correlations. As with other moderator analyses, the CIs for these analyses overlap.

Measurement of traditional bullying. The final categorical moderator variable dealt with whether TB or TV was also measured in the study along with CB/CV ($k = 96$) or not ($k = 38$). There were sufficient data to examine this moderating variable for 12 constructs (including variables 1, 4, 5, 7, 16, 17, 25, 26, 39–41, and 43 from Tables 2 and 3). Results of the mixed effects ANOVA revealed no significant moderating role for the relationships between CV and depression, loneliness, self-esteem, anxiety, age, and frequency of Internet use, nor between CB and self-esteem, age, frequency of Internet use, and normative beliefs about aggression (see Table 8). The moderator explained significant variability in the relationships between CB and depression (mean difference = .13, $Q_{BG} = 6.75, p < .01$) and CV (mean difference = .13, $Q_{BG} = 9.28, p < .01$). In both cases, the relationships were smaller when TB or TV was also measured. Although the CIs did not overlap for the relationship between CB and CV, they were overlapping for the relationship between CB and depression.

Table 4
Moderator Analyses: Analysis of Variance Results for School Grade Level of Sample

Measure	<i>N</i>	<i>k</i>	r^+	CI _{r^+} [95%]	Between-group <i>Q</i>
CV × TV (all)	161,808	76	0.40	[0.36, 0.43]	6.31*
TV (MS only)	51,636	27	0.37	[0.31, 0.43]	
TV (MS and HS)	66,649	26	0.46	[0.40, 0.51]	
TV (HS only)	43,523	23	0.36	[0.30, 0.43]	

Note. CV = cyberbullying victimization; TV = traditional bullying victimization; MS = middle school; HS high school; r^+ = observed correlation corrected for sampling error; k = number of independent associations; CI = confidence interval; Q = Cochran's (1954) measure of homogeneity.

* $p < .05$.

Table 5
Moderator Analyses: Analysis of Variance Results for Country of Origin

Measure	<i>N</i>	<i>k</i>	r^+	CI _{r^+} [95%]	Between-group <i>Q</i>
Cyberbullying victimization (CV)					
Loneliness (all)	16,653	8	0.24	[0.16, 0.31]	7.50**
Loneliness (North America)	450	3	0.40	[0.26, 0.52]	
Loneliness (Europe/Australia)	16,203	5	0.17	[0.08, 0.26]	
Self-esteem (all)	28,575	20	-0.16	[-0.19, -0.13]	7.29**
Self-esteem (North America)	11,687	14	-0.19	[-0.23, -0.15]	
Self-esteem (Europe/Australia)	16,888	6	-0.11	[-0.15, -0.06]	
Traditional victimization (all)					
TV (North America)	59,835	34	0.45	[0.40, 0.50]	5.45*
TV (Europe/Australia)	98,503	43	0.37	[0.32, 0.41]	
Traditional bullying (all)					
TB (North America)	33,152	24	0.31	[0.27, 0.34]	13.02***
TB (Europe/Australia)	90,749	34	0.21	[0.18, 0.25]	
Cyberbullying perpetration					
Self-esteem (all)	20,716	14	-0.09	[-0.11, -0.07]	7.13**
Self-esteem (North America)	10,138	9	-0.12	[-0.15, -0.09]	
Self-esteem (Europe/Australia)	10,578	5	-0.05	[-0.09, -0.02]	
Traditional victimization (all)					
TV (North America)	30,843	23	0.25	[0.21, 0.29]	8.13**
TV (Europe/Australia)	89,494	34	0.17	[0.14, 0.21]	

Note. TV = traditional bullying victimization; TB = traditional bullying perpetration; r^+ = observed correlation corrected for sampling error; *k* = number of independent associations; CI = confidence interval; *Q* = Cochran's (1954) measure of homogeneity.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Gender. The final moderator analysis examined whether the proportion of the sample that was female moderated each relationship. This analysis was conducted with weighted regression analysis with restricted maximum-likelihood estimation. The percentage of females was entered as the predictor of each weighted effect size. Sufficient data were available for 14 construct pairs (see Table 9 for variables included in these analyses). Results indicate that the only significant relationship moderated by the proportion of females was the relationship between CV and depression ($\beta = .41$, $Q_{\text{model}} = 6.11$, $p < .05$). This indicates that, when a sample contained more females, the relationship between CV and depression tended to be larger.

Meta-Analysis Discussion

We used meta-analysis to examine data from 131 studies on cyberbullying. This meta-analysis is the first of its kind to quantitatively synthesize the growing body of research on cyberbullying, to highlight the magnitude of the relations between predictors and outcomes of CB and CV, and to identify the conditions under which these relationships might differ. The studies included in the meta-analysis represented a wide array of approaches to the study of cyberbullying, both in terms of sample characteristics (e.g., sample size, country of origin, breakdown of gender in each sample) and of measurement features (e.g., reporting time frame,

Table 6
Moderator Analyses: Analysis of Variance Results for Single vs. Multiple Item Measures of CV/CB

Measure	<i>N</i>	<i>k</i>	r^+	CI _{r^+} [95%]	Between-group <i>Q</i>
Cyberbullying victimization (CV)					
Social anxiety (all)	13,408	9	0.15	[0.11, 0.18]	4.52*
Social anxiety (single item)	2,837	3	0.08	[0.02, 0.15]	
Social anxiety (multiple items)	10,571	6	0.17	[0.13, 0.22]	
Cyberbullying perpetration (CB)					
CV (all)	147,434	91	0.51	[0.47, 0.55]	11.64***
CV (single item)	53,478	25	0.40	[0.31, 0.48]	
CV (multiple items)	93,956	66	0.55	[0.51, 0.60]	

Note. r^+ = observed correlation corrected for sampling error; *k* = number of independent associations; CI = confidence interval; *Q* = Cochran's (1954) measure of homogeneity.

* $p < .05$. *** $p < .001$.

Table 7
Moderator Analyses: Analysis of Variance Results for CB Definition or "Bully" Mentioned vs. Not Mentioned Prior to CV/CB Measurement

Measure	<i>N</i>	<i>k</i>	r^+	CI _{r^+} [95%]	Between-group <i>Q</i>
Cyberbullying victimization (CV)					
Age (all)	52,782	32	0.01	[-0.01, 0.04]	4.07*
Age (no definition)	11,515	14	0.04	[0.01, 0.08]	
Age (definition provided)	41,267	18	-0.01	[-0.03, 0.02]	
Cyberbullying perpetration (CB)					
Age (all)	52,105	31	0.05	[0.03, 0.08]	3.99*
Age (no definition)	14,959	16	0.08	[0.04, 0.12]	
Age (definition provided)	37,146	15	0.03	[-0.01, 0.07]	
Traditional victimization (all)	126,264	61	0.21	[0.18, 0.23]	5.34*
TV (no definition)	27,779	21	0.25	[0.21, 0.29]	
TV (definition provided)	98,485	40	0.19	[0.15, 0.22]	7.92**
CV (all)	147,434	91	0.51	[0.47, 0.55]	
CV (no definition)	41,156	42	0.57	[0.52, 0.62]	
CV (definition provided)	106,278	49	0.46	[0.40, 0.52]	

Note. r^+ = observed correlation corrected for sampling error; *k* = number of independent associations; CI = confidence interval; *Q* = Cochran's (1954) measure of homogeneity; TV = traditional bullying victimization. * $p < .05$. ** $p < .01$.

number of items in the measure, inclusion of a bullying definition, whether traditional bullying was also measured).

Our results highlight the risk factors (e.g., traditional bullying or victimization, anger, moral disengagement, risky online behavior, and the frequency of Internet use) that may predispose one to become involved with CB or CV and the protective factors (e.g., school safety, school climate, perceived support, and parental monitoring) that might limit one's involvement as a bully or victim. Additionally, the results of the meta-analysis highlight a number of variables that are associated with increased reporting of CB and CV, including psychological variables such as increased depression and decreased life satisfaction and behavioral variables like increased drug and alcohol use. There was also a negative relationship between cyberbullying perpetration and academic achievement. Beyond providing a broad picture of the pattern of relationships between CB/CV and meaningful behavioral and psychological variables, the current meta-analysis identified a number of significant between-study moderators, including sample origin, number of items in CB/CV measurement, inclusion of a bullying

definition, co-measurement of traditional bullying, and gender. No significant moderating role was identified for publication status or reporting time frame of measurement. In the discussion below, we (a) review the weighted mean effect size findings for the relationships with CB/CV; (b) discuss moderation of these findings by origin of sample, grade level of sample, and measurement characteristics; (c) identify limitations of this review; and (d) highlight implications of this research. Avenues for future research stemming from this meta-analysis will be provided within the Future Research section.

Relationships With Cyberbullying Perpetration

The results indicate that CB is highly related to both TB and CV, indicating that individuals who cyberbully tend to bully others in face-to-face settings and to be victims of cyberbullying as well. These results support the claims made by many researchers that cyberbullying may be an extension of traditional bullying (Olweus, 2013; P. K. Smith et al., 2008) and that experiencing CV may

Table 8
Moderator Analyses: Analysis of Variance Results for Traditional Bullying Measured or Not Measured

Measure	<i>N</i>	<i>k</i>	r^+	CI _{r^+} [95%]	Between-group <i>Q</i>
Cyberbullying perpetration (CB)					
Depression (all)	19,820	16	0.15	[0.11, 0.19]	6.75**
Depression (TB not measured)	2,221	4	0.25	[0.16, 0.33]	
Depression (TB also measured)	17,599	12	0.12	[0.08, 0.17]	
CV (all)	147,434	91	0.51	[0.47, 0.55]	9.28**
CV (TB not measured)	17,666	27	0.60	[0.54, 0.66]	
CV (TB also measured)	129,768	64	0.47	[0.42, 0.52]	

Note. r^+ = observed correlation corrected for sampling error; *k* = number of independent associations; CI = confidence interval; *Q* = Cochran's (1954) measure of homogeneity; TB = traditional bullying perpetration; CV = cyberbullying victimization. ** $p < .01$.

Table 9

Moderator Analyses: Modified Weighted Regression Analyses With Percent of Sample That Was Female as Moderator

Measure	Cyberbullying perpetration					Cyberbullying victimization				
	<i>N</i>	<i>k</i>	β	R^2	<i>Q</i> (model)	<i>N</i>	<i>k</i>	β	R^2	<i>Q</i> (model)
CV	147,434	91	-0.01	0	0					
TV	126,264	58	0.17	0.03	1.66	164,280	77	0.18	0.03	2.48
TB	136,105	67	0.10	0.01	0.63	128,642	57	0.01	0	0
Age	52,105	31	0.01	0	0	52,782	32	-0.05	0	0.08
Frequency of Internet use	6,764	12	-0.20	0.04	0.43	5,427	12	-0.34	0.12	1.43
Depression	19,820	16	-0.16	0.03	0.40	55,929	30	0.41	0.17	6.11*
Self-esteem	21,342	14	0.26	0.07	0.83	29,201	21	-0.20	0.04	0.91
Anxiety						7,450	14	0.18	0.03	0.34

Note. CV = cyberbullying victimization; TV = traditional bullying victimization; TB = traditional bullying perpetration; *k* = number of independent associations; β = standardized regression coefficient; *Q* (model) = regression model sum of squares, distributed as a chi-square with 1 degree of freedom. * $p < .05$.

provoke one to engage in CB, or vice versa (Kowalski, Limber, & Agatston, 2012), perhaps triggering a chain of back-and-forth CB/CV episodes. However, it is important to note that TB explained only 20% of the variance in reports of CB (i.e., $r = .45^2 = .20$), suggesting that not all individuals who report being bullied in traditional ways also report being cyberbullied. Indeed, previous research suggests that approximately 10% of those individuals who perpetrate CB do not also perpetrate TB (see, e.g., Raskauskas & Stoltz, 2007).

Other variables that exhibited a significant relationship with CB include believing that CB is an acceptable way to behave and having high levels of moral disengagement, supporting previous theoretical work on social-cognitive theory of moral thought and behavior (Bandura, 1999), and extending previous research linking moral disengagement with TB (Menesini et al., 2003). Additionally, it appears that being online more often is associated with greater CB, and engaging in risky online behavior is also linked with increased risk for CB. These behaviors may play a role in making an individual more susceptible to CB or CV.

A number of protective factors were identified in the current meta-analysis, including personal characteristics, parental involvement, and school characteristics. One personal characteristic that appeared to offer an individual protection from engaging in CB was empathy. Individuals who reported higher levels of cognitive and affective empathy (or an ability to share the emotions of other people) tended to engage in CB less frequently. Additionally, parental monitoring was negatively related to CB. Finally, school variables that were inversely linked to engagement in CB included school climate (e.g., respect, fairness, and kindness of staff) and school safety. These results provide support for the role of personal (i.e., empathy) and situational factors (i.e., school climate and safety) in the episodic processes of the GAM model.

In terms of behavioral variables, individuals who engage in high levels of CB also reported using higher amounts of drugs and alcohol and obtaining lower levels of academic achievement. These findings highlight the cascade of problem behaviors engaged in by individuals who cyberbully. Additionally, results also linked engagement in CB with a number of negative psychological variables, including higher levels of anxiety, loneliness, and depression and lower levels of self-esteem and life-satisfaction. Many of these associations were identified with victims of cyberbullying, and, thus, their linkage with CB may be a reflection of

the fact that many individuals who cyberbully also tend to be cybervictims. Again, the absence of longitudinal associations in this regard precludes causal statements regarding directionality of effects.

Relationships With Cyberbullying Victimization

Experiencing CV was highly related to victimization in traditional ways as well. That is, individuals who reported high levels of CV also tended to report high levels of TV, indicating that many individuals may be targets of bullying behavior in both face-to-face and online contexts, providing further support for the idea that cyberbullying can be considered an extension of traditional bullying (P. K. Smith et al., 2008). Additionally, a number of risk factors were positively related to victimization online, including social anxiety, frequency of Internet use, and risky online behavior. Several preventive factors also emerged as potential protective factors in the experience of victimization online, including school safety, school climate, and perceived support. These results indicate that individuals who report higher levels of CV also report lower levels of school safety, climate, and support from others.

Finally, a number of positive relationships were found between CV and psychosocial and behavioral variables, including stress, anxiety, depression, loneliness, conduct problems, emotional problems, somatic symptoms, and drug and alcohol use. Most concerning, a moderately positive relationship was found between CV and suicidal ideation, indicating that individuals reporting higher levels of CV also reported having thought about committing suicide more often. These findings highlight the well-documented impact that cyberbullying victimization has on an individual's psychological and physical health and the need for interventions targeted at reducing the incidence of both TV and CV and providing support for victims.

Moderators of the CB/CV Relations

Grade level. Our goal in examining this moderator variable was to determine whether the pattern of relationships between CB/CV and behavioral and psychological variables would be stronger or weaker as individuals progressed through school. Given that cyberbullying is thought to peak in late middle school (Hinduja & Patchin, 2008; Williams & Guerra, 2007), we might

predict that relationships between CB/CV and other variables would be strongest among middle school samples. However, we found that samples containing both middle school and high school students had larger relations between CV and TV compared to samples containing only middle school students or only high school students. One possible reason for this could be that there might be larger variance in the cybervictimization variable among the combined middle school and high school samples, which could have inflated the size of the correlation between these variables. Another possible reason could be that there is an increased prevalence of cybervictimization around the time that students are leaving middle school and entering high school.

A majority of the samples that contained middle school and high school samples contained students from late middle school (seventh and eighth grade) and students from early high school (ninth and 10th grade), rather than the full range of grades that might be in either school. The middle school only samples were, in fact, significantly younger in terms of average age ($M_{\text{age}} = 12.16$) than this combined group, $M_{\text{age}} = 14.02$; $t(80) = 7.92, p < .001$, and the high school only samples were significantly older ($M_{\text{age}} = 15.10$) than this combined group, $t(78) = 4.46, p < .001$. Therefore, these results seem to support the idea that outcomes might be worst among students in seventh through 10th grade. As students reach the peak bullying age, the results indicate that youth tend to experience both CV and TV. Because we know that experiencing CV is linked with anxiety, depression, and suicidal ideation, knowing which age group to target for intervention efforts might help schools and communities better deal with these issues.

Country of origin. Although the current meta-analysis initially sought to make comparisons among different continents in which research on CB had been conducted (i.e., Australia, Asia, Europe, North America), there were insufficient studies to allow for moderator analyses in each of these categories. Nonetheless, comparisons were possible between North America and Europe/Australia, and results indicated that relationships between CV and loneliness, self-esteem, TV, and TB, as well as between CB and self-esteem and TV were all stronger in North American samples than in European/Australian samples. There are a number of possibilities for why these differences exist. One possibility is that a larger number of nationwide interventions have been conducted in European countries than in North America (e.g., Genta, Brighi, & Guarini, 2009; Livingstone & Haddon, 2009; Paul, Smith, & Blumberg, 2010), and, thus, the overall prevalence in these countries might be lower than in North America. Indeed, we tested this possibility with available data from Table 1, and the difference in average CV prevalence rates between European/Australian samples ($M = 16.34$) and North American samples ($M = 21.6$) is marginally significant, $t(54) = 1.56, p = .06$ (one-tailed). No differences were found in average cyberbullying perpetration rates between European/Australian samples ($M = 14.52$) and North American samples, $M = 14.85$; $t(49) = 0.09, p = .46$.

Another possibility could be due to differences in culture between North America and other parts of the world. For example, differences in power distance and individualism/collectivism have been demonstrated between North America and elsewhere, and these differences may manifest in bullying behaviors. In collectivistic cultures, the number of perpetrators typically exceeds the number of targets, as perpetrators often act in groups. In more individualistic cultures, the number of targets most often exceeds

the number of perpetrators (Koo, Kwak, & Smith, 2008; see also Berger, 2007; Li, 2007b, 2008). Cross et al. (2012) suggest that, when making cross-cultural comparisons of prevalence rates of cyberbullying, it is important to keep in mind that (a) bullying and cyberbullying may not demonstrate definitional consistency across different cultures and (b) varying prevalence rates may reflect cultural differences in policy rather than the nature of the behavior itself. In addition, as methodological and conceptual issues may also differ across cultures, additional research is needed on this topic (Walrave & Heirman, 2011).

Single-item vs. multiple-item measures. A wide array of measurement tools exist for measuring cyberbullying. Some of them utilize a single item for indexing the frequency of CB/CV, whereas others contain several items. Results of moderator analyses revealed that effect sizes tended to be larger for the relationships between CV and social anxiety and CV and CB when multiple items were used to measure CB/CV. One possible reason for this is that using multiple items tends to result in higher reliability of measurement, and such increased reliability may increase the size of correlation coefficients (Murphy & Davidshofer, 2005).

Provision of a bullying definition or the word "bully." As several authors have speculated (e.g., Menesini & Nocentini, 2009) and recent research by Ybarra et al. (2012) has shown, labeling behaviors as bullying resulted in lower prevalence rates than providing neither a definition nor the word "bully" and using a behavioral checklist. In the current meta-analysis, we examined whether provision of a definition or inclusion of the word "bully" might be related to effect sizes across studies. Results of moderator analyses revealed that providing a definition or mentioning the word "bully" in the measure of CB/CV resulted in smaller relationships of CV with age and CB with age, TV, and CV than if a definition or the word "bully" was not included.

One possible reason for these smaller relationships could be that having a definition affects socially desirable responding (Menesini & Nocentini, 2009). The word "bully" carries a negative connotation, and individuals may be less willing to report that they bullied someone else or were the victim of bullying. Thus, when this word is included in measures, overall mean scores are likely to be lower. Another possibility is that provision of a definition of bullying makes participants more aware of the bullying phenomenon, thus affecting their response processes. Participants might be more likely to carefully reflect on whether they actually experienced/participated in cyberbullying once they have a clearer understanding of what such behavior entails. This may result in less variability in the measure of CB/CV because participants know what is being measured more clearly and are less likely to misclassify themselves as either a perpetrator or a victim of cyberbullying. This reduced variability in the CB/CV measure could, therefore, restrict the size of the correlation coefficient (Murphy & Davidshofer, 2005).

Measurement of traditional bullying. Many studies examining cyberbullying had the goal of determining how the frequency of CB/CV compared to the frequency of TB/TV. Results of this moderator analysis revealed that when TB or TV had also been measured, there were smaller relationships between CB and depression and CB and CV. One possible reason for the differences in effect sizes could be that, when individuals respond to measures of CB/CV in the absence of other measures of bullying, they may

be including other types of bullying experiences in their responses. When other measures of bullying are included in the study, some of these responses then get (properly) classified as traditional bullying.

Gender. Mixed results have been reported in previous research on the role that gender plays in predicting either cyberbullying or cybervictimization. Some researchers have found no link between the two variables (e.g., Williams & Guerra, 2007). Other studies have found that males are more likely to perpetrate, whereas females are more likely to be victims of cyberbullying (Sourander et al., 2010). Results of moderator analyses revealed that gender significantly moderated the cybervictimization–depression relationship, indicating that, as the percentage of the sample that was female increases, the relationship between cybervictimization and depression increases. These results might indicate that females are more susceptible than males to the damaging consequences of cybervictimization, but further research is needed in this area to understand the role that gender plays.

Limitations

One common concern when conducting a meta-analysis is publication bias. That is, studies that contain statistically significant findings are more likely to be published than findings that are not statistically significant (Hedges & Vevea, 1996). This bias can be problematic, because it may lead to meta-analytic findings that are overly high because large significant effects represent a greater proportion of the meta-analytic database. However, as noted in the results section, the current meta-analysis was able to deal with this limitation, as 16.8% of the effect sizes reported were based on unpublished work and no differences in effect size were found between published and unpublished studies.

A second limitation of this research is that we cannot make causal statements about the relations between CB/CV and the behavioral and psychological variables because all of the studies included in the meta-analysis used designs that were correlational in nature. Thus, we cannot guarantee temporal precedence nor rule out possible third variable confounds. For example, is it the case that an individual has low self-esteem and decides to perpetrate cyberbullying as a result? Or is it that he or she perpetrates cyberbullying and, as a result, feels less positively about him- or herself? As another example, we found that depression was related to both CB and CV, but it might be acting as a third variable influencing both constructs. Future research should examine CB/CV within an experimental setting to help establish temporal precedence and attempt to control for such third variables when designing such studies. In many cases, experimental manipulation may not be feasible, and so the best recommendation is to conduct longitudinal studies to better address questions of temporal precedence.

Another limitation deals with generalizability. Our goal in this meta-analysis was to be comprehensive and include as many predictors and outcomes in the analysis as possible. A number of meta-analytic results included in the current article were based on five or fewer samples ($k < 5$). As such, the weighted mean effect sizes from these meta-analyses may be less reliable, and thus should be interpreted with caution. However, their inclusion in the meta-analysis provides us with a preliminary picture of their

relationship with CB/CV and highlights the need to study these variables further in future research.

Additionally, because there is some overlap in involvement with cyberbullying and traditional bullying, it is difficult to tease apart the adverse effects following from cyberbullying alone compared to exposure to both cyberbullying and traditional bullying (Kowalski & Limber, 2013). Olweus (2013) summed it up well when he stated “to find out about the possible negative effects of cybervictimization is a complex and challenging research task.” Additional research examining the unique and joint contributions of involvement in cyberbullying and traditional bullying to negative physical and psychological outcomes is needed.

Another limitation deals with the possibility of an inflated Type I error rate. Given that the current study involved conducting moderator analyses for a large number of behavioral and psychological correlates of cyberbullying and cybervictimization, there is an increased chance that a significant between-group Q might be found in the moderator analyses (Cafri, Kromrey, & Brannick, 2010). Additionally, many of the significant moderated relationships had confidence intervals that overlapped between categories of the moderator, which suggests that the differences, although statistically significant, were relatively small. Therefore, for those moderator analyses that revealed a small, but significant between-group Q and overlapping confidence intervals, caution is advised in interpreting these results.

Finally, a number of different theoretical models have been applied to traditional bullying behavior in the literature. Among the theories that we could have selected for conceptually understanding cyberbullying behavior is Bronfenbrenner’s (1979) ecological systems theory, which situates individual behavior within five environmental systems (i.e., microsystem, mesosystem, exosystem, macrosystem, and chronosystem). Whereas this would be a useful means of discussing cyberbullying, we selected the GAM because (a) we believe that it better allows researchers to formulate testable hypotheses to advance research in the cyberbullying arena, and (b) elements of the GAM incorporate the larger situational elements (e.g., school) advocated by other theoretical models, such as ecological systems theory. We are not claiming, however, that the GAM is the only useful theoretical model for examining cyberbullying behavior. Indeed, for particular features of cyberbullying, an alternative theoretical model might be preferred. In particular, a systemic-ecological model, such as that discussed by Mishna (2003), might be better suited than the GAM when designing, implementing, and testing bullying prevention and intervention programs.

Implications

This meta-analysis reports relationships of predictors and outcomes with CB and CV. However, moderator analyses reveal that certain relationships with CB/CV are not global. Instead, relationships with CB/CV depend on several factors that should be taken into consideration when evaluating research in this area. Relationships with CB/CV tend to be largest when studies are completed in North America, measured with multiple items, included a definition or the word “bully” with CB/CV measurement, and traditional bullying was not also measured. These findings have several implications. First, studies examining the relationships between CV and social anxiety as well as between CV and CB might be

more likely to report larger relationships when CB/CV is measured with multiple items. Secondly, the relationships of CB with CV, age, and TV as well as between CV and age may potentially be inflated when neither a definition of bullying nor the word “bully” is provided along with the measure. Olweus (2013) addressed this measurement issue, calling, as we do, for additional empirical research attention devoted to addressing both conceptual and methodological issues attached to assessments of bullying, cyberbullying, and overall aggression. Finally, the relationships of CB with depression and CV are likely to be higher when studies do not also measure traditional bullying. Taken together, these findings suggest that researchers should include a definition of bullying or the word “bully” and also measure traditional bullying in their studies if they want to get the most accurate picture of relationships with CB/CV. Although it would also seem that a recommendation might be made to measure CB/CV with multiple-item measures, such a recommendation might be premature, as the picture is not quite clear on the impact of this practice.

Future Research

Throughout this article, we have made numerous references to areas of research that are in need of additional investigation. The list is long, but this is not surprising, given the relatively recent emergence of the phenomenon under investigation. Below we propose additional directions for future research, beyond those directions already mentioned, and organize them within the context of the GAM as dealing with either person factors or situation factors to help broaden the application of the GAM to the cyberbullying research domain. We also provide future research directions dealing with study design features.

Person Factors

Existing research has shed light on several personality factors that are associated with involvement in CB/CV, including empathy, narcissism, social intelligence, and hyperactivity. However, many other personality traits may also be linked with involvement in CB/CV, including core self-evaluations, competitiveness, curiosity, dominance and warmth, emotional stability (and other traits of the Big 5 or 16 Personality Factor models), jealousy, locus of control, sensation seeking, and optimism/pessimism (e.g., Andreou, 2000; Kashdan et al., 2013; Parker, Low, Walker, & Gamm, 2005; Sijtsema, Veenstra, Lindenberg, & Salmivalli, 2009). Recent work has demonstrated that individuals who are high in sensation seeking and relatively low in emotional stability are more likely to be aggressive (Caprara et al., 2013; Dvorak, Pearson, & Kuvaas, 2013), but less is known about how these traits may predispose someone to engaging in cyberbullying perpetration. We would predict, based on the GAM, that these person factors would impact the thoughts, feelings, and arousal of individuals and make them more likely to engage in cyberbullying behavior. Obtaining a better understanding of the role of personality in predicting involvement in cyberbullying perpetration or victimization may help us to better design prevention/intervention efforts aimed at treating the individual in the situation (Mason, 2008).

To date, most of the research on cyberbullying has focused on neurotypical children, with little attention given to experiences

with cyberbullying among children with any of a number of disabilities. Because children with particular disabilities, such as autism spectrum disorders, have been shown to have much higher prevalence rates of traditional bullying victimization and perpetration than do neurotypical youth (e.g., Kowalski & Fedina, 2011), it is important to include all youth at all levels of functioning in studies of cyberbullying. Doing this will help inform prevention and intervention efforts.

As the world becomes more technologically advanced, the age of access to technology is decreasing (Lester, Cross, & Shaw, 2012). Much of the existing research on cyberbullying has examined children in middle school or later grades, but less is known about the prevalence of cyberbullying and associated behaviors among younger children. Additionally, the age focus can be expanded in the other direction as well to examine cyberbullying among adults in the workplace. In the workplace, the Internet is seen as the primary communication medium among workers in many parts of the world (Lim & Teo, 2009). Namely, among employed adults, approximately 62% use the Internet at work, and among these “wired workers,” more than half report doing at least some work from home through technology (Madden & Jones, 2008). Most workers agree that the Internet has improved their ability to do their job and share ideas with coworkers and has added flexibility to their work schedules and locations (Madden & Jones, 2008). Preliminary work suggests that workplace cyberbullying is associated with negative work outcomes, such as reduced job satisfaction, increased absenteeism, and higher turnover intentions (Giumetti, McKibben, Hatfield, Schroeder, & Kowalski, 2012). Indeed, it will be important to determine whether children/adolescents who engage in cyberbullying perpetration or are victims of cyberbullying also experience these behaviors when they enter the workforce. Further investigation of this phenomenon in this setting is warranted.

As discussed previously, there is considerable variability in the literature regarding the influence of individual variables, such as gender and age, on cyberbullying prevalence rates. Although additional research is certainly needed to further investigate these variables, this variability should also be viewed through the lens of prevention and intervention efforts, rather than as an end in itself. These variations suggest that there will not likely be a one-size-fits-all model of prevention and intervention when it comes to bullying, whether traditional or virtual. Thus, parents, educators, and community members need to be flexible in designing their programs so these can be tailored to the needs of particular populations.

Situational Factors

Possible situational factors to examine include exposure to media violence (e.g., violent video games or television), behavioral modeling of siblings, peers, or adults who either engage in or are victims of interpersonal aggression (including CB/CV), parental discipline practices (Kokkinos & Panayiotou, 2007), community-level variables (e.g., crime rates and population density), and society-level variables (e.g., cultural values and political and economic stability).

Preliminary evidence from a nationally representative Canadian sample suggests that children who perpetrate bullying and cyber-

bullying also tend to prefer mature and violent video games (Dittrick, Beran, Mishna, Hetherington, & Shariff, 2013). Additionally, recent research in China and Australia indicates that children exposed to violent video games were more likely to be perpetrators of cyberbullying as well as cyberbully victims (Lam, Cheng, & Liu, 2013). Given the cross-sectional nature of this research, it is unclear whether media violence is the causal factor leading to bullying and cyberbullying or vice versa. Additional research is needed to determine whether long-term exposure to media violence leads to increased levels of bullying and cyberbullying. Experimental studies examining these variables would also be informative and help us to better understand causal direction. For example, do individuals who are exposed to a cyberbullying encounter prefer to play violent video games over nonviolent video games? Or, might individuals who have just played a violent video game be more likely to engage in cyberbullying perpetration in a subsequent social interaction?

At the community level, it will be important to understand issues like crime rate, population density, and school policies and their relationship with cyberbullying (Hatzenbuehler & Keyes, 2013; P. K. Smith, Kupferberg, et al., 2012). Although there is recent research that suggests that the population density of a community may be related to the likelihood of traditional bullying victimization (Goldweber, Waasdorp, & Bradshaw, 2013), it appears that no research has examined population density or urbanicity and its relationship with cyberbullying. Another important community-level variable to examine is school policy related to cyberbullying. A recent study by P. K. Smith, Kupferberg, et al. (2012) found that, although many schools do have policies dealing with face-to-face bullying, very few mention cyberbullying or ways to deal with cyberbullying issues at school. Similar findings have been noted in Canada (see, e.g., Cassidy, Brown, & Jackson, 2012) and the United States (see, e.g., Orobko, 2010). Although it is clear that many schools are creating and adopting policies aimed at cyberbullying (see, e.g., Hunley-Jenkins, 2013), little research has examined the effectiveness of these policies at reducing rates of cyberbullying.

At the national level, additional cross-cultural research is needed in order to better understand national-level differences in prevalence and associated outcomes from bullying and cyberbullying behaviors. Cultures with low power distance (i.e., members of the culture operate on a more equal playing field relative to one another) might be expected to have less cyberbullying than those with high power distance, or at least cyberbullying motivated by a desire to establish one's place in the social hierarchy (Power et al., 2013). Additionally, differences in the prevalence of cyberbullying might be expected in individualistic and collectivistic cultures. Shapka and Law (2013), for example, found higher rates of cyberbullying among East Asian adolescents than those of European descent. In addition to examining these and other cultural dimensions from Hofstede (2001), studies should examine the differences in practices, policies, and behaviors typical of a society as identified in the GLOBE research program (House, Hanges, Javidan, Dorfman, & Gupta, 2004). For example, might countries with a high humane orientation, whereby individuals are encouraged to be fair and caring to others, be less accepting of bullying and cyberbullying among youth (Power et al., 2013)?

Study Design Features

Methodologically, greater consensus is needed regarding how to conceptualize and measure cyberbullying. One item that researchers have debated in the CB literature is the necessity of CB measures including all three components of the definition of traditional bullying: (a) intentional act of aggression that (b) is repetitive and (c) occurs among individuals who differ in terms of power (Ybarra et al., 2012). Several researchers have questioned in particular whether an individual should be considered a victim of cyberbullying if he or she has experienced an act of cyberbullying only once. The issue here is that, in a cyber-context, a message has relative permanence, and so an act may become repetitive if it is viewed multiple times. Additionally, the role of power differences among perpetrators and victims has also been questioned in a cyberbullying context, because individuals with different levels of technical skill may be seen as having different power even though they may be the same in other regards (age, height, popularity, etc.). Future research efforts can help to clarify this picture by creating new measures and examining the extent to which existing measures capture these three components of the definition of cyberbullying.

Additional methodological work is needed to help us determine the factor structure of cyberbullying. Preliminary work has helped to establish that it may not be best represented by a single item tapping a single factor but rather by multiple items corresponding with two or more latent factors. Additionally, work by Dempsey et al. (2009) indicated that cybervictimization is a construct distinct from other forms of traditional bullying victimization (i.e., overt and relational) via factor analysis. To further understand the dimensional structure of cyberbullying, additional work is needed using structural equation modeling. In addition, studies should be designed to examine the nested nature of the cyberbullying phenomenon using hierarchical linear modeling, because cyberbullying is nested within a myriad of other groups (e.g., schools, communities, states, countries).

The majority of existing research has utilized self-report measures from the perspective of the first person (e.g., the bully or the victim). However, future research that gathers reports of CB from sources other than the self (such as from parents, friends, and teachers) is needed to examine the extent to which there is over- or underreporting of victimization (Calvete et al., 2010) and to address the issues of social desirability in responding to measures of CB and CV (Beran, Rinaldi, Bickham, & Rich, 2012).

To date, most of the research across cultures has used nonexperimental methodology (e.g., surveys, interviews, or observations). Although this has provided useful information, more studies manipulating cyberbullying as part of an experimental design (e.g., a study in which participants are instructed to perpetrate cyberbullying or an experiment in which participants experience varying degrees of cyberbullying victimization) are needed to determine the impact for victims and perpetrators on specific outcomes among youth or working adults. This will allow for conclusions regarding causal direction (e.g., is cyberbullying the cause of the distal outcomes discussed here; e.g., behavioral problems) and help to rule out possible third variables (such as also experiencing face-to-face bullying) that may explain the outcomes of experiencing cyberbullying.

Another important area in which additional research is needed is closer examinations of the overlap between traditional bullying and cyberbullying (Beckman, Hagquist, & Hellström, 2012; Lester et al., 2012). More research investigating not only the number of people who are involved in both traditional bullying and cyberbullying but also the unique contributions of involvement in each of these types of bullying to negative mental and physical health outcomes is clearly required. Findings from numerous research studies have already suggested that cyberbullying does indeed contribute unique variance to negative outcomes over and above traditional bullying (e.g., Dempsey et al., 2009; Fredstrom, Adams, & Gilman, 2011; Machmutow, Perren, Sticca, & Alsaker, 2012; Menesini, Calussi, & Nocentini, 2012; Perren et al., 2010; Perren & Gutzwiller-Helfenfinger, 2012; Sakellariou, Carroll, & Houghton, 2012), but additional research is needed in this area. Additionally, more research should track individuals over time to see if traditional bullying at an early age is linked with cyberbullying at a later age (or vice versa; Yang et al., 2013). Most of the existing longitudinal research is limited to two measurement occasions (for an exception, see Rivers & Noret, 2010). Studies with three or more measurement occasions will allow for examination of the possible reciprocal relationships that may exist between traditional bullying and cyberbullying as well as between victimization and bullying. This research will then inform prevention/intervention efforts. Although we advocate comprehensive bullying prevention programs, understanding the relative contributions of traditional bullying and cyberbullying to physical and mental health will be useful in informing these comprehensive bullying prevention programs.

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Correction to Kowalski et al. (2014)

In the article “Bullying in the Digital Age: A Critical Review and Meta-Analysis of Cyberbullying Research Among Youth” by Robin M. Kowalski, Gary W. Giumetti, Amber N. Schroeder, and Micah R. Lattanner (*Psychological Bulletin*, Advance online publication, February 10, 2014. doi: 10.1037/a0035618), the words “cyberbullying perpetration” and “cyber victimization” were switched in the figure captions for Figures 2 and 3. The corrected captions for Figures 2 and 3 appear below.

Figure 2. Forest plot for meta-analytic correlates of cyber victimization, displaying r^+ and 95% confidence intervals.

Figure 3. Forest plot for meta-analytic correlates of cyberbullying perpetration, displaying r^+ and 95% confidence intervals. NOBAG = Normative Beliefs about Aggression.

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