Risk factors for bullying among children with autism spectrum disorders

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Abstract

Although children with disabilities have been found to be at an increased risk of bullying, there are limited studies investigating predictors of bullying involvement in children with autism spectrum disorders. The current study presents findings from 1221 parents of children diagnosed with autism spectrum disorder who were selected from a national web-based registry. Parents completed a survey dedicated to the school and bullying experiences of their child, and multivariate logistic regression analyses were conducted to identify child and school risk factors for involvement as victim, bully, or bully–victim. Additional analyses examined the risk of bullying involvement based on the amount of time spent in general education classrooms. Children diagnosed with Asperger's disorder, attending a public school or a school with a general education population, were at the greatest risk of being victimized in the past month. Children with comorbid conditions and a high level of autistic traits were the most likely to be victims, bullies, and bully–victims. Finally, children in full inclusion classrooms were more likely to be victimized than those who spend the majority of their time in special education settings. Future research studies should be invested in finding appropriate supports for children with autism spectrum disorder placed in inclusive settings.

Keywords

autism spectrum disorder, bullying, schools, special needs

Introduction

Approximately 30% of school-aged children are involved in bullying, either as bullies, victims, or bully–victims (Bradshaw et al., 2007b; Nansel et al., 2001; Spriggs et al., 2007). Bullying is a common form of abuse defined by an imbalance of power, where the more powerful individual(s) intends to inflict repeated physical or mental harm (Olweus, 1993). The consequences of bullying are well documented and include decreased levels of self-esteem, depressive symptomatology, psychopathology (e.g. anxiety and depression), self-harming, and even suicidal ideations (Arseneault et al., 2010; Hawton and Harriss, 2008; Hay and Meldrum, 2010; Seals and Young, 2003). Most studies of bullying have been limited to the general education population. The few studies that have explored bullying in special education populations have reported higher rates of peer victimization among students with special needs (Rose et al., 2011). Children with disabilities are believed to be at increased risk of victimization (Singer, 2005; Van Cleave and Davis, 2006), as they often have social skill deficits, face frequent peer rejection, have fewer friends, and occupy lower social statuses (Greenham, 1999; Kavale and Forness, 1996; Swanson and Malone, 1992). Although children with

special needs in inclusion settings have been shown to benefit from increased interactions with typically developing children (Vaughn et al., 1996), it appears that they are still at risk of being isolated within the classroom and subsequently being bullied (Pivik et al., 2002; Saylor and Leach, 2009). Importantly, those children with autism spectrum disorders (ASDs) tend to be at an increased risk of bullying (Cappadocia et al., 2012; Carter, 2009; Little, 2002; Sofronoff et al., 2011; Van Roekel et al., 2010; Wainscot et al., 2008). Unfortunately, most studies dedicated to bullying and children with ASD are limited to small clinical samples with restricted age groups, ASD diagnosis types, and geographical areas. In fact, the majority of studies

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focus exclusively on children diagnosed with Asperger's disorder or high-functioning autism, thereby neglecting a substantial portion of the autism spectrum. Moreover, the available studies have failed to account for the typical presence of comorbid psychiatric conditions exhibited by children with ASD or school-related characteristics (e.g. school funding type and student body population) (Hofvander et al., 2009; Klin et al., 2005; Leyfer et al., 2006; Simonoff et al., 2008).

The current study extends the previous literature by identifying child-level and school-level risk factors associated with bullying in one of the largest samples of children diagnosed with an ASD across the United States. The sample contains not only a diverse population of children with ASDs, including varying diagnostic types, but also psychiatric comorbid conditions and levels of autism symptomatology. It was hypothesized that higher functioning children would be at increased risk of victimization, as would children who spent more time in an inclusive educational setting. It was further hypothesized that children who present with more comorbid conditions and a high number of autistic traits would be at additional risk. Identifying children with ASD who are at greatest risk of involvement in bullying has important implications for clinicians, teachers, and parents who are interested in preventing bullying and promoting effective coping strategies among children who are bullied.

Methods

Procedure

Participants eligible for the current study were enrolled in the Interactive Autism Network (IAN), an online US registry for families of children with a child with an ASD (http://www.ianresearch.org). IAN includes families of children on the autism spectrum who are under 18 years of age and have received an ASD diagnosis from a clinical professional. The study was approved by the Johns Hopkins Medical Institutions Institutional Review Board, and parents provided consent to participate in IAN research studies when they completed initial IAN registration (#NA_00002750). Data were collected from parents via the web-based *Bullying and School Experiences of Children with ASD Survey* (BSE) between October 2011 and February 2012.

Recruitment. Enrollment for the current study was restricted to children within IAN, aged 6–15 years, living in the United States with a current ASD diagnosis. Invitations went out to all eligible families ($n = 7328$), with parents of eligible children separated into an incentivized group ($n = 1400$) and a general group ($n = 5928$). The incentivized group was offered the opportunity to be entered into a drawing to win one of two mp3 players and included the most active IAN families. An incentive was used to increase participation by families of children who had not experienced bully victimization or perpetration, while also increasing retention of families

within IAN on future research projects (Goritz, 2006; Kalb et al., 2012). The most active families were targeted in order to ensure that a large enough sample was obtained to allow for subanalyses between both school and diagnostic group differences. A total of 1221 families responded to the invitation for recruitment. The response rate was high for an Internet survey among the incentivized group, with 47% of parents completing the entire survey (Shih and Fan, 2008). The response rate for the general group at 10% was considered to be low average for an Internet survey.

Preliminary analyses compared demographic differences between families in the incentivized group and the general group. Parents in the incentivized group were less likely to have a child who had been diagnosed with Asperger's disorder. We also compared demographic differences between responders and nonresponders in each of the incentivized group and the general group. Within the incentivized group, responders resembled nonresponders on the majority of demographic variables. However, responders were more likely to be Caucasian and have older children diagnosed with Asperger's disorder. The same difference was found in the general group, without any racial differences.

Sample. Table 1 presents demographic and school characteristics. Of the 1221 parents who participated in the study, 94% were mothers and 54% were incentivized. Children were predominantly male, Caucasian, and non-Hispanic with a mean age of 10.6 years (standard deviation (SD) = 2.9). The children's diagnoses included autistic disorder (40.1%), Asperger's disorder (24.2%), and other ASDs (35.7%), representing pervasive developmental disorder–not otherwise specified (PDD-NOS) and generic ASD or pervasive developmental disorder (PDD). Approximately 88% were attending public school, with over 80% spending time in general education classes.

Measures

Data for the current study were primarily obtained from the BSE, with the remaining information drawn from initial IAN registration materials. The 63-itemed BSE was designed exclusively for the current study and was used to collect key information from the parent about their child's involvement in bullying, as well as their school and psychological functioning, with questions derived from previously published measures, with minor formatting to allow for a parent-response (Boyd et al., 2003; Bradshaw et al., 2007a, 2007b; Ialongo et al., 1999; Solberg and Olweus, 2003).

School demographic variables. The BSE obtained information about the child's school funding (public or private), population served (general education or school exclusively serving children with special needs), and inclusion level (the amount of time spent in a general education classroom compared to a special education classroom).

Table 1. Demographic characteristics of sample divided by level of bullying involvement in the past month.

	No involvement[a] (n = 715)	Victim only (n = 355)	Bully only (n = 42)	Bully–victim (n = 64)
Child characteristics (%)				
Male	83.5	80.6	88.1	77.8
Race				
Caucasian	91.3	86.1*	78.6**	92.1
African American	2.5	3.7	11.9**	4.7
Other	6.2	10.2**	9.5	3.2
Hispanic	9.2	8.7	7.1	9.4
Receiving FARMs	17.1	28.2***	23.8	37.5***
ASD diagnosis				
Asperger's disorder	17.3	36.4***	23.8	40.6***
Autism	45.9	29.7***	45.2	21.9***
Other ASD	36.8	33.9	31.0	37.5
School characteristics (%)				
Type				
Public	84.6	93.5***	85.7	93.8
Private	15.4	6.5	14.3	6.2
Population				
General education	75.4	89.0***	80.9	85.9
Special education	24.6	11.0	19.1	14.1
School level				
Elementary	60.8	56.7	70.7	62.5
Middle	26.7	32.6*	14.6	25.0
High school	12.5	10.7	14.6	12.5

FARM: free and reduced meal; ASD: autism spectrum disorder.
[a]The "no involvement group" serves as the reference for all analyses comparing bullying involvement subgroups.
*$p < .05$, **$p < .01$, ***$p < .001$.

Child demographic variables. Child demographic information (age, gender, race (Caucasian, African American, and other), and ethnicity (Hispanic or non-Hispanic)) was obtained at IAN registration. Whether the child received free or reduced priced meals was used as a proxy for family socioeconomic status. The child's academic abilities were assessed through the question "How would you describe your child's overall academic performance?" with response options including "a great deal above average," "somewhat above average," "average," "somewhat below average," and "great deal below average." The variable for academic ability was dichotomized into below average performance (termed low academic achievement) and average and above performance. The child's ability to make friends was assessed through the question "How well would you say your child gets along with other children?" with options including "much better than average," "better than average," "average," "worse than average," and "much worse than average." The variable for difficulty making friends was dichotomized into average and better and below average (termed difficulty making friends).

Child clinical characteristics. ASD diagnosis was also obtained at IAN registration and has been validated in previous studies (Daniels et al., 2012; Lee et al., 2010). The sample included children with the following ASD diagnoses: autism or autistic disorder (n = 487), Asperger's disorder (n = 294), and a combined PDD-NOS, PDD, and ASD group designated "other ASD" (n = 434). Additional information was obtained to determine the child's level of autism symptomatology and the presence of comorbid psychiatric conditions or learning disabilities.

Comorbidity. The BSE further inquired whether the parent had ever been told by a "teacher, school official, or medical professional" that their child had a diagnosis of any of seven psychiatric conditions (attention deficit hyperactivity disorder (ADHD), depression, anxiety, obsessive compulsive disorder (OCD), social anxiety, oppositional defiant disorder (ODD), or any of eight learning disorder diagnoses (dyslexia, sensory processing disorder, intellectual disability, visual or hearing impairment, speech or language impairment, traumatic brain injury, dysgraphia, or a specific learning disability)).

Autism symptomatology. Sixteen additional questions, which were derived from the *Social Communication Questionnaire* (Rutter et al., 2003) and the *Social Responsiveness Scale* (Constantino, 2002), were asked of parents in order to capture autistic symptomatology. These questions pertained to the child's communication, social interactions, and the presence of repetitive or stereotyped behaviors, and each item was answered whether or not the child displayed the specific trait or behavior. The internal consistency of

the 16 items was high (α = 0.70). The level of autism symptomatology was subdivided into low (4 or less traits), moderate (5–9 traits), or high (10 or more traits).

Involvement in bullying. Bullying was defined as "when a person or group of people *repeatedly* say or do mean or hurtful things to someone *on purpose*. It typically occurs when there is a *power* imbalance." (Nansel et al., 2001; Olweus, 1993). The main outcome of bullying involvement was assessed through a series of questions designed to capture the frequency of perpetration and victimization, with provided examples including "teasing, hitting, threatening, name-calling, ignoring, stealing from, cyberbullying, spreading rumors, and leaving someone out on purpose." (Bradshaw et al., 2007b). Parents were asked "Has your child ever been bullied at school?"; for those who reported ever being victimized, parents were then asked to report the frequency of victimization through the question "How frequently has your child been bullied at school in the *past month*?" with response options of "several times a week," "once a week," "2–3 times total during the past month," "1 time during the past month," or "my child has not been bullied in the past month." A set of questions with the same response options assessed the frequency of bullying perpetration. A bully–victim was defined as an individual who was both a perpetrator and a victim of bullying in the past month (Bradshaw et al., 2007b; Nansel et al., 2001; Solberg and Olweus, 2003).

Statistical analyses

We examined the differences in demographic characteristics between children with varying levels of bullying involvement in the past month (victim only, bully only, or bully–victim) compared to children with no bullying involvement in the past month (the reference group), using bivariate logistic regression models. Three multivariate logistic regression models determined which child demographic or clinical characteristics (age, gender, race, ethnicity, free and reduced meal (FARM) status, current ASD diagnosis (Asperger's disorder, autistic disorder, and other ASDs), number of comorbid conditions, number of autistic traits, academic achievement, and sociability) or school characteristics (school type, population, and level of inclusion) were associated with past month bullying involvement by comparing children who were victims only in the past month (*n* = 355), bullies only in the past month (*n* = 42), or bully–victims in the past month (*n* = 64) to children who were neither bullies nor victims in the past month (*n* = 715). These models were also adjusted by recruitment group status (not shown in tables). A final set of three multivariate logistic regression models explored the relationship between a child's level of inclusion in general education classrooms and their involvement in bullying in the past month, as victim, bully, or bully–victim. These models were adjusted for child and school demographics and recruitment group status. Finally, in all models, a series

of interaction terms between recruitment group and child and school covariates were tested; however, there were no significant findings, suggesting the relationship between bullying involvement and child and school characteristics were not related to a parent's motivation to participate; all interaction terms were subsequently dropped. All analyses were performed using STATA 10.1 (College Station, TX).

Missingness was low for the sample, with less than 2% missing on bullying involvement variables and 1% on clinical diagnosis; these individuals were removed from the sample, resulting in 1176 children remaining. A complete case data analysis was performed for each analysis, with all models containing over 86% of the original sample. Sensitivity analyses revealed parents with and without missing data did not differ on demographic characteristics.

Results

Description of the sample

Table 1 includes descriptive statistics comparing children with no bullying involvement in the past month, to children who were victims only in the past month, bullies only in the past month, and bully–victims in the past month. Children who were victimized in the past month were less likely to be Caucasian (odds ratio (OR) = 0.60, 95% confidence interval (CI): 0.40–0.88, *p* = .01) when compared to children who were not involved in bullying in the past month. However, children who were victimized in the past month were more likely to be diagnosed with Asperger's disorder (OR = 2.75, 95% CI: 2.05–3.67, *p* < .001), receiving FARMs (OR = 1.90, 95% CI: 1.40–2.58, *p* < .001), attending a public school (OR = 2.63, 95% CI: 1.64–4.23, *p* < .001), a middle school (OR = 1.33, 95% CI: 1.01–1.75, *p* < .05), or a school with a general education population (OR = 2.65, 95% CI: 1.81–3.86, *p* < .001) when compared to children who were not involved in bullying in the past month.

Children who bullied others in the past month were more likely to be African American (OR = 5.23, 95% CI: 1.84, 14.85, *p* = .002) when compared to children who were not involved in bullying in the past month. Children who were bully–victims were more likely to be receiving FARMs (OR = 2.90, 95% CI: 1.68–5.01, *p* < .001) and be diagnosed with Asperger's disorder (OR = 3.29, 95% CI = 1.93, 5.62, *p* < .001) when compared to children who had no bullying involvement in the past month.

In all, 63% of children with ASD had been victimized in their lifetime, and 38.0% had been victimized in the past month. Additionally, 19.9% had bullied others in their lifetime, with 9.3% bullying others in the past month. Of these, 63% were bully–victims, that is, they had been both victim and perpetrator in the past month. A total of 28% of children were frequent victims of bullying (two or more times a month), while 5.0% were frequent perpetrators of bullying. Children with Asperger's disorder were the most likely

Table 2. Multivariate logistic regression models for bullying behaviors in the past month.

	OR (95% CI)		
	Victim	Bully	Bully–victim
Child characteristics			
Age	1.00 (0.89–1.12)	0.97 (0.74–1.26)	0.93 (0.75–1.16)
Male	0.75 (0.52–1.10)	1.10 (0.38–3.17)	0.67 (0.32–1.39)
Race			
African American	1.63 (0.68–3.92)	7.67 (2.19–26.82)	2.98 (0.70–12.63)
Other	1.89 (1.06–3.37)	2.76 (0.81–9.39)	0.44 (0.09–2.20)
Caucasian (reference)	Reference	Reference	Reference
Hispanic	0.90 (0.52–1.56)	0.91 (0.25–3.41)	1.31 (0.47–3.62)
Receiving FARMs	1.78 (1.24–2.56)	1.31 (0.53–3.24)	3.50 (1.80–6.78)
Current diagnosis			
Autistic disorder	0.76 (0.54–1.06)	1.13 (0.49–2.64)	0.48 (0.23–1.01)
Asperger's disorder	2.08 (1.40–3.08)	2.17 (0.75–6.26)	2.44 (1.07–4.70)
Other ASD types (reference)	Reference	Reference	Reference
Psychiatric comorbid conditions			
2 or more	1.84 (1.27–2.68)	2.46 (0.94–6.44)	3.31 (1.53–7.18)
1	1.39 (0.96–2.00)	2.39 (0.93–6.15)	2.36 (1.04–5.34)
None (reference)	Reference	Reference	Reference
Level of autistic traits[a]			
High	1.70 (1.05–2.74)	3.22 (1.18–8.77)	2.79 (1.08–7.20)
Moderate	1.50 (1.05–2.13)	0.98 (0.38–2.52)	2.25 (1.00–5.09)
Low (reference)	Reference	Reference	Reference
Low academic achievement	0.68 (0.50–0.93)	1.18 (0.53–2.60)	0.72 (0.37–1.40)
Difficulty making friends	1.61 (1.19–2.17)	2.88 (1.32–6.29)	2.87 (1.56–5.29)
School characteristics			
Public school	2.03 (1.14–3.62)	0.87 (0.28–2.70)	1.94 (0.58–6.44)
General education school	2.06 (1.28–3.31)	1.55 (0.55–4.37)	2.13 (0.83–5.46)
School level			
Elementary	1.52 (0.64–3.59)	1.79 (0.21–14.96)	1.13 (0.21–5.97)
Middle	1.80 (1.02–3.20)	0.70 (0.16–3.16)	1.52 (0.49–4.77)
High school (reference)	Reference	Reference	Reference

ASD: autism spectrum disorder; OR: odds ratio; CI: confidence interval; FARM: free and reduced meal.
[a]Autistic trait level was defined as high (10 or more traits), moderate (5–9 traits), and low (4 or less traits.

to be frequent victims (48.7%) when compared to children with autistic disorder (19.3%) or other ASDs (24.9%). Moreover, the vast majority of children with Asperger's disorder (89%) experienced victimization in their lifetime compared to children with autistic disorder (49%) or other ASDs (60%).

Risk factors for bullying behaviors

Table 2 presents the results of the three multiple logistic regression models for the outcomes of being a victim, bully, and bully–victim in the past month (all compared to children who were neither victim nor bully in the past month).

Victim. Children who received FARMs (OR = 1.78, 95% CI: 1.24–2.56, p = .002), attended a public school (OR = 2.03, 95% CI: 1.14–3.62, p = .02), attended a general education

school (OR = 2.06, 95% CI: 1.28–3.31, p = .003), or attended a middle school (as compared to a high school) (OR = 1.80, 95% CI: 1.02–3.20, p = .04) were more likely to have been victimized in the past month. Children with Asperger's disorder (OR = 2.08, 95% CI: 1.40–3.08, p < .001) were also more likely to be victimized in the past month, as were children with two or more comorbid conditions (OR = 1.84, 95% CI: 1.27–2.68, p = .001) when compared to children with no comorbid conditions. Children with high levels of autistic traits (OR = 1.70, 95% CI: 1.05–2.74, p = .03) or moderate levels of autistic traits (OR = 1.50, 95% CI: 1.05–2.13, p = .03) were the most likely to be bullied. Finally, racial minority children (OR = 1.89, 95% CI: 1.06–3.37, p = .03) and children who had difficulty making friends (OR = 1.61, 95% CI: 1.19–2.17, p = .002) were more likely to be bullied in the past month. Interestingly, children who had a lower level of academic

Table 3. Multivariate logistic regression models for bullying behaviors by level of inclusion.

	OR (95% CI)		
	Victim	Bully	Bully–victim
100% (full inclusion)	3.23 (1.88–5.56)	0.58 (0.16–2.12)	1.54 (0.57–4.15)
50% to <100%	2.55 (1.56–4.16)	0.87 (0.31–2.39)	1.11 (0.44–2.78)
0% to <50% (reference)	Reference	Reference	Reference

OR: odds ratio; CI: confidence interval.

achievement (OR = 0.68, 95% CI = 0.50–0.93, *p* = .02) were less likely to be bullied in the past month. Although not included in Table 1, parents who were incentivized were less likely to have a child who was bullied in the past month (OR = 0.71, 95% CI = 0.53–0.95, *p* = .02).

Bully. There were fewer significant predictors of perpetration in the past month. Children with high levels of autistic traits (OR = 3.22, 95% CI: 1.18–8.77, *p* = .02) were more likely to be perpetrators of bullying in the past month compared to children with low levels of autistic traits, as were African American children (OR = 7.67, 95% CI: 2.19–26.82, *p* = .001) and children who had difficulty making friends (OR = 2.88, 95% CI: 1.32–6.29, *p* = .008).

Bully–victim. Receiving FARMs (OR = 3.50, 95% CI: 1.80–6.78, *p* < .001) and having difficulty making friends (OR = 2.87, 95% CI: 1.56–5.29, *p* = .001) were significant predictors of being a bully–victim compared to children who were neither bully nor victim in the past month. Children with two or more comorbid disorders (OR = 3.31, 95% CI = 1.53–7.18, *p* = .002) or one comorbid disorder (OR = 2.36, 95% CI = 1.04–5.34, *p* = .04) were more likely to be bully–victims than children with no comorbid disorders. At the same time, children with high levels of autistic traits (OR = 2.79, 95% CI: 1.08–7.20, *p* = .03) were more likely to be bully–victims than children with low levels of autistic traits. Children diagnosed with Asperger's disorder were more likely to be bully–victims in the past month (OR = 2.24, 95% CI: 1.07–4.70, *p* = .03) compared to children with other diagnosed ASDs.

Level of inclusion

Table 3 presents the likelihood of a child being a victim, bully, or bully–victim in the past month based on the amount of time spent in a general education classroom. Children in a full inclusion setting were at the greatest risk of victimization in the past month (OR = 3.23, 95% CI: 1.88–5.56, *p* < .001), followed by children who spent the majority of their time in inclusion settings (OR = 2.55, 95% CI: 1.56–4.16, *p* < .001), all compared to children who were primarily in special education settings. The risk of being a bully or bully–victim was not associated with the level of inclusion.

Discussion

The current study examined child and school characteristics that may place children with an ASD at risk of being involved in bullying. The majority of children diagnosed with an ASD had experienced victimization sometime in their lives (63%), with a significant percentage experiencing victimization in the past month (38%). As hypothesized, children with Asperger's disorder were more likely to be victims or bully–victims in the past month when compared to children with autistic disorder or other ASDs, as were children diagnosed with a number of comorbid conditions. Children exhibiting high levels of autistic traits, those who had difficulty making friends, and those receiving FARMs were more likely to be a victim, bully, or bully–victim in the past month. With regard to schooling, children attending public schools were at an increased risk of experiencing victimization, as were children attending middle school or a school with a general education population. Research dedicated to bullying in a general education population has found bullying to be most common during middle school (Bradshaw et al., 2007b). In addition, children spending the greatest amount of time in an inclusive setting were at the greatest risk of victimization.

These findings suggest that children who spend a great deal of time in less protected, general education settings with typical peers may be at greatest risk of being bullied. This would help explain the high rates of victimization that have been reported in previous research dedicated exclusively to children with high-functioning ASD, namely, Asperger's disorder (Carter, 2009; Little, 2002; Sofronoff et al., 2011; Wainscot et al., 2008). These are precisely the children most likely to be included in general education classrooms and, in our study, were also the children who struggled the most to make friends—an important point as friends can play a protective effect against being bullied for both typically developing children and children with ASDs (Gray, 2004; Nansel et al., 2001). The curious finding that children with low academic achievement are protected *against* victimization seems to contradict previous research (Schwartz et al., 2005) but provides further evidence that children with the greatest impairments are being protected by spending all or most of their time in special education settings. Several previously identified predictors of bullying behaviors among a general education population were also

observed in this study, including lower socioeconomic status (Jankauskiene et al., 2008), the presence of psychiatric conditions (Brunstein Klomek et al., 2007), and difficulty making friends (Bollmer et al., 2005; Hodges et al., 1999).

Strengths and limitations

Through the use of a web-based survey, we captured a large sample of children with ASDs across the United States. Web-based surveys have become increasingly popular in recent years, given their ability to collect accurate data quickly at a low cost across a large geographical region (Boyer et al., 2002; Evans and Mathur, 2005; Smith et al., 2007). In fact, the children in the study live in 47 states with sufficient power to explore both clinical child- and school-level characteristics.

Despite its strengths, the present study is not without limitations. Parent-report has become the standard for capturing rates of bullying in studies dedicated to children with ASDs (e.g. Cappadocia et al., 2012; Little, 2002), although it is likely parents are underreporting their child's bullying experiences (Holt et al., 2009), as children do not always report bullying incidents to adults, be they teachers or parents (Unnever and Cornell, 2004). Even high-functioning children with ASDs may struggle with understanding the intent of other children when it relates to bullying and may not recognize they are being teased or bullied, which would threaten the reliability of self-report (Baron-Cohen, 1995). Given children on the spectrum may be nonverbal, intellectually disabled, or face other challenges that impair their ability to self-report bullying episodes, parent-report was deemed the most appropriate method for data collection. The potential for unbalanced reporting rates by parents should not be dismissed, however, as higher functioning children may be able to best relate episodes of bullying to their parents. Incidentally, given children with Asperger's disorder were the most likely to be victimized in the past month, they also have the greatest number of opportunities to report to their parents, which could further bias reporting rates (Matsunaga, 2009). Future studies should rely on teacher-report in addition to parent-report to provide the most accurate picture of bullying involvement, as the current method may lead to response biases being captured in overlapping constructs.

As parents who have a child who is victimized may be more inclined to fill out the survey, an incentivized group was created in the hopes of diminishing this bias through statistical adjustment. The finding that parents of children in the incentivized group were less likely to report victimization in the past month suggests the general group may contain a higher level of sampling bias when compared to the incentivized group, although there is likely sampling and response biases present in each group. It should not be dismissed, however, that incentives may create additional response biases, although these may be minimized with nonmonetary incentives (Singer and Kulka, 2002; Teisl et al., 2005). Additional limitations concern the cross-sectional nature of the sample design that precludes the ability to make causal conclusions about the direction of associations. Finally, despite the size of the clinical sample obtained, the findings of the study may not generalize to all families with a child with ASD, although the high proportion of Caucasian males resembles that of a previous national study (Kogan et al., 2009).

Conclusions

The findings from the current study confirm that children across the autism spectrum are at increased risk of being bullied when compared to their typically developing peers, with children who are the highest functioning, and the most immersed in general education schools and classrooms, being at the greatest risk. Including children with ASDs in settings with typical peers is believed to have many beneficial effects for the affected children and their unaffected classmates alike. Our study shows, however, that this vulnerable population of children with ASDs may not be adequately protected in such settings.

Implications

The decision of whether or not to include students with ASDs has been hotly debated among principals, teachers, parents, and even the students themselves (Horrocks et al., 2008; Kasari et al., 1999; Ochs et al., 2001; Robertson et al., 2003). When these children are included, it is imperative that schools ensure that they receive the supports they need to thrive at school while also protecting them from bullying. Moreover, the development and implementation of school bullying policies and inclusion programs must take into account the special vulnerability of this population, which can include staff and teachers being trained in identifying children who may be at additional risk of victimization. The adoption of a school-wide anti-bullying program also has the potential to reduce risk for children with ASDs through the improvement of the school climate (Waasdorp et al., 2012).

Outside of the school, clinicians should familiarize themselves with both the physical and psychological symptoms commonly associated with bullying involvement and be prepared to offer appropriate referrals to mental health professionals, potentially through the school. Clinicians are further reminded that many children do not report bullying incidents to adults for fear of their own safety, and their parents may subsequently be unaware of their child's bullying involvement (Fekkes et al., 2005).

Conflict of interest

The authors declare that there is no conflict of interest.

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