Prevalence and Correlates of Bullying Perpetration and Victimization Among School-Aged Youth with Intellectual Disabilities: A Systematic Review

Christophe Maïano[1,2,3], Annie Aimé[1,3], Marie-Claude Salvas[3,4], Alexandre J. S. Morin[2], Claude L. Normand[3]

[1] Cyberpsychology Laboratory, Department of Psychoeducation and Psychology, Université du Québec en Outaouais (UQO), Canada.

[2] Institute for Positive Psychology and Education, Australian Catholic University, Australia.

[3] Department of Psychoeducation and Psychology, Université du Québec en Outaouais (UQO), Canada.

[4] Research Unit on Children's Psychosocial Maladjustment, Canada

Acknowledgements: The preparation of this systematic review was supported by grants from the Social Sciences and Humanities Research Council of Canada (430-2012-0091, 435-2014-0909) and the Australian Research Council (DP140101559).

Corresponding author: Christophe Maïano, Université du Québec en Outaouais, Campus de Saint-Jérôme, Département de Psychoéducation et de Psychologie, 5 rue Saint-Joseph, Saint-Jérôme (Québec) J7Z 0B7, email: christophe.maiano@uqo.ca

This is the prepublication version of the following manuscript:
Maïano, C., Aimé, A., Salvas, M.-C., Morin, A. J. S., & Normand, C. (2016). Prevalence and correlates of bullying perpetration and victimization among school-aged youth with intellectual disabilities: A systematic review. *Research in Developmental Disabilities*, *49-50*, 181-195.

Highlights

- Overall, 15.1% were bullies, 36.3% were victims, and 25.2% were bully-victims
- High prevalence rates of physical, verbal and relational victimization were found
- Bullying experiences differed according to studies' characteristics
- Differences between groups (with or without disabilities) were mixed and inconclusive

Correlates of bullying perpetration and victimization remain understudied

Abstract

Recent literature reviews show that bullying perpetration and victimization are major public health concerns for typically developing (TD) youth. Nevertheless, the magnitude of this phenomenon among youth with intellectual disabilities (ID) remains unclear. Therefore, the purpose of this review is to provide a synthesis of the empirical studies examining the prevalence and correlates of bullying perpetration and victimization among youth with ID. A systematic literature search was performed and 11 studies met the inclusion criteria. The findings from these studies showed weighted mean prevalence rates of general bullying perpetration, bullying victimization and both of 15.1%, 36.3%, and 25.2%, respectively. Weighted mean prevalence rates of bullying perpetration and victimization differed according to the characteristics of the studies (e.g., assessment context, school setting, information source, type of measures, time frame). Additionally, high weighted mean prevalence rates of physical (33.3%), verbal (50.2%), relational (37.4%), and cyber (38.3%) victimization were found among youth with ID. When youth with ID were compared to youth with other disabilities or TD peers, no clear differences were found. Finally, the present review shows that correlates of bullying perpetration and victimization in this population remain understudied.

Keywords: Bullying; Victimization; Perpetration; Intellectual Disabilities; Prevalence; Correlates.

Bullying can be defined as a form of aggressive behavior that is intentional, repetitive, and causing harm, distress or discomfort to someone else (Olweus, 2013). It differs from aggression, conflict and violence by its repetitive nature, or the high likelihood that it will be repeated, and by the dynamic interaction involved between at least two persons (Gladden, Vivolo-Kantor, Hamburger, & Lumpkin, 2014; Juvonen & Graham, 2014; Marsh, Nagengast, Morin, Parada, Craven, & Hamilton, 2011). More precisely, bullying implies a relational power imbalance where a bully acts negatively towards a victim who can hardly defend him or herself (Solberg, Olweus, & Endresen, 2007). Although bullying occurs in multiple settings, it is most often studied in school settings (Juvonen & Graham, 2014). Youth can be involved in bullying as perpetrators (bully), victims (bullied), perpetrators and victims (bully-victim), or bystanders/witnesses (Vessey, DiFazio, & Strout, 2013).

Bullying can be either direct or indirect (Olweus, 2013). Direct bullying comprises physical (e.g., hitting, pushing, kicking and hair pulling) and verbal (e.g., name calling, teasing, laughing at and ridiculing) forms of intentional negative behaviors. Indirect or relational bullying consists of exclusion or social isolation (e.g., barring from a group, keeping or leaving out and shunning), lying, talking behind one's back, spreading rumors or manipulating relationships (Juvonen & Graham, 2014; Olweus, 2013). Cyber-bullying may also occur (e.g., hurtful text messaging or emailing). All these forms of bullying can be assessed (Crothers & Levinson, 2004) using various methods (observation, interview, sociometric measures, questionnaire) and sources (self-reports, parents, teachers, or peers).

Bullying Perpetration and Victimization in Youth with Disabilities

Recent reviews examining the prevalence rates of bullying perpetration and victimization among youth with disabilities have focused mainly on specific disabilities (e.g., emotional disabilities, learning disabilities, physical disabilities, and attention deficit hyperactivity disorders; Carter & Spencer, 2006; Cummings, Pepler, Mishna, & Craig, 2006; Mishna, 2003; Rose et al., 2011; Thompson, Whitney, & Smith, 1994), chronic conditions (e.g., chronic diseases, weight problems; Sentenac, Arnaud, Gavin, Molcho, Gabhainn, & Godeau, 2012), and autism spectrum disorders (Schroeder, Cappadocia, Bebko, Pepler, & Weiss, 2014; Sreckovic, Brunsting, & Able, 2014). Overall, results from these reviews show that youth with various types of disabilities present higher levels of bullying perpetration and victimization than their peers without disabilities (Carter & Spencer, 2006; Cummings et al., 2006; Mishna, 2003; Rose, Monda-Amya, & Espelage, 2011). For example, in one reviewed study, up to 100% of students with hearing impairments reported being victimized, while in another one, 68.6% of students from special education classes reported bullying others (for more details see Carter & Spencer, 2006; Rose et al., 2011). This heightened risk has been attributed to the putative negative effects of some youth's characteristics, including their (a) visible traits, such as physical appearance, academic performance or inappropriate behavior; (b) limited social network or unstable friendships; and (c) deficits in social and problem-solving skills (Carter & Spencer, 2006; Cummings et al., 2006; Mishna, 2003; Rose et al., 2011).

Although they highlight the importance of studying and intervening in bullying among youth with disabilities, results from past research present two major limitations. First, they are plagued by methodological issues, such as (a) unrepresentative and small convenience samples (Rose et al., 2011; Sentenac et al., 2012), (b) no universal definition of bullying (Carter & Spencer, 2006), (c) no comparison groups (Rose et al., 2011), and (d) a variety of assessment methods preventing between-study comparisons of bullying perpetration and victimization rates (Sentenac et al., 2012). Moreover, unlike victimization rates, bullying perpetration rates are rarely measured (Rose et al., 2011).

Second, few studies have specifically focused on youth with intellectual disabilities (ID). In fact, past studies tend to resort to populations of youth with various disabilities and

often fail to provide information about specific disabilities, such as ID. Among the existing reviews, only one identified three studies including participants with ID (Rose et al., 2011), and among these three studies only one focused on school-aged youth (Reiter & Lapidot-Lefler, 2007). This lack of information on bullying in youth with ID is worrisome, since these youth have personal attributes that may make them highly vulnerable to victimization. Indeed, Nettelbeck and Wilson (2002) believe they may be more vulnerable because of their "[…] impaired judgment, higher compliance, lack of knowledge; precipitous attributes, such as failing to recognize the imminence of danger and exhibiting behaviors that elicit violent reactions […]" (p. 296). Their vulnerability to victimization is further accentuated by other personal features, such as deficiencies in social adjustment and social skills, atypical physical appearance, and impaired physical abilities and skills (Glumbić & Žunić-Pavlović, 2010; Reiter & Lapidot-Lefler, 2007). Likewise, their social skills deficits may make them more likely to rely on aggression as a mode of coping with interpersonal difficulties (Nettelbeck & Wilson, 2002).

A review of research on the prevalence and correlates of bullying perpetration and victimization in youth with ID is thus warranted. A clear understanding of this critical area will help scholars, practitioners and policy makers determine the true extent of bullying among youth with ID. The purpose of this review is threefold. The first objective is to provide a synthesis of the empirical studies examining the prevalence of bullying perpetration, victimization, and perpetration-victimization among youth with ID. More specifically, these prevalence rates will be examined according to several characteristics of the reviewed studies (i.e., assessment context, school setting, information sources, types of measures, assessment time frame, and bullying frequency criteria). The second objective is to examine whether youth with ID are at greater risk of bullying perpetration, victimization, and perpetration-victimization than their typically developing (TD) peers or peers with other disabilities. The last objective is to synthetize the findings from studies examining the correlates of bullying perpetration, victimization, and perpetration-victimization among youth with ID.

Method

Information Sources and Search Strategy

A systematic electronic search was conducted in nine databases, without imposing any year restrictions [Academic Search Complete (1887–2015), Medline (1946–2015), PsycARTICLES (including PsycINFO, 1904–2015), Psychology and Behavioral Sciences Collection (1965–2015), Scopus (1996–2015), CINAHL (1981–2015), Education Sources (1900–2015), ERIC (1966–2015) and SocINDEX (1908–2015)]. The studies were identified using all possible combinations of the following groups of search terms: (a) Intellectual* disab* OR learning disab* OR learning difficult* OR mental* retard* OR developmental dis*; (b) Bull* OR Victim* OR Peer* Relation* OR Violen*; and (c) School* OR Education OR Class*. Additionally, a hand search was performed in reference lists of relevant articles and previous reviews of the literature on youth with disabilities (e.g., Carter & Spencer, 2006; Cummings et al., 2006; Mishna, 2003; Rose et al., 2011; Schroeder et al., 2014; Sentenac et al., 2012; Sreckovic et al., 2014; Thompson et al., 1994), as well as in all available years of peer-reviewed journals devoted to ID or developmental disorders (e.g., *American Journal on Intellectual and Developmental Disabilities*, *Journal of Intellectual Disabilities Research*, *Intellectual and Developmental Disabilities*, *Journal of Applied Research in Intellectual Disabilities*, *Journal of Intellectual and Developmental Disability*, *Journal of Autism and Developmental Disorders*, *Research in Developmental Disabilities*). This literature search was last updated on June 15, 2015.

Inclusion Criteria

Studies were considered for this review if they met the following five inclusion criteria. First, they had to include participants with a diagnosis of ID. Mixed samples of participants

with multiple disabilities were also considered eligible if data on the prevalence rates of bullying (perpetration, victimization, or both) were available for an identified subsample of youth with a diagnosis of ID.

Second, participants had to be school-aged youth with ID, from 5 to 22 years old, depending on the country's school policy. Studies comprising mixed samples of adolescents and adults with ID were considered eligible if the participants' mean age was 18 or lower, or if data on the relevant outcomes were available for those under 18 years old. Samples consisting of adults only were excluded.

Third, studies were retained if they examined prevalence rates of bullying perpetration, victimization or both among youth with ID. The term "general bullying" was used when studies provided only a general prevalence rate of bullying estimated either using very generic items (e.g., "being bullied or picked on," "getting teased or picked on") or by combining the responses for various specific forms of bullying (i.e., physical, verbal, relational and cyber) into a single summary score. When data concerning prevalence rates or total sample size were not reported in the text, authors were contacted directly for more information. If this information was still not available, the study was excluded from the review.

Fourth, only prospective, cohort, cross-sectional and case-control studies were included. Reviews, theoretical papers, or single-case studies were excluded. Finally, only studies published in English in a peer-reviewed journal were retained. Studies in other languages, published in non-peer-reviewed journals or unpublished (e.g., dissertations) were excluded.

Study Selection, Data Extraction, and Quality Assessment of Method Reporting

As suggested in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement (Liberati et al., 2009), inclusion of the relevant studies was determined by the authors through a three-step procedure based on a sequential examination of the title, abstract, and full text. At each step, decisions to retain a study were first made by all the authors separately and subsequently reviewed in committee. At each step, discrepant ratings were resolved in committee. Detailed information extracted from the reviewed studies is presented in Table S1 of the online supplements, and includes country, design, characteristics of ID and control participants, assessment context, school setting, types of bullying, information sources, types of measures, assessment time frame and criterion, prevalence estimates and correlates.

Assessments of the quality of method reporting in the reviewed studies were based on the recommendations of the STrengthening the Reporting of OBservational studies in Epidemiology Statement (STROBE; Vandenbroucke et al., 2007) and covered nine criteria: (a) study design, (b) setting, (c) participants, (d) variables, (e) data sources/measurement, (f) bias, (g) study size, (h) quantitative variables, and (i) statistical methods (for a broader description of these items, see Table 4). Each author rated each criterion (which comprised one or several indicators) separately in order to determine whether or not it met the STROBE recommendations. Discrepant ratings were discussed and resolved in committee.

Analysis and Synthesis of Prevalence Rates

Prevalence rates from multiple studies measuring bullying were aggregated to calculate a weighted mean prevalence estimate as follows (Oseburg, Dijkstra, Groothoff, Reijneveld, & Jansen, 2011, p. 62):

$$= \frac{\sum(\text{prevalence rate} \times \text{number of respondents})}{\sum(\text{number of respondents})}$$

Additionally, 95% confidence intervals of the weighted mean prevalence rates were estimated based on the normal approximation of the binomial distribution. However, when the product (np) of the total number of respondents (n) and of the proportion (p) was below 5, the exact binomial calculation of the binomial distribution was used.

The weighted mean prevalence estimates of bullying perpetration, victimization, and

both were examined according to the following study characteristics: (1) information sources (e.g., self-report *vs.* parents), (2) the assessment context (e.g., school *vs.* any), (3) school setting (e.g., regular education, special school, or multiple settings [i.e., youth recruited in regular education and special school settings]), (4) types of measures (e.g., questionnaire, interview, or mixed), (5) assessment time frame (e.g., past month, current year, or lifetime), and (6) bullying frequency criteria (i.e., dichotomous [present/absent] *vs.* severity cut-off score).

Results

Study Selection

As illustrated in Figure 1, the search provided 421 articles. When all duplicates were deleted, this number fell to 178. Of these, 152 studies were excluded based on their titles and abstracts, because they did not meet the inclusion criteria (for more details, see Figure 1). The full text of the 26 remaining articles was carefully screened and 15 more were excluded (for a full list of the studies, see the online supplements) because they did not meet at least one inclusion criterion. Eleven studies published between 2001 and 2015 (Blake, Lund, Zhou, Kwok, & Benz, 2012; Blake, Kim, Lund, Zhou, Kwok, & Benz, 2014; Bear, Mantz, Glutting, Yang, & Boyer, 2015; Christensen, Fraynt, Neece, & Baker, 2012; Glumbić & Źunić-Pavlović, 2010; Mayes, Calhoun, Baweja, & Mahr, 2015; Reiter & Lapidot-Lefler, 2007; Rose, Simpson, & Moss, 2015; Swearer, Wang, Maag, Siebecker, & Frerichs, 2012; Zeedyk, Rodriguez, Tipton, Baker, & Blacher, 2014; Žic & Igrić, 2001) met the inclusion criteria and are summarized in Table 1.

Study Characteristics

As shown in Table 1, most of the reviewed studies (72.7%) were conducted in the United States. Nine out of eleven studies used a comparison group, such as TD peers or youth with other disabilities (e.g., autism spectrum disorder, learning disability; see Table S1 for more details on the type of disability). Overall, a total of 2468 participants with ID were involved in these studies (M = 224.3, SD = 363.3, range = 8 to 1234). In 54.5% of the studies, the participants were exclusively schooled in regular education settings, 27.3% of the study settings were mixed, and two studies focused exclusively on special schools. When mentioned (in 54.5% of the studies), ID levels were mostly mild. Although the participants' age ranged from 6 to 21 years (M = 12.2, SD = 2.5), most were adolescents (54.5%). The majority were boys (M = 57.9%, SD = 13.6%, range = 30% to 73.8%). Additionally, the majority of the reviewed studies established the diagnosis of ID based solely on school-reported information. In only three of the reviewed studies (Christensen et al., 2012; Mayes et al., 2015; Zeedyk et al., 2014), the diagnosis of ID was established by the research team using formal intellectual quotient tests and/or adaptive behavior tests. Finally, except for Mayes et al. (2015), none of the other reviewed studies provided information about comorbid diagnoses (i.e., ADHD, autism, anxiety/depression, and/or oppositional defiant disorder) among the youth with ID.

Bullying was assessed mostly by questionnaire (63.6%), in the school context (63.6%), and reported only by the youth with ID (45.4%) or their parents (36.4%). Additionally, in studies the reference period was the past–current year (27.3%) or the past month(s) (36.4%). All studies provided data on victimization, while only six considered perpetration. Finally, all studies focused on general bullying and less than half of them examined specific forms (e.g., physical, verbal, relational).

Finally, it is important to note some possible overlap between the studies. Indeed, Blake et al. (2012) drew participants from two data sets (National Longitudinal Transition Study-2 and the Special Education Elementary Longitudinal Study), whereas Blake et al. (2014) also drew participants from the second of these data sets. Consequently, it is possible that samples used in both studies overlap to some extent. However, given that the sample size (1234 *vs.* 490), sample characteristics (e.g., age range), inclusion/exclusion criteria (e.g.,

school setting), and types of measures (e.g., questionnaire and interview *vs*. interview only) were different across these two studies, it was decided to retain both in this review. Additionally, Zeedyk et al. (2014) drew their sample from the one used by Christensen et al. (2012). Therefore, both studies could not be included for estimating the weighted mean prevalence rate of general bullying victimization and perpetration and only Christensen et al.'s study was retained for this purpose. However, since Zeedyk et al. (2014) examined specific forms of bullying victimization (i.e., physical, verbal, and relational), this study was used in the present review for estimating the weighted mean prevalence rates of specific forms of bullying victimization.

Prevalence Rates of Bullying Perpetration, Victimization and Perpetration-Victimization

Perpetration. Prevalence estimates of general bullying perpetration were reported in six studies (Christensen et al., 2012; Glumbić & Źunić-Pavlović, 2010; Mayes et al., 2015; Reiter & Lapidot-Lefler, 2007; Rose et al., 2015; Swearer et al., 2012). However, given that Reiter and Lapidot-Lefler (2007) did not provide their sample size, the weighted mean prevalence estimate could only be estimated on five studies. This weighted mean prevalence estimate was 15.1% (95%CI = 11.9–18.3, range = 0%–46.8%). Only one study examined specific forms of bullying perpetration, and revealed prevalence rates of 46.3% (95%CI = 36.9–55.7) for physical bullying and 41.8% (95%CI= 32–51.6) for relational bullying (Rose et al., 2015).

As illustrated in Table 2, the results showed systematic variations as a function of the study characteristics. Higher weighted mean prevalence estimates of general bullying perpetration were observed in studies: (a) using self-reports rather than parental reports; (b) focusing specifically on the school context; (c) involving youth attending regular schools (as opposed to special education or multiple settings); (d) using questionnaires rather than interviews; and (e) using a dichotomous criterion. Moreover, prevalence estimates of physical and relational bullying perpetration were higher with a dichotomous criterion (present/absent) than with a severity cut-off score (see Table 2).

Victimization. Prevalence estimates of general victimization were reported in all reviewed studies. However, as noted above, Zeedyk et al.'s (2014) results were not included in the calculation of the weighted mean prevalence estimate of general victimization, which is estimated at 36.3% (95%CI = 34.4–38.2, range = 6.6%–83%). Prevalence rates of physical (Bear et al., 2015; Reiter & Lapidot-Lefler, 2007; Zeedyk et al., 2014), verbal (Bear et al., 2015; Reiter & Lapidot-Lefler, 2007; Zeedyk et al., 2014; Žic & Igrić, 2001), and relational (Bear et al., 2015; Rose et al., 2015; Zeedyk et al., 2014) victimization were reported in three, four and three studies, respectively. These studies revealed weighted mean prevalence rates of physical, verbal, and relational victimization of 33.3% (95%CI = 27.2–39.4, range = 24.3%–56.7%), 50.2% (95%CI = 44–56.4, range = 35%–56.8%), and 37.4% (95%CI = 30.1–44.6, range = 21.6%–46.4%), respectively. Finally, cyber victimization was examined in only one study (Rose et al., 2015), where 38.3% (95%CI = 28.5–48.1) of the youth reported being bullied online.

As illustrated in Table 3, the results showed systematic variations as a function of the study characteristics. Similarly to perpetration estimates, weighted mean prevalence estimates of general victimization were higher when: (a) reported by youth with ID rather than by parents, (b) obtained through questionnaires, and (c) relying on a dichotomous (present/absent) criterion rather than a severity cut-off score. However, in contrast to general perpetration, general victimization was more prevalent in special education settings than in regular education or multiple settings, and less prevalent in studies focusing exclusively on bullying within the school context.

Weighted mean prevalence estimates for physical bullying victimization were higher

when: (a) reported by parents, (b) the youth were recruited in multiple settings, and (c) declared in interviews. Similarly, weighted mean prevalence estimates of verbal victimization were higher: (a) when the focus was on the school context, (b) the youth were schooled in multiple settings, and (c) assessments were done by interview. Finally, weighted mean prevalence estimates of relational victimization were higher when: (a) they were reported by the youth, (b) the youth attended a regular education setting, (c) reported in questionnaires, and (d) a monthly time frame was used. It is noteworthy that all specific forms were estimated to be more prevalent when a dichotomous criterion (present/absent) was used.

Perpetration-victimization. Four studies (Glumbić & Źunić-Pavlović, 2010; Mayes et al., 2015; Rose et al., 2015; Swearer et al., 2012) reported prevalence estimates of general perpetration-victimization. However, none of the reviewed studies examined the prevalence of specific forms of bullying perpetration-victimization. The weighted mean prevalence estimate for general perpetration-victimization was 25.2% (95%CI = 21.1–29.4, range = 1.6%–75%).

As illustrated in Table 2, the results also showed some variations as a function of the study characteristics, revealing higher weighted mean prevalence estimates of general bullying perpetration-victimization in studies: (a) including participants attending regular schools, and (b) using a dichotomous criterion (present/absent) for bullying experience.

Comparison with TD peers or those with other disabilities

Perpetration. Two studies statistically compared rates of bullying perpetration between youth with ID and their TD peers (Christensen et al., 2012; Mayes et al., 2015). They revealed either no differences (Christensen et al., 2012) or a significantly higher prevalence (Mayes et al., 2015) among youth with ID. In addition, two studies (Swearer et al., 2012; Mayes et al., 2015) statistically compared the prevalence of bullying perpetration among youth with ID and peers with other disabilities. One study reported no significant differences (Swearer et al., 2012), whereas the other one (Mayes et al., 2015) revealed a significantly higher prevalence among youth with ID compared with youth with ADHD-inattentive, depression/anxiety, and eating disorders.

Victimization. Four studies statistically compared the prevalence of general victimization among youth with ID and their TD peers (Bear et al., 2015; Christensen et al., 2012; Mayes et al., 2015; Žic & Igrić, 2001). These studies revealed either no differences (Žic & Igrić, 2001) or a significantly higher prevalence of self-reported (Christensen et al., 2012) and parent-reported (Bear et al., 2015; Mayes et al., 2015) victimization among youth with ID. Similarly, five studies (Blake et al., 2012, 2014; Mayes et al., 2015; Swearer et al., 2012; Zeedyk et al., 2014) statistically compared the prevalence of general victimization among youth with ID and peers with other disabilities. Three of these studies (Blake et al., 2012, 2014; Swearer et al., 2012) showed no significant differences, whereas the other two (Mayes et al., 2015; Zeedyk et al., 2014) found that youth with ID were significantly less likely to be victimized than youth with autism spectrum disorders (ASD). In addition, Mayes et al. (2015), showed that youth with ID were significantly more likely to be victimized than youth with ADHD (combined or inattentive), depression/anxiety, and eating disorders.

Three studies (Bear et al., 2015; Zeedyk et al., 2014; Žic & Igrić, 2001) statistically compared prevalence of physical or verbal victimization among youth with ID and their TD peers. Findings from youth (Zeedyk et al., 2014) revealed either a significantly higher prevalence of physical victimization or a significantly lower prevalence of verbal victimization among youth with ID. Inversely, parental reports showed no-significant differences in prevalence of physical (Bear et al., 2015; Zeedyk et al., 2014) or verbal victimization (Bear et al., 2015; Zeedyk et al., 2014; Žic & Igrić, 2001).

Two studies (Bear et al., 2015; Zeedyk et al., 2014) examined comparisons of prevalence estimates of relational victimization among youth with ID and their TD peers.

Youth self-reports (Zeedyk et al., 2014) revealed a significantly lower prevalence for youth with ID than their TD peers. In contrast, parental reports showed either a significantly higher prevalence estimate among youth with ID (Bear et al., 2015) or no significant differences (Zeedyk et al., 2014).

Finally, prevalence estimates of physical, verbal, and relational victimization among youth with ID and those with ASD were statistically examined in only one study (Zeedyk et al., 2014). Results showed that youth with ID have significantly lower prevalence estimates of physical and verbal victimization than their peers with ASD, whereas parental reports showed no significant differences. In addition, findings from youth self-reports show a significantly higher prevalence of relational victimization among youth with ID, whereas parental reports revealed no such difference.

Perpetration-Victimization. Only one study compared prevalence estimates of bullying perpetration and victimization by youth with ID and their peers with other disabilities (Swearer et al., 2012). This study found no significant between-group differences.

Correlates of Bullying Perpetration and Victimization

Perpetration. One study (Reiter & Lapidot-Lefler, 2007) examined the correlates of bullying perpetration and showed that it was significantly related to hyperactivity and behavior problems among adolescents with ID. However, no significant relationship was found between general bullying perpetration and emotional problems, relational problems or social skills deficit.

Victimization. Two studies (Christensen et al., 2012; Reiter & Lapidot-Lefler, 2007) examined the correlates of general victimization. Christensen et al. (2012) showed that general victimization was related to social problems and social withdrawal among adolescents with ID and TD peers. However, they found no significant relationship between general victimization and externalizing problems, anxiety, depression or socioeconomic variables (mother's years of schooling and family income). Meanwhile, Reiter and Lapidot-Lefler (2007) showed that general victimization was significantly related to emotional and relational problems among adolescents with ID. However, it was not significantly associated with hyperactivity and behavior problems or social skills deficit.

Quality Assessment of Method Reporting in the Reviewed Studies

As shown in Table 4, nine criteria were used to assess the quality of method reporting of the reviewed studies. Most of these criteria (except participants and statistical methods) rely on one indicator. In this systematic review, a study was considered as meeting the criteria (represented by a closed circle in Table 4) when the information available in the article was fully reported or described as recommended in the STROBE statement (Vandenbroucke et al., 2007).

Table 4 presents the findings from the quality assessment of method reporting in the reviewed studies. The findings show that all of the studies partially meet the STROBE statement criteria. More precisely, most of them reported or described information about the variables (90.9%), data sources/measurement (81.8%), and quantitative variables (100%). However, according to the STROBE statement criteria, most of them did not report sufficient information about the study design (18.2%), setting (36.4%), bias (36.4%), and sample size (18.2%). Finally, none of the studies met all of the indicators pertaining to information on the participants and statistical methods.

Discussion

Prevalence Rates of Bullying Perpetration, Victimization and Perpetration-Victimization

The first aim of this review was to provide a synthesis of the empirical studies examining the prevalence of bullying perpetration, victimization, and both among youth with ID. The findings show that youth with ID are more commonly involved in bullying as victims

(36.3%) but can also be perpetrators (15.1%) or perpetrator-victims (25.2%). In addition, they are likely to experience many forms of victimization, such as physical (33.3%), relational (37.4%) and cyber (38.3%), with verbal (50.2%) victimization being the most frequently reported. Interestingly, although prevalence rates obtained for bullying perpetration among youth with ID were similar to those from studies on TD youth (e.g., Craig et al., 2009; Due & Holstein, 2008; Due et al., 2005; Due, Merlo, Harel-Fixhc, & Damsgaard, 2009; Nansel, Craig, Overpeck, Saluja, & Ruan, 2004), rates of bullying victimization and perpetration-victimization were higher than those commonly found among TD youth (e.g., Craig et al., 2009; Due & Holstein, 2008; Due et al., 2005, 2009; Nansel et al., 2004).

Additionally, the present review show that prevalence rates differ according to specific study characteristics, such as the information sources, assessment context and school setting, types of measures, time frame, and bullying frequency criteria.

Information Sources and type of measures. The results show that youth with ID and parents tend to report rather different prevalence rates of bullying perpetration and victimization. In fact, general forms of bullying perpetration and victimization appear to be reported more frequently by the youth themselves than by the parents. The same pattern of results was observed for relational victimization, while the opposite was found for physical victimization. Parents of youth with ID appear more aware and more concerned with more obvious forms of bullying (physical), while youth may show greater sensitivity to more subtle forms (relational). The actual results also suggest that, like parents of TD youth, parents of youth with ID may tend to underestimate the amount of bullying occurring (Sawyer, Mishna, Pepler, & Wiener, 2011; Sheard, Clegg, Standen, & Cromby, 2001). However, the current findings do not provide a clear indication of the most accurate information source or of whether one should be preferred over the other. Self- and parental reports may each have their own potential biases. If they maintain ongoing contact with schools and community stakeholders, parents may provide more accurate information about their children's behavior and school or community experiences. For their part, given their more limited social skills, youth with ID may misinterpret verbal and non-verbal cues from others (Hong & Espelage, 2012) and be less skilled at recognizing emotions in others (Sheard et al., 2001). Therefore, as recently done by van Roekel, Scholte, and Didden (2010) regarding youth with ASD, it seems important to test how and whether youth with ID are able to adequately recognize bullying perpetration and victimization when it occurs in order to determine the intervention target. Indeed, if a youth with ID is misinterpreting bullying situations, the intervention should be aimed at helping him/her to identify what is bullying or not. Regardless of whether he/she adequately recognizes bullying situations, an intervention is still needed, because he/she may still be suffering from the negative consequences associated with his/her perceived experience of victimization.

Additionally, most of the reviewed studies favored questionnaires, which, for people with ID, may pose problems (Finlay & Lyons, 2001), such as a lack of understanding or difficulties with abstract or hypothetical scenarios—especially in populations with moderate or severe ID levels. In fact, questionnaires may be more appropriate for use with parents as a source of information. For questionnaires to be used with youth with ID, sufficient reading abilities are necessary, and the wording must be adapted. Conversely, interviews may provide an atmosphere of trust and confidence, enabling youth to overcome their language difficulties. It also makes it easier to clarify terms and verify comprehension (Finlay & Lyons, 2001). Future studies using and comparing both methods may help to better know if general bullying perpetration and victimization rates are likely to be inflated when youth with ID are surveyed through questionnaires. In addition, they may help to determine which types of measures to select for evaluating bullying perpetration and victimization in accordance to the source of information. In the meantime, read-aloud procedures may help make the administration of

questionnaires more flexible and adapted to the reality of youth with ID.

Comparison between parents' and youth's reports is further complicated by the fact that, in most studies, only one information source (parents or youth) was solicited. Only Christensen et al. (2012) and Zeedyk et al. (2014) have examined the level of agreement between youth with ID and their parents. Whereas Christensen et al. (2012) obtained a significant moderate agreement between mothers and adolescents in reports of the prevalence of general bullying victimization, Zeedyk et al. (2014) show non-significant levels of agreement between youth with ID and their mothers in reports of the prevalence of specific forms of bullying victimization. Consequently, the relative accuracy of parents' and children's reports remains uncertain and future studies should aim to improve multi-source assessment procedures for bullying among youth with ID. In order to clarify discrepancies in ratings between parental and self-reports future studies should include other sources of information such as peers and teachers, who can witness bullying without being directly or emotionally involved.

Assessment context and schooling setting. The findings show that youth with ID frequently experience school bullying and that when they bully others, they do it mostly at school. Nevertheless, the results show that victimization occurs in other contexts as well. Interestingly, special schools and multiple school settings stand out as especially risky settings for victimization in this population. Only relational victimization was reported to occur more often in regular school settings, suggesting that in these regular schools settings, the social interaction opportunities between youth with ID and their TD peers may be less efficiently monitored and regulated by the school personnel. This suggest that school personnel involved with youth with ID in regular school settings should be particularly attentive to signs of relational victimization, and perhaps that specific training sessions should be developed to help these personnel recognize signs of relational victimization among youth with ID and to identify proper intervention strategies.

Time frame. Results regarding possible differences in prevalence rates as a function of the length of the assessment time frame were generally inconclusive. This inconsistency may be observed because none of the studies relying on longer time frames (i.e., current or past school year) controlled for the exact duration of the assessment period. For instance, some participants may have reported bullying occurring since the beginning of the school year a few months into the school year, whereas others may have reported it closer to the end of the school year. Overall, it thus remains unknown whether a shorter or a longer time frame should be preferred, especially given the cognitive limitations of youth with ID, which may impact their long-term recall. Future studies using and comparing various time frames may help provide a clearer answer to this question.

Criteria. The findings show that studies relying on a dichotomous criteria (whether bullying occurred or not) tended to result in significantly higher prevalence rates than severity cut-off scores based on the frequency of exposure to bullying. As recently highlighted by Bear et al. (2015) and Rose et al. (2015), using a more liberal dichotomous criterion may heighten prevalence estimates because it would capture behaviors that do not necessarily reflect the repetitive nature of bullying. In contrast, the question remains as to whether exposure to bullying, even once, may generate harmful consequences for the targeted youth. More systematic studies of the consequences of bullying as a function of the bullying criterion may be required to answer this question.

Comparison with TD peers or those with other disabilities

The second objective was to examine whether youth with ID were at greater risk for bullying perpetration, victimization, and perpetration-victimization than their TD peers or peers with other disabilities. Findings from this systematic review are mixed and inconclusive regarding comparisons in prevalence rates of bullying perpetration and victimization between

youth with ID and their TD peers or peers with other disabilities. These findings were unexpected in light of previous studies of youth with other disabilities which, for example, found victimization rates two to four times higher in youth with "visible" disabilities (e.g., physical disabilities, hearing impairments) than in students without disabilities (Rose et al., 2011). However, our results suggest that youth with ID may not be characterized by more victimization overall than their peers, therefore suggesting that victimization is a rather common experience in all youth, no matter if they are dealing with a disability or not. It also appears that youth with ID can be perpetrator of bullying and that they are not exclusively confined to a victim's role. Furthermore, in these youth, types of victimization may be particularly relevant to consider. The present findings show that these youth tend to report less verbal and relational victimization as well as more physical victimization than their TD peers, and that they also tend to report more relational victimization, as well as less physical and verbal victimization than their peers with ASD. In the reviewed studies, such differences were not supported by parental report however, raising again the question as to whether youth with ID can effectively discriminate between different forms of victimization and if parental report should be preferred over self-report for research purposes, while keeping in mind that for the exposed youth even erroneous perceptions of victimization can be associated with negative consequences. Given the scarcity of research in this area and the inconsistent nature of the findings, it seems important to explore these possible differences in victimization rates more systematically.

Correlates of Bullying Perpetration and Victimization

Bullying perpetration in youth with ID was associated with a higher risk of hyperactivity and behavior problems (Reiter & Lapidot-Lefler, 2007). These associations might be explained by the comorbidity often present with ID diagnoses. Youth with ID typically present lower self-regulation and may also struggle with language or communication problems that may heighten their likelihood of bullying others, often as a way of expressing or responding to aggression (Carter & Spencer, 2006).

The current findings suggest that social limitations (i.e., social and emotional problems and social withdrawal) may represent more important risk factors for youth with ID than cognitive limitations. These results are in line with Cook, Williams, Guerra, Kim, and Sadek's (2010) meta-analysis revealing that peer status and social competence were significant predictors of bullying victimization in school-aged TD youth. According to these scholars, TD victims are likely to show internalizing symptoms and to lack adequate social skills (Cook et al., 2010). Since youth with ID are characterized by poorer social skills than TD youth, they could represent easy bullying targets (Carter & Spencer, 2006; Sheard et al., 2001). Although interesting, these results are mainly based on evidence from cross-sectional studies, which precludes the ability to determine whether internalizing symptoms and low social skills increase the risk of victimization among youth with ID, or whether it is being victimized that predicts heightened levels of internalizing symptoms and reduced social skills (e.g., Mishna, 2003; Rose et al., 2012). This should be more thoroughly investigated in future studies.

Limitations and Directions for Future Studies

Although informative, the present findings must be interpreted with caution given the limitations of the reviewed studies. First, generalizability of the findings is questionable given the location of the studies and the participants' main characteristics. Indeed, the studies were conducted mostly in the United States and relied mostly on small sample sizes (6 of the 11 studies: $N < 65$). Consequently, it is still unknown whether the prevalence estimates of bullying perpetration and victimization among youth with ID differ in other cultures or countries. Additionally, in the majority of the studies, the diagnosis of ID was established based solely on school-reported information. Consequently, almost no information is available regarding diagnostic assessment procedures or even their standardization across

participants within a study. It is thus possible that unsystematic assessment procedures may partly explain the observed heterogeneity of results among the reviewed studies. Future studies should provide clearer information on how the diagnostic assessment was conducted and obtained. Similarly, only one study (Mayes et al., 2015) provided information about possible comorbid diagnoses among participants (i.e., ADHD, autism, anxiety, depression, and/or oppositional defiant disorder). Again, such a lack of information is problematic and likely creates heterogeneity in the results between the reviewed studies. Finally, only half of the studies (54.5%) clearly reported participants' levels of ID, which in most cases were mild. Given these limitations, it is still unknown whether the prevalence of bullying perpetration and victimization differs as a function of the level of severity (i.e., mild, moderate, severe) and comorbidity (e.g., Down syndrome, ASD, ADHD).

Second, although the reviewed studies focused on youth involved in bullying as perpetrators, victims or both, they neglected witnesses of bullying incidents. This is worrisome because research among TD youth highlights that witnessing bullying may have deleterious consequences on youth psychosocial adjustment (e.g., Janosz, Archambault, Pagani, Pascal, Morin, & Bowen, 2008; Morin, Maïano, Nagengast, Marsh, Morizot, & Janosz, 2011). Thus, the prevalence and consequences of exposure to bullying as witnesses should be more thoroughly investigated among youth with ID.

Third, studies examining bullying victimization and perpetration among youth with ID should be more rigorous with regard to the quality of method reporting and follow the STROBE recommendations (Vandenbroucke et al., 2007) more closely. In particular, the observed lack of information on the participants and statistical methods tempers the strength of the present findings. It is thus important that future studies more thoroughly describe their design, setting and statistical methods (e.g., interactions, missing data).

Finally, very few studies examined the correlates of bullying perpetration and victimization among youth with ID. Consequently, the individual and contextual variables that may be related to bullying among youth with ID must be more specifically examined in future studies to address the factors involved in bullying and to tailor interventions accordingly.

Conclusion

In conclusion, despite the heterogeneous quality of the reviewed studies, the present findings show that bullying perpetration and victimization represent a current and worrisome phenomenon in youth with ID. Living with ID may lead to a relative lack of control over one's life, which may in turn substantially increase these youth's risk of being repetitively involved in a power imbalance (Nettelbeck & Wilson, 2002). Moreover, being a victim of bullying may increase the likelihood of youth with ID resorting to bullying perpetration, especially in regular education settings. Unfortunately, bullying perpetration is clearly understudied in this population, and youth with ID are most often perceived solely as victims of bullying. This study highlights the need not only to more rigorously assess bullying perpetration and victimization in youth with ID, but also to better understand the nature of bullying by focusing more specifically on forms of victimization (physical, verbal and relational) and by considering its correlates more systematically.

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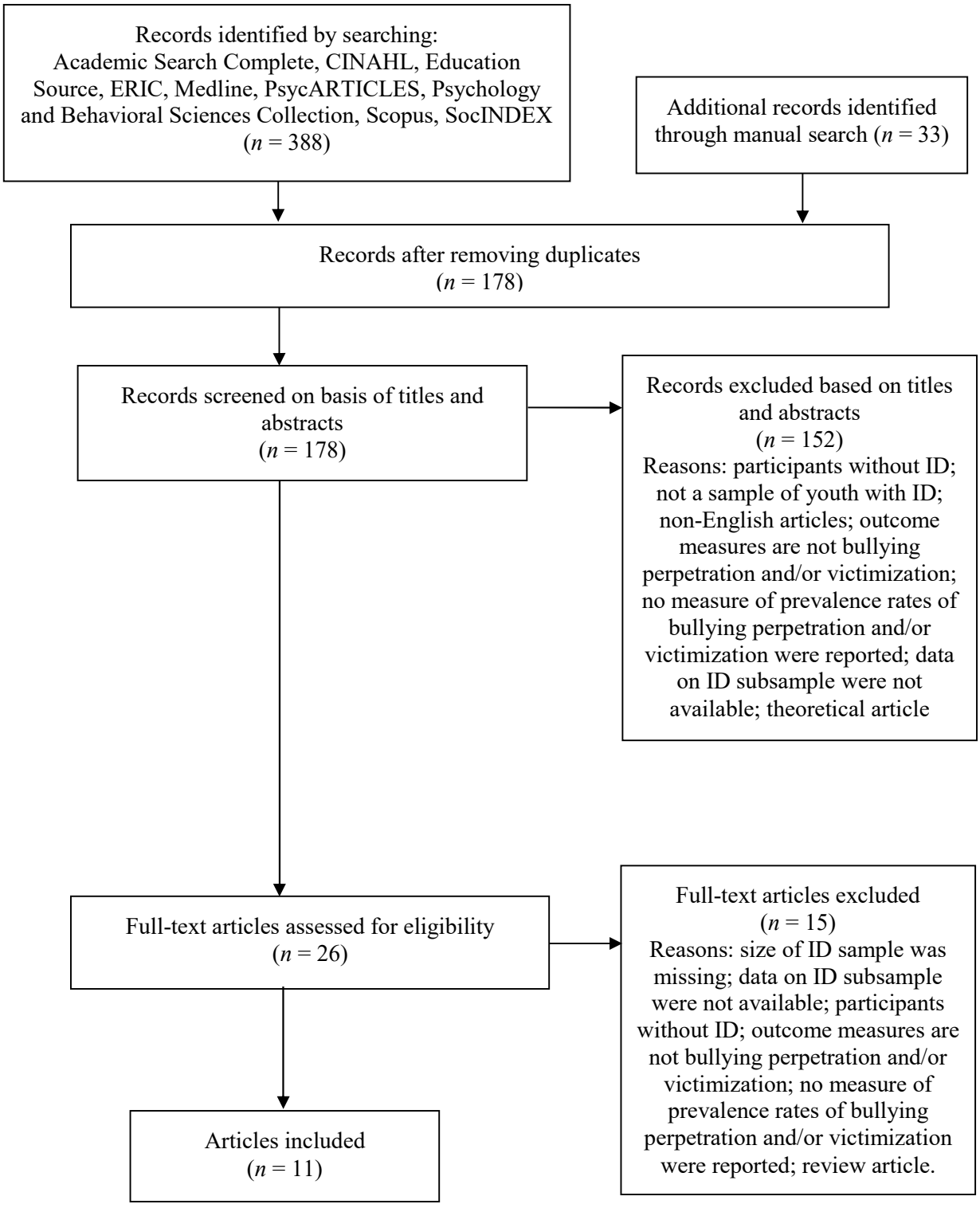

Figure 1. Results of Search Strategy Based on the PRISMA Statement (Liberati et al., 2009)

Table 1
Main Characteristics of the Reviewed Studies

References	Design	Countries	N_{sample}†*	Age^{M}†	Age^{R}†	$\%_{boys}$†	ID level†	Comparison sample	Assessment context	School setting†	Bullying	Types of bullying	Sources	Measures	Time frame	Criteria
Bear et al. (2015)	CC	USA	37	NM	6/7-10/11	41.7	Mild-moderate	Disabled, TD	SCH	RE	VICT•	G, P, V, R	PA	Q	Year	CO-DIC⌘
Blake et al. (2012)	Cohort	USA	1234	NM	6-16	NM	NM	Disabled	SCH	Mixed (RE, SS)	VICT	G	PA	Mixed (Q, I)	Year	DIC
Blake et al. (2014)	Cohort	USA	490	10.57	7-13	67.1	NM	Disabled	SCH	RE	VICT	G	PA	I	Year	DIC
Christensen et al. (2012)	Cohort	USA	46	13	13	62.2	NM	TD	Any	Mixed (RE, SS)	VICT, PERP	G	SR, PA••	I	NM	CO-DIC○
Glumbić & Žunić-Pavlović (2010)	CS	SRB	61	15.88	12.5-17.5	73.8	Mild	None	SCH	SS	VICT, PERP	G	SR	Q	Month	CO
Mayes et al. (2015)	CC	USA	230	8.6	6-18	73	Mild-severe	Disabled, TD	Any	RE	VICT, PERP	G	PA	Q	Month	DIC☆
Reiter & Lapidot-Lefler (2007)	CS	ISR	186	NM	12-21	56.5	Mild	None	NM	SS	VICT, PERP▲	G, P, V	SR	Q	NM	DIC
Rose et al. (2015)	CC	USA	117	14.35	11-20	58.1	NM	Disabled, TD	SCH	RE	VICT, PERP	G, P, R, C	SR	Q	Month	CO-DIC⌘
Swearer et al. (2012)	CC	USA	8	12.88	11-14	62.5	Mild	Disabled, TD	SCH	RE	VICT, PERP	G	SR	Q	Month	DIC
Zeedyk et al. (2014)	CC	USA	39	13	13	53.8	NM	ASD, TD	SCH	Mixed (RE, SS)	VICT	G^{Δ}, P, V, R	SR, PA••	I	NM	$CO^{\Delta\Delta}$-DIC
Žic & Igrić (2011)	CC	CR	20	9.36	7-10.5	30	Mild	TD	Any	RE	VICT	G, V	SR	Q	NM	DIC

Note. †These characteristics are for the ID sample only. *The *N* sample used by authors to estimate the prevalence estimate can be different from the overall sample described in their study; •the prevalence estimates of mild and moderate subsamples were combined (averaged) to obtain an overall prevalence for the ID sample; •• the prevalence rates from both of these information sources were combined (averaged) to estimate an overall study prevalence; $^{\Delta}$this type of bullying was not included in the analysis because the prevalence was estimated using the same sample as the one from Christensen et al. (2012); $^{\Delta\Delta}$In Zeedik et al. (2014), the same severity cut-off criterion was used for estimating the prevalence of general victimization than in Christensen et al. (2012). This estimate was identical in both studies because it was calculated on the same sample. Therefore, Zeedik et al.'s estimate was not included in the analysis;☆for this study, the data used were those with victim only, perpetration only, and perpetration-victimization only; ▲the prevalence estimate of perpetration and perpetration-victimization was not included in the analysis because the sample size was not mentioned; ⌘the prevalence rates of both of these criteria were combined (averaged) to estimate an overall study prevalence; ○the prevalence rates of both of these criteria were combined (averaged) separately for each information source (self-report and parents) to estimate an overall prevalence for each information source; ^{M}Mean; ^{R}range; ASD = autism spectrum disorder; C = Cyber; CC = case-control; CO = severity cut-off score; CR = Croatia; CS = cross-sectional; DIC = dichotomous G = general; I = Interview; ID = intellectual disability; ISR = Israel; NL = The Netherlands; NM = not mentioned; P = Physical; PA = parent; PERP = perpetration; Q = questionnaire; R = relational; RE = regular education schools; SCH = school; SR = self-report; SRB = Serbia; SS = special schools; TD = typically developing: TE = teacher; USA = United States of America; V = verbal; VICT = victimization.

Table 2

Prevalence and Range of Bullying Perpetration and Perpetration-Victimization According to Studies' Characteristics

Characteristics	Perpetration												Perpetration-Victimization			
	General				Physical				Relational				General			
	N	%	95%CI	Range (%)	*N*	%	95%CI	Range (%)	*N*	%	95%CI	Range (%)	*N*	%	95%CI	Range (%)
By source of information																
Parents	2	5.9	3.1-8.7	5.2-9.8	-	-	-	-	-	-	-	-	1	26.1	20.4-31.8	-
Self-report	4	26.8	20.8-32.7	0-46.8	1	46.3	36.9-55.7	-	1	41.8	32-51.6	-	3	24.2	18-30.3	1.6-75
By assessment context												-				
School	3	31.9	25.1-38.8	0-46.8	1	46.3	36.9-55.7	-	1	41.8	32-51.6	-	3	24.2	18-30.3	1.6-75
Any	2	5.4	2.8-7.9	5.2-5.9	-	-	-	-	-	-	-	-	1	26.1	20.4-31.8	-
By school setting												-				
Regular education	3	18.1	14-22.1	0-46.8	1	46.3	36.9-55.7	-	1	41.8	32-51.6	-	3	29.3	24.6-34	26.1-75
Special school	1	9.8	2.3-17.3	-	-	-	-	-	-	-	-	-	1	1.6	0.04-8.8	-
Mixed	1	5.9	2.1-14.5	-	-	-	-	-	-	-	-	-	-	-	-	-
By type of measures												-				
Questionnaire	4	16.8	13.2-20.5	0-46.8	1	46.3	36.9-55.7	-	1	41.8	32-51.6	-	4	25.2	21.1-29.4	1.6-75
Interview	1	5.9	2.1-14.5	-	-	-	-	-	-	-	-	-	-	-	-	-
By time frame												-				
Year	-	-		-	-	-		-	-	-		-	-	-		-
Months	4	16.8	13.2-20.5	0-46.8	1	46.3	36.9-55.7	-	1	41.8	32-51.6	-	4	25.2	21.1-29.4	1.6-75
NM	1	5.9	2.1-14.5	-	-	-	-	-	-	-	-	-	-	-		-
By bullying frequency criterion																
Dichotomous	4	22.2	18.2-26.2	0-69.4	1	69.7	61.1-78.3	-	1	52.6	42.7-62.5	-	3	35.8	30.8-40.8	26.1-75
Severity cut-off	3	13.8	9.5-18.1	2.6-24.1	1	22.9	15-30.8	-	1	30.9	21.7-40.1	-	2	9	4.8-13.2	1.6-12.8

Note. *N* = number of studies; NM = not mentioned.

Table 3

Prevalence and Range of Bullying Victimization According to Studies' Characteristics

Characteristics	General				Physical				Verbal				Relational				Cyber			
	N	%	95%CI	Range (%)	*N*	%	95%CI	Range (%)	*N*	%	95%CI	Range (%)	*N*	%	95%CI	Range (%)	*N*	%	95%CI	Range (%)
By source of information																				
Parents	5	32.2	30.2-34.3	17.6-42.5	2	41.4	28.7-54	24.3-71.4	2	51.7	38.8-64.6	43.2-66.7	2	29.1	17.4-40.8	28.6-29.4		-		-
Self-report	6	56	51.2-60.7	6.6-83	2	30.5	23.6-37.4	29.8-37.5	3	49.8	42.7-56.9	35-52.3	2	41.6	32.5-50.7	12.5-46.4	1	38.3	28.5-48.1	-
By assessment context																				
School	6	31.5	29.4-33.5	6.6-49.1	2	40.5	29.3-51.7	24.3-56.7	2	50	38.6-61.4	43.2-56.8	3	37.4	30.1-44.6	21.6-46.4	1	38.3	28.5-48.1	-
Any	3	38.4	33.1-43.6	30-42.2	-	-		-	1	35	14.1-55.9	-	-	-	-	-		-		-
NM	1	83	77.6-88.4	-	1	29.8	22.6-37	-	1	52.3	44.4-60.2	-	-	-	-	-		-		-
By school setting																				
Regular education	6	33.1	30-36.2	17.6-49.1	1	24.3	10.5-38.1	-	2	40.3	27.6-53.1	35-43.2	2	41.7	33.4-50.1	29.4-46.4	1	38.3	28.5-48.1	-
Special school	2	64.1	58.2-70.1	6.6-83	1	29.8	22.6-37	-	1	52.3	44.4-60.2	-	-	-	-	-		-		-
Mixed	2	33.3	30.7-35.8	32.7-42.2	1	56.7	40.8-72.7	-	1	56.8	40.8-72.8	-	1	21.6	8.4-34.9	-		-		-
By type of measures																				
Questionnaires	7	48.1	44.3-52	6.6-83	2	28.7	22.3-35.2	24.3-29.8	3	49.1	42.3-55.8	35-52.3	2	41.7	33.4-50.1	29.4-46.4	1	38.3	28.5-48.1	-
Interview	2	30.6	26.7-34.4	28.7-42.2	1	56.7	40.8-72.7	-	1	56.8	40.8-72.8	-	1	21.6	8.4-34.9	-		-		-
Mixed	1	32.7	30.1-35.3	-					-	-		-	-	-	-	-		-		-
By time frame																				
Year	3	31.3	29.1-33.5	17.6-32.7	1	24.3	10.5-38.1	-	1	43.2	27.2-59.3	-	1	29.4	14.7-44.1	-				
Months	4	35.8	31.2-40.5	6.6-49.1	-	-		-	-	-		-	1	46.4	36.5-56.3	-	1	38.3	28.5-48.1	-
NM	3	68.2	62.7-73.6	30-83	2	35	28.3-41.8	29.8-56.7	3	51.4	44.7-58.2	35-56.8	1	21.6	8.4-34.9	-		-		-
By bullying frequency criterion																				
Dichotomous	9	38.8	36.8-40.7	24.3-83	3	36.4	30.1-42.6	29.8-56.7	4	54.2	48-60.4	35-70.2	3	51.2	43.7-58.7	21.6-63.9	1	51.1	41-61.2	-
Severity cut-off	4	19.5	14.9-24.1	6.6-27.3	1	5.4	0.7-18.2	-	1	16.2	4.3-28.1	-	2	24	16.8-31.3	11.3-28.9	1	25.5	16.7-34.3	-

Note. *N* = number of studies; NM = not mentioned.

Table 4

Quality Assessment[†] *of Method Reporting in the Reviewed Studies*

References	Study design[a]	Setting[b]	Participants[c]	Variables[d]	Data sources/ measurement[e]	Bias[f]	Sample size[g]	Quantitative variables[h]	Statistical methods[i]
Bear et al. (2015)	○	●	●○	●	●	○	○	●	●○●✧○
Blake et al. (2012)	○	●	●○	●	●	●	●	●	●○●✧○
Blake et al. (2014)	●	●	●○	●	●	●	●	●	●○●✧○
Christensen et al. (2012)	○	○	●○	●	○	○	○	●	●●○✧●
Glumbić & Žunić-Pavlović (2010)	○	○	○✧	○	○	○	○	●	○●○✧○
Mayes et al. (2015)	○	○	●○	●	●	●	○	●	●●○✧○
Reiter & Lapidot-Lefler (2007)	○	○	○✧	●	●	○	○	●	○●○✧○
Rose et al. (2015)	●	●	○○	●	●	○	○	●	○○○✧○
Swearer et al. (2012)	○	○	●○	●	●	●	○	●	●●○✧○
Zeedyk et al. (2014)	○	○	●○	●	●	○	○	●	●●○✧○
Žic & Igrić (2001)	○	○	●●	●	●	○	○	●	○○○●○

Note [†]The criteria used to assess quality of method reporting are taken from the STrengthening the Reporting of OBservational studies in Epidemiology Statement (STROBE; Vandenbrouke et al., 2007); [a]One indicator: presentation of key elements of study design early in the paper; [b]One indicator: description of information related to the setting, locations, periods of recruitment; [c]Two indicators: (1) description of eligibility criteria, sources and methods of participant selection; and (2) matching criteria and number of exposed/unexposed or number of controls per case when appropriate; [d]One indicator: clear definition of outcomes, exposures, predictors, potential confounders; [e]One indicator: sources of data and details of measurement methods; [f]One indicator: description of any efforts to address potential sources of bias; [g]One indicator: description of how the sample size was determined; [h]One indicator: explanation of how quantitative variables were managed in the analysis; [i]Five indicators: (1) description of all statistical methods, (2) description of any methods used to examine subgroups and interactions,(3) explanation of missing data management, (4) explanation of how loss to follow-up, matching of cases and controls or sampling strategies were addressed, and (5) description of sensitivity analyses; ● = met the STROBE recommendation; ○ = did not meet the STROBE recommendation; ✧= not a relevant indicator.

Supplemental Materials for:

Prevalence and Correlates of Bullying Perpetration and Victimization Among School-Aged Youth with Intellectual Disabilities: A Systematic Review

This online supplement comprises two sections, including:

S1. References for the full-text articles assessed for eligibility but excluded from the systematic review

Table S1. Studies Examining the Prevalence and Correlates of Bullying Perpetration and Victimization Among School-Aged Youth with Intellectual Disabilities

S1. References for the full-text articles assessed for eligibility but excluded from the systematic review

Didden, R., Scholte, R. H., Korzilius, H., De Moor, J. M., Vermeulen, A., O'Reilly, M., ... & Lancioni, G. E. (2009). Cyberbullying among students with intellectual and developmental disability in special education settings. *Developmental Neurorehabilitation*, *12*(3), 146-151.

Farmer, T. W., Petrin, R., Brooks, D. S., Hamm, J. V., Lambert, K., & Gravelle, M. (2012). Bullying involvement and the school adjustment of rural students with and without disabilities. *Journal of Emotional & Behavioral Disorders*, *20*(1), 19-37.

Kaukiainen, A., Salmivalli, C., Lagerspetz, K., Tamminen, M., Vauras, M., Mäki, H., & Poskiparta, E. (2002). Learning difficulties, social intelligence, and self–concept: Connections to bully–victim problems. *Scandinavian Journal of Psychology*, *43*(3), 269-278.

Kokkinos, C. M., & Antoniadou, N. (2013). Bullying and victimization experiences in elementary school students nominated by their teachers for specific learning disabilities. *School Psychology International*, *34*(6), 674-690.

Luciano, S., & Savage, R. S. (2007). Bullying risk in children with learning difficulties in inclusive educational settings. *Canadian Journal of School Psychology*, *22*(1), 14-31.

Martlew, M., & Hodson, J. (1991). Children with mild learning difficulties in an integrated and in a special school: Comparisons of behaviour, teasing and teachers' attitudes. *British Journal of Educational Psychology*, *61*(3), 355-372.

Morrison, G. M., Furlong, M. J., & Smith, G. (1994). Factors associated with the experience of school violence among general education, leadership class, opportunity class, and special day class pupils. *Education & Treatment of Children*, *17*(3), 356-369.

Nabuzoka, D., & Smith, P. K. (1993). Sociometric status and social behaviour of children with and without learning difficulties. *Journal of Child Psychology & Psychiatry*, *34*(8), 1435-1448.

Nabuzoka, D. (2003). Teacher ratings and peer nominations of bullying and other behaviour of children with and without learning difficulties. *Educational Psychology*, *23*(3), 307-321.

Norwich, B., & Kelly, N. (2004). Pupils' views on inclusion: Moderate learning difficulties and bullying in mainstream and special schools. *British Educational Research Journal*, *30*(1), 43-65.

Phasha, T. N., & Nyokangi, D. (2012). School-based sexual violence among female learners with mild intellectual disability in South Africa. *Violence against women*, *18*(3), 309-321.

Reiter, S., Bryen, D., & Shachar, I. (2007). Adolescents with intellectual disabilities as victims of abuse. *Journal of Intellectual Disabilities*, *11*(4), 371–387.

Sterzing, P. R., Shattuck, P. T., Narendorf, S. C., Wagner, M., & Cooper, B. P. (2012). Bullying involvement and autism spectrum disorders: Prevalence and correlates of bullying involvement among adolescents with an autism spectrum disorder. *Archives of Pediatrics & Adolescent Medicine*, *166*(11), 1058-1064.

Thompson, D., Whitney, I., & Smith, P. K. (1994). Bullying of children with special needs in mainstream schools. *Support for Learning*, *9*(3), 103-106.

Whitney, I., Nabuzoka, D., & Smith, P. K. (1992). Bullying in schools: Mainstream and special needs. *Support for learning*, *7*(1), 3-7.

Table S1. Studies Examining the Prevalence and Correlates of Bullying Perpetration and Victimization Among School-Aged Youth with Intellectual Disabilities

Reference & Country	Design	ID sample†	CTRL sample†	Assessment context	School setting△	Types of bullying	Sources	Measures	Time frame & Criterion	Prevalence	Correlates
Bear et al. (2015) *United States of America*	Case-control	N_{total} = 37 $\%_{boys}$= 41.7 Age_{range} = 6/7-10/11 Age_{mean} = NM Age_{SD} = NM ID_{level} = mild, moderate ID_{CMO} = NM	N_{total} = 12490 $\%_{boys}$= NM Age_{range} = NM Age_{mean} = NM Age_{SD} = NM Characteristics = TD and WOD●	School	Regular education	General Physical Verbal Relational	Parents	Questionnaire (APRIBTS)	Current school Year Dichotomous (No vs. at least "sometimes") Severity cut-off (At least "once or twice a month")	*ID sample* Victimization General: 24.3%○ / 10.8%○○ Physical: 43.3%○ / 5.4%○○ Verbal: 70.2%○ / 16.2%○○ Relational: 47.6%○ / 11.3%○○ *CTRL samples* Victimization $General^{AD}$: 29.8%○ / 7.3%○○ $General^{TD}$: 22.3%○ / 5.2%○○ $Physical^{AD}$: 41.1%○ / 9.9%○○ $Physical^{TD}$: 36%○ / 6.8%○○ $Verbal^{AD}$: 62%○ / 19.6%○○ $Verbal^{TD}$: 56.3%○ / 15.3%○○ $Relational^{AD}$: 44.8%○ / 11%○○ $Relational^{TD}$: 34.9%○ / 7.8%○○	Not examined
Blake et al. (2012) *United States of America*	Cohort	N_{total} = 1234 $\%_{boys}$= NM Age_{range} = 6-16 Age_{mean} = NM Age_{SD} = NM ID_{level} = NM ID_{CMO} = NM	N_{total} = 12282 $\%_{sex}$= NM Age_{range} = 6-16 Age_{mean} = NM Age_{SD} = NM Characteristics = WOD‡	School	Regular Education, special school	General	Parents	Questionnaire (1 question from the NLTS2) Interview (1 question from the SEELS)	Current or past school year Dichotomous (No vs. yes)	*ID sample* Victimization $General^{W1}$: 32.7%□ *CTRL sample* Victimization $General^{W1}$: 28%□	Not examined
Blake et al. (2014) *United States of America*	Cohort	N_{total} = 490 $\%_{boys}$= 67.1 Age_{range} = 7-13 Age_{mean} = 10.57 Age_{SD} = 1.62 ID_{level} = NM ID_{CMO} = NM	N_{total} = 3665 $\%_{boys}$= 64.8 Age_{range} = 6-13 Age_{mean} = NM Age_{SD} = NM Characteristics = WOD✠	School	Regular education	General	Parents	Interview (from the SEELS)	During this school year or this past school year Dichotomous (No vs. yes)	*ID sample* Victimization $General^{W1}$: 28.7%□□ *CTRL sample* Victimization $General^{W1}$: 28.6%□□	Not examined

Note. AD = sample with all disabilities including ID; APRIBTS = Adolescent Peer Relations Instrument Bully/Target Scale; ADHD = attention deficit hyperactivity disorder; ASD = autism spectrum disorders; ANX = anxiety; BD = behavioral disorder; BRP-II = Behavior Rating Profile, Second edition; BVS = Bully Victimization Scale; BS = Breaking the Silence; CMO = comorbidity; CTRL = control sample; DEP = depression; HBQ = Harassment Bullying Questionnaire; HI = hearing impaired; ID = intellectual disability; LD = learning disability/deficiency; *M* =mean; NLTS2 = National Longitudinal Transition Study-2; NM = not mentioned; OHI = other health impaired; ODD = oppositional defiant disorder; PBS = Pediatric Behavior Scale; PRB = Pacific-Rim Bullying Measure; RAPS = Relational Aggression Perpetration Scale; RAVS = Relational Aggression Victimization Scale; SEELS = special education elementary longitudinal study; SD = standard deviation; SI = speech/language impairment; TD = typically developing; UIBS = University of Illinois Bully Scale; UIFS = University of Illinois Fight Scale; UIVS = University of Illinois Victimization Scale; WOD = with other disabilities; ^{ASD} autism spectrum disorder; ^{NS} not statistically significant; ^{Only} Prevalence estimate for bullying perpetration only, victimization only and perpetration-victimization only; ^{TD} typically developing; ^{W1} wave 1; †The *N* sample used by authors to estimate the prevalence estimate can be different from the overall sample described in their study; □ prevalence estimated based on elementary-, middle- and high-school data; □□ data provided by the first author; ● emotional disturbance, other health impairment, specific learning disabilities, autism spectrum disorder, hearing impairment, speech or language impairment, blind or visual impairment, orthopedic impairment; ‡ emotional disturbance, learning disability, speech or language impairment, autism, orthopedic impairment, other health impairment, multiple disabilities, visual impairment, deaf-blindness, hearing impairment, traumatic brain injury; ✠ autism, attention deficit hyperactivity disorder, emotional disturbance, learning disability, orthopedic impairment, speech language impairment; ❀ autism, attention deficit hyperactivity disorder – combined, attention deficit hyperactivity disorder – inattentive, depression/anxiety, eating disorder, oppositional defiant disorder; ★ autism spectrum disorder, emotional-behavioral disorder, other health impairment, sensory related-disabilities, specific learning disability; Δ for ID sample only; ⌑ mean prevalence of beaten, pushed, threatened with harm, kicked, and pinched; ✧mean prevalence of sworn at, laughed at, and told nasty, rude things;○ mean prevalence - estimated without a severity cut-off criterion, i.e. at least "sometimes" - of youth sample with mild and moderate ID; ○○ mean prevalence - estimated with a severity cut-off criterion of at least "once or twice a month" - of youth sample with mild and moderate ID; ☾ prevalence estimated with a dichotomous criterion (No vs. yes); ☾☾ prevalence estimated with a severity cut-off criterion of "frequent bullying lasting less than one month". For this estimation the overall sample (not only those who were bullies or bullied) of youth with ID was used; ▲the prevalence estimate of perpetration and perpetration-victimization was not included in the analysis because the sample size was not mentioned for this subsample; ■ Prevalence estimated with a dichotomous criterion (No vs. at least "one time"); ■■ Prevalence estimated with a severity cut-off criterion of "at least one standard deviation above the total population mean score";*p < .05.

Table S1 (continued)

Reference & Country	Design	ID sample†	CTRL sample†	Assessment context	School setting△	Types of bullying	Sources	Measures	Time frame & Criterion	Prevalence	Correlates
Christensen et al. (2012) *United States of America*	Cohort	N_{total} = 46 $\%_{boys}$= 62.2 Age_{range} = 13 Age_{mean} = 13 Age_{SD} = NM ID_{level} = NM ID_{CMO} = NM	N_{total} = 91 $\%_{boys}$= 52.7 Age_{range} = 13 Age_{mean} = 13 Age_{SD} = NM Characteristics = TD	Any	Regular education; special school	General	Self Parents (mother)	Interview (mother, youth)	NM Dichotomous (No vs. yes) Severity cut-off ("frequent bullying lasting less than one month")	*ID sample* Perpetration General: 2.8%♂ / 0%♀♀ (self) General: 14.6%♂ / 4.9%♀♀ (mother) Victimization General: 62.2%♂ / 21.6%♀♀ (self) General: 52.5%♂ / 32.5%♀♀ (mother) *CTRL sample* Perpetration General: 10.2%♂ / 2.3%♀♀ (self) General: 22.4%♂ / 4.5%♀♀ (mother) Victimization General: 40.9%♂ / 18.2%♀♀ (self) General: 42.6%♂ / 22.1%♀♀ (mother)	*ID & CTRL samples* Victimization General WITH externalizing behavior problems^{NS}, anxious/depressed^{NS}, socioeconomic variables^{NS}, social problems*, social withdrawal*
Glumbić & Žunić-Pavlović (2010) *Serbia*	Cross-sectional	N_{total} = 61 $\%_{boys}$= 73.8 Age_{range} = 12.5-17.5 Age_{mean} = 15.88 Age_{SD} = 1.35 ID_{level} = mild ID_{CMO} = NM	None	School	Special school	General	Self	Questionnaire (BVS)	Past month Severity cut-off (BVS subscale T scores > 58 for perpetration, > 56 for victimization)	Perpetration^{Only} General: 9.8% Victimization^{Only} General: 6.6% Both^{Only} General: 1.6%	Not examined
Mayes et al. (2015) *United States of America*	Case-control	N_{total} = 230 $\%_{boys}$= 73 Age_{range} = 6-18 Age_{mean} = 8.6 Age_{SD} = NM ID_{level} = mild-severe ID_{CMO} = ODD, ASD, ADHD, ANX, DEP	N_{total} = 1477 $\%_{boys}$= NM Age_{range} = NM Age_{mean} = NM Age_{SD} = NM Characteristics = TD and WOD֍	Any	Regular education	General	Parents (mother)	Questionnaire (PBS)	Past two months Dichotomous (No vs. at least "sometimes")	Perpetration^{Only} General: 5.2% Victimization^{Only} General: 37.8% Both^{Only} General: 26.1%	Not examined
Reiter & Lapidot-Lefler (2007) *Israel*	Cross-sectional	N_{total} = 186 $\%_{boys}$= 56.5 Age_{range} = 12-21 Age_{mean} = NM Age_{SD} = NM ID_{level} = mild ID_{CMO} = NM	None	NM	Special school	General Physical Verbal	Self	Questionnaire (HBQ, BS)	NM Dichotomous (No vs. yes)	Perpetration▲ General$^{Highest\text{-}group}$: 50% Victimization General: 83% Physical¤: 29.8% Verbal✧: 52.3% Both▲ General$^{Highest\text{-}group}$: 31.5%	Perpetration General WITH hyperactivity*, behavior problems*, emotional problems^{NS}, interpersonal relations problems^{NS}, social skills deficit^{NS} Victimization General WITH emotional problems*, interpersonal relations problems*, hyperactivity^{NS}, behavior problems^{NS}, social skills deficit^{NS}

Table S1 (continued)

Reference & Country	Design	ID sample†	CTRL sample†	Assessment context	School setting△	Types of bullying	Sources	Measures	Time frame & Criterion	Prevalence	Correlates
Rose et al. (2015) *United States of America*	Case-control	N_{total} = 117 $\%_{boys}$= 58.1 Age_{range} = 11-20 Age_{mean} = 14.35 Age_{SD} = 1.84 ID_{level} = NM ID_{CMO} = NM	N_{total} = 14391 $\%_{boys}$= NM Age_{range} = 11-20 Age_{mean} = NM Age_{SD} = NM Characteristics = TD and WOD★	School	Regular education	General Physical Relational Cyber	Self	Questionnaire (UIBS, UIFS, UIVS, RAPS, RAVS)	During the past 30 days Dichotomous (No vs. at least "one time") Severity cut-off ("A least "one standard deviation above the total population mean Score")	*ID sample* Perpetration General: 69.4%■/ 24.1%■■ Physical: 69.7%■ / 22.9%■■ Relational: 52.6%■ / 30.9%■■ Victimization General: 73.8%■/ 24.3%■■ Relational: 63.9%■/ 28.9%■■ Cyber: 51.1%■/ 25.5%■■ Both General: 52.1%■/ 12.8%■■ *CTRL samples* Perpetration General^{AD}: 69.6%■/ 15.8%■■ General^{TD}: 70.5%■/ 13.5%■■ Physical^{AD}: 67.7%■/ 20%■■ Physical^{TD}: 62.1%■/ 13.6%■■ Relational^{AD}: 44.3%■/ 15.4%■■ Relational^{TD}: 41.7%■/ 10%■■ Victimization General^{AD}: 66.3%■/ 21.6%■■ General^{TD}: 60.1%■/ 14.5%■■ Relational^{AD}: 61.1%■/ 22.2■■ Relational^{TD}: 57%■/ 13.4■■ Cyber^{AD}: 47.8%■/ 16.4%■■ Cyber^{TD}: 46.6%■/ 11.5%■■ Both General^{AD}: 49.8%■/ 7.1%■■ General^{TD}: 48.6%■/ 4.3%■■	Not examined
Swearer et al. (2012) *United States of America*	Case-control	N_{total} = 8 $\%_{boys}$= 62.5 Age_{range} = 11-14 Age_{mean} = 12.88 Age_{SD} = 0.99 ID_{level} = mild ID_{CMO} = NM	N_{total} = 808 $\%_{boys}$= NM Age_{range} = 9-16 Age_{mean} = NM Age_{SD} = NM Characteristics = LD (n = 51), SI (n = 25), BD (n = 14), OHI (n = 29), HI (n = 3), TD (n = 686)	School	Regular education	General	Self	Questionnaire (PRB)	Past two months Dichotomous (No vs. at least "once or twice")	*ID sample* Perpetration^{Only} General: 0% Victimization^{Only} General: 25% Both^{Only} General: 75% *CTRL sample* Victimization^{Only} General^{TD}: 36% Perpetration^{Only} General^{TD}: 6.6% Both^{Only} General^{TD}: 29.6%	Not examined among the ID subsample

Table S1 (continued)

Reference & Country	Design	ID sample†	CTRL sample†	Assessment context	School setting△	Types of bullying	Sources	Measures	Time frame & Criterion	Prevalence	Correlates
Zeedyk et al. (2014) *United States of America*	Case-control	N_{total} = 39 $\%_{boys}$= 53.8 Age_{range} = 13 Age_{mean} = 13 Age_{SD} = NM ID_{level} = NM ID_{CMO} = NM	N_{total} = 136 $\%_{boys}$= 88.6^{ASD}, 47.8^{TD} Age_{range} = 13 Age_{mean} = NM Age_{SD} = NM Characteristics = ASD (n = 44), TD (n = 92)	School	Regular education; special school	General Physical Verbal Relational	Self Parents (mother)	Interview (mother, youth)	NM Dichotomous (No vs. yes)	*ID sample* Victimization General: 48.5% (self) General: 56.8% (parents) Physical: 37.5% (self) Physical: 71.4% (parents) Verbal: 43.8% (self) Verbal: 66.7% (parents) Relational: 12.5% (self) Relational: 28.6% (parents) *CTRL samples* Victimization General^{ASD}: 75.0% (self) General^{TD}: 41.6% (self) General^{ASD}: 80.0% (parents) General^{TD}: 35.7% (parents) Physical^{ASD}: 51.5% (self) Physical^{TD}: 16.2% (self) Physical^{ASD}: 64.3% (parents) Physical^{TD}: 63.3% (parents) Verbal^{ASD}: 78.8% (self) Verbal^{TD}: 62.2% (self) Verbal^{ASD}: 71.4% (parents) Verbal^{TD}: 66.7% (parents) Relational^{ASD}: 9.1% (self) Relational^{TD}: 32.4% (self) Relational^{ASD}: 14.2% (parents) Relational^{TD}: 23.3% (parents)	Not examined among the ID subsample
Žic & Igrić (2001) *Croatia*	Case-control	N_{total} = 20 $\%_{boys}$= 30 Age_{range} = 7-10.5 Age_{mean} = 9.36 Age_{SD} = NM ID_{level} = mild ID_{CMO} = NM	N_{total} = 20 $\%_{boys}$= 30 Age_{range} = 7-10.5 Age_{mean} = 9.28 Age_{SD} = NM Characteristics = TD	Any	Regular education	General Verbal	Self	Questionnaire [2 items (#42, #56) from the BRP-II]	NM Dichotomous (False vs. true)	*ID sample* Victimization General: 30% Verbal: 35% *CTRL sample* Victimization General: 15% Verbal: 35%	Not examined