Bullying-related behaviour in adolescents with autism: Links with autism severity and emotional and behavioural problems

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Abstract

This study examined the association between peer-reported bullying-related behaviours (bully, victim, outsider and defender), age, gender, autism severity and teacher-rated emotional and behavioural problems in adolescents with autism spectrum disorder, using a multi-informant approach. The sample comprised 120 adolescents (11% girls, $M_{age} = 15.6$ years, standard deviation = 1.89 years) attending a special school for children with autism. Results show that bullying decreased with age and was associated with behavioural problems, while victimisation was only associated with peer problems – a pattern of results comparable to studies exploring these associations in typically developing children. However, there were few associations among study variables for outsider or defender behaviours in this sample. Notably, children's autism severity did not significantly predict bullying-related behaviours.

Keywords

adolescents, autism spectrum disorders, behavioural problems, bullying, defending, emotional problems, victimisation

The incidence of victimisation in children and adolescents with autism spectrum disorders (ASD) is reported as between 46% and 94% (Adams et al., 2014; Carter, 2009; Little, 2001). Research into the individual-level factors associated with bullying and victimisation has only recently come to the fore for children with ASD compared to typically developing (TD) children. Given the frequency of victimisation in children and adolescents with ASD, and the growing literature suggesting that they also engage in other bullying-related behaviour, such as bullying and defending (e.g. Begeer et al., 2016; Rieffe et al., 2012; Van Roekel et al., 2010), it is important to understand which individual-level factors in this special population are associated with the emergence of peer-reported bullying-related behaviours: bully, victim, defender and outsider. The most commonly studied predictors of bullying-related behaviour studied in TD children include gender, age and level of emotional and behavioural problems (Cook et al., 2010). This study therefore examines the association between these key individual-level predictors and multiple peer-reported bullying-related behaviours in adolescents with ASD. Furthermore, given the role of autism severity in bullying as outlined in previous research (Cappadocia et al., 2012; Zablotsky et al., 2013a), this ASD-specific individual-level factor was also included in this study.

Studies examining the association between gender and bullying-related behaviour in TD children and adolescents have shown that boys and girls are just as likely to be victims of bullying, while boys are more likely to be the perpetrators of bullying and girls are more likely to show defender or outsider behaviour (Gini et al., 2008; Goossens et al., 2006; Pepler et al., 2008; for an exception, see Nansel et al., 2001; Salmivalli et al., 1996; Veenstra et al., 2005). While there are fewer studies investigating bullying and gender in adolescents with ASD, similar findings emerge with both boys and girls equally likely to be victimised (e.g. Cappadocia et al., 2012; Hebron and Humphrey, 2014). However, unsurprisingly the small samples of girls within ASD groups pose problems for assessing gender differences in bullying-related behaviours. Differences between boys and girls in bully, defender and outsider behaviour have yet to be comprehensively examined in children with ASD.

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With respect to age and bullying-related behaviours, in several large TD samples, the incidence of bullying appears to decrease with age, such that bullying is highest at the beginning of secondary school and tends to decrease over time (e.g. Bowen and Holtom, 2010; Nansel et al., 2001; Pepler et al., 2006). However, in adolescents with ASD, findings regarding age differences in bullying incidents have been mixed. In line with findings from TD samples, Cappadocia et al. (2012), in a study of 192 children with ASD, reported a decrease in victimisation for children with ASD between the ages of 5 and 21. However, recent work by Hebron and Humphrey (2014) using parent- and teacher-reported victimisation found that victimisation increased between 5 and 15 years of age for children with ASD and proposed that in younger children social groups are simpler but as children get older, social relationships become more complex and as such adolescents may be less tolerant of the social differences inherent to those with ASD. In both these studies, adult-informants, such as parents or teachers, report on children's bullying experiences, which presupposes that either adults have observed bullying taking place or that the child has disclosed to the adult about their bullying experience, which results in adult-informants typically under-reporting bullying behaviour (e.g. Hunt, 2007; Stockdale et al., 2002). As such, further research on age differences in bullying in children with ASD is needed with other informants of bullying.

In addition to gender and age, TD children's emotional and behavioural problems are consistently associated with bullying-related behaviour. Behavioural problems, broadly defined as the externalising psychosocial maladjustments including oppositional and conduct problems, were found to be one of the strongest predictors of bullying behaviour in TD children, although this relation was weaker in adolescence according to a meta-analysis by Cook et al. (2010). Adolescents who were frequently victimised were also more likely to experience emotional problems (Siegel et al., 2009). Similarly, in research with adolescents with ASD, there is a reported association between externalising behavioural problems and bullying (Montes and Halterman, 2007; Sterzing et al., 2012; Zablotsky et al., 2013b). For example, Montes and Halterman (2007) found that children and adolescents with ASD and comorbid behavioural problems were more likely to bully others compared to adolescents with ASD without comorbid behavioural problems or indeed TD adolescents with behavioural problems.

With respect to victimisation and emotional problems, the findings for adolescents with ASD again are comparable to those for TD samples; adolescents with ASD who experience victimisation are also more likely to have emotional problems (e.g. Cappadocia et al., 2012; Shtayermman, 2007; Zablotsky et al., 2013b), although it should be noted that this has not consistently been found when other key variables are controlled for (e.g. social

skills and social vulnerability; Sofronoff et al., 2011). Research has also demonstrated an association between behavioural problems and victimisation in adolescents with ASD, suggesting that the types of behaviours that influence victimisation in adolescents with ASD may be qualitatively different to those in TD groups (Hebron and Humphrey, 2014; Sterzing et al., 2012). The association between emotional and externalising behavioural problems and other bullying-related behaviours, such as defending or outsider behaviour, has yet to be examined in adolescents with ASD.

However, predictors of bullying-related behaviour in the extant literature for TD children may not be unequivocally generalisable to ASD samples. Instead, bullying behaviours may also be a direct function of the severity of individual's ASD symptoms. If this is the case, it suggests an atypical underlying mechanism of bullying-related behaviours in ASD compared to TD populations. Indeed, there is some research, predominantly with parent-reported bullying behaviours, that shows that young people with a high level of autistic traits were more likely to be victimised in mainstream settings (Cappadocia et al., 2012; Zablotsky et al., 2013b). However, the opposite has also been found, such that children with lower levels of ASD severity or social and communication difficulties were *more* likely to experience victimisation (Nowell et al., 2014; Rowley et al., 2012; Shtayermman, 2007). This divergence in findings may be the result of methodological differences, as those finding a negative association between autism severity and victimisation for the most part utilised a more comprehensive multi-informant ratings of bullying behaviour. This study, employing peer-reported bullying behaviour, may be able to shed light on this association. Furthermore, this study extends the literature by examining the association between autism severity and outsider and defender behaviour. Finally, simultaneously including autism severity with other individual-level predictors will provide a unique perspective on the potential mechanisms driving bullying-related behaviours in adolescents with ASD.

The current study

This study explores, for the first time to our knowledge, the association between peer-nominated bullying-related behaviours (bullying, victimisation, defender and outsider behaviours) with age, gender, emotional and behaviour problems and autism severity using a multi-informant approach. The sample specifically focused on cognitively able adolescents with ASD given the cognitive demands of the self-reported bullying-related behaviour measure. We expect the predictors of bullying-related behaviour of adolescents with ASD to broadly mirror that found in the literature on TD children while exploring the additional effect of autism severity. Peer-nominations rather than

teacher or parent report of bullying-related behaviours were specifically chosen as peers typically observe interactions that are hidden from adults (Pellegrini and Bartini, 2000), and recent research has highlighted that children with ASD are accurate reporters of their classmates' bullying behaviours (Van Roekel et al., 2010).

This study focused on adolescents with ASD in a special educational setting. Between 10% and 60% of children with ASD are educated in separate dedicated educational settings (the Netherlands: Begeer et al., 2013; England: Department for Education, 2012; United States: Lavelle et al., 2014; Snyder and Dillow, 2012; Australia: Australian Bureau of Statistics (ABS), 2012). Recent research suggests that levels of bullying and victimisation in these settings are equivalent to that experienced by TD children in mainstream schools (e.g. Begeer et al., 2016; Van Roekel et al., 2010). As such, studying the child-level factors associated with bullying-related behaviours for children with ASD in these special settings provides a unique opportunity to investigate individual-level correlates when children's ASD does not distinguish them in the classroom.

Method

Participants

Participants were 120 adolescents and young adults with ASD (11 girls; 9%) between the ages 11.42 and 20.17 years (M_{age} = 15.6 years, standard deviation (SD) = 1.89 years) at a special secondary school for adolescents with autism preparing students for university, situated in Amsterdam, the Netherlands (see also Begeer et al., 2016). In order for a student to be admitted into the school, parents must submit a document outlining that their special educational needs fall into a specific class ('REC 4 indicatie'), specifically for students with behavioural or psychiatric disorders, including autism. In addition, information about the students IQ status is also obtained at admission. As such, all participants had an ASD diagnosis, according to the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; text rev.; DSM-IV-TR; American Psychiatric Association (APA), 1994), assessed by psychiatrists or psychologists and were cognitively able (average or above average IQ).

Instruments

Peer-reported bullying-related behaviour. Participants were asked to report on their peers' bullying-related behaviour using an Internet-based version of the bullying role nomination procedure (BRNP) used by Olthof et al. (2011). This is an adapted version of the procedure developed by Goossens et al., (2006) derived from the instrument of Salmivalli et al. (1996). The BRNP is a peer nomination procedure intended to elicit nominations for four bullying-related behaviours: *bullying* (perpetrator of bullying), *victim* (target of bullying), *outsider* (actively avoiding all involvement in bullying, also known as a passive bystander) and *defender* (provide help to the victim; see Olthof et al., 2011; Salmivalli et al., 1996).

The BRNP bullying and victimisation measures are each based on the number of received nominations in response to five nomination questions, while the defending and outsider measures are each based on nominations in response to one question. It should be noted that even single-item peer nomination scores are inherently reliable as they result from the responses of all participant nominators in the student group, as such a peer nomination score reflects responses on a series of *n* yes–no items, with *n* being the number of participants in the given study (Reijntjes et al., 2016a). BRNP-based measures have shown considerable stability across a 3-year period (Reijntjes et al., 2013a, 2013b; Reijntjes et al., 2016a), and nomination scores are associated with self-report measures of involvement in bullying (Bouman et al., 2012), measures of children's position in the peer group (Olthof et al. 2011; Reijntjes et al., 2013a, 2013b; Reijntjes et al., 2016a), strategic behaviour (Olthof et al. 2011) and personality characteristics (Reijntjes et al., 2016b).

Children were first made familiar with a general description of bullying which included aspects of intentionality, repetition and power differential, common to all scientific definitions of bullying. Children were then given descriptions of five different forms of bullying and after each description they were asked to nominate classmates who (a) were being bullied in this particular way and (b) carried out that particular form of bullying. In a similar format, children were then asked to nominate peers in their class who engaged in outsider and defender behaviours. Continuous scores were computed for each type of nomination (i.e. bully, victim, outsider and defender nominations) by dividing the number of received nominations by the number of classmates who served as nominators.

There is a tendency for children to specialise in a particular form of bullying (e.g. exclusionary behaviours rather than hitting or kicking), as such computing an overall mean across bullying behaviour may underestimate the extent to which an individual child actually engaged in bullying. To overcome this issue, based on a procedure by Witvliet et al. (2010) and Olthof et al. (2011), children's scores on their two highest forms of bullying were averaged (Spearman's rho = 0.89, $p < 0.001$), and this score was used as their overall peer-reported bullying score. Children's peer-reported victimisation, outsider and defender scores were computed in a similar manner (see Olthof et al., 2011 for more detail on the peer report–based measures of involvement in bullying). As final continuous scores showed severe kurtosis, suggesting that a large

Table 1. Mean, standard deviation and range of key study variables.

Measure	*n*	*M*	*SD*	Range
Age (years)	120	15.60	1.89	11.42–20.17
SRS	87	75.31	26.17	24–134
SDQ				
Emotional problems	116	3.30	2.50	0–10
Conduct problems	118	1.58	1.90	0–8
Hyperactivity	118	4.25	2.88	0–10
Peer problems	111	3.73	2.40	0–9
Prosocial behaviour	112	5.93	2.82	0–10
Bullying-related behaviours				
Bully	120	0.066	0.87	−0.76 to 2.65
Victim	120	0.083	0.87	−0.72 to 2.65
Outsider	120	0.067	0.84	−0.61 to 2.65
Defender	120	0.092	0.72	−0.30 to 2.65

SD: standard deviation; SRS: Social Responsiveness Scale; SDQ: Strengths and Difficulties Questionnaire.

number of students were not frequently nominated, these scores were transformed with a Rankit procedure which resulted in an approximate normal distribution without outliers. Normalising scores using the Rankit procedure has been recommended in the literature as it is an accurate way to increase the power and robustness of the statistical procedures that are used to analyse the data (Solomon and Sawilowsky, 2009).

Autism severity. The Social Responsiveness Scale (SRS; Constantino and Gruber, 2002) is a widely used measure to quantitatively index autistic traits. The SRS is a 65-item parent questionnaire, commonly used for children between 4 and 18 years, assessing social interactions, relationships and communication skills using 4-point Likert scales through five sub-scales (receptive, cognitive, expressive, motivational factors and autistic mannerisms). A higher score indicates more autistic traits. This measure has established reliability and validity (Constantino and Gruber, 2007). For this study, total scores were used (Cronbach's $\alpha = 0.95$).

Emotional and behavioural problems. Emotional and behavioural problems were assessed using the Strengths and Difficulties Questionnaire (SDQ), a widely used measure of teacher-reported difficulties in childhood and adolescence (Goodman, 1997). This measure comprises 25 items from five 5-item sub-scales: hyperactivity (Cronbach's $\alpha = 0.78$), emotional symptoms (Cronbach's $\alpha = 0.76$), conduct problems (Cronbach's $\alpha = 0.71$), peer problems (Cronbach's $\alpha = 0.64$) and prosocial behaviour (Cronbach's $\alpha = 0.83$). Teachers respond to each item by endorsing one of three response options: *not true, somewhat true* or *certainly true*. Individual subscale scores were calculated using standard scoring as per SDQ guidelines, including the

standard rules for missing items or scales. Internal consistency was comparable to the use of this measure with TD children (Van Widenfelt et al., 2003).

Procedure

All students and their parents were informed about this study through presentations and letters. Informed consent was obtained from 120 adolescents and their parents. Data were collected by inviting all participating students belonging to one class at the same time to complete the computerised questionnaires, either in their own classroom or in the library, providing them with privacy and making sure the students could not influence each other. The research assistant gave group instructions, emphasising the confidentiality of the study.

Results

Descriptive statistics for all study variables are presented in Table 1. Table 2 summarises the pattern of bivariate relations between gender (boys coded 0 and girls coded 1), age, autism severity and emotional and behavioural problems and bullying-related behaviours (bully, victim, outsider, defender). Several features of Table 2 are noteworthy. First, autism severity was unrelated to any of the four bullying-related behaviours. Second, gender was only associated with defender behaviour, such that girls were more likely to be defenders compared to boys, while age was only associated with bullying; increasing age was associated with less bullying behaviour. Third, among the bullying-related behaviours, only bullying and outsider behaviour were negatively associated. Finally, for the most part, there were consistent associations between bullying-related behaviour and participant's emotional and behavioural problems. Specifically, bullying behaviour was associated with greater conduct problems and hyperactivity and lower levels of peer problems; victimisation was associated with greater emotional problems, conduct problems, hyperactivity, peer problems and less prosocial behaviour; defending was only associated with greater prosocial behaviour. However, there was no association between outsider behaviour and emotional or behavioural problems.

To examine the unique contribution of behavioural problems to the prediction of participant's bullying-related behaviour over and above autism severity, gender and age, four hierarchical multiple regression models were constructed (see Table 3). In all four models, age and gender were entered in the first step, autism severity was entered in the second step and behavioural and emotional problems were entered in the third step.

In Model 1, predicting bullying behaviour (see Model 1; Table 3), the first step was significant, $F(2, 73) = 6.08$, $p = 0.004$, with age making a significant contribution to the

Table 2. Summary of bivariate correlations between key study variables.

	1	2	3	4	5	6	7	8	9	10	11	12
1. Gender	–	0.14	0.02	−0.02	−0.16	0.21*	0.00	0.06	0.01	−0.03	0.05	0.15
2. Age		–	−0.26**	−0.18	−0.03	−0.16	−0.10	−0.01	−0.09	−0.12	0.14	−0.03
3. Bully			–	0.02	−0.36**	0.02	−0.08	−0.07	0.45**	0.33**	−0.25**	−0.10
4. Victim				–	0.10	0.01	0.16	0.16	0.18*	0.22*	0.32**	−0.26**
5. Outsider					–	−0.10	−0.11	0.05	−0.16	−0.13	0.08	0.04
6. Defender						–	−0.05	0.10	−0.08	−0.05	−0.10	0.25**
7. Autism severity							–	0.24*	0.05	−0.03	0.28*	−0.23*
8. SDQ: emotional symptoms								–	0.34**	0.29**	0.15	−0.17
9. SDQ: conduct problems									–	0.58**	0.12	−0.46**
10. SDQ: hyperactivity										–	−0.13	−0.29**
11. SDQ: peer problems											–	−0.38**
12. SDQ: prosocial behaviour												–

SDQ: Strengths and Difficulties Questionnaire.
*$p < 0.05$; **$p < 0.01$.

Table 3. Hierarchical multiple regression analyses predicting bullying-related behaviours.

Variable	Model 1 Bully		Model 2 Victim		Model 3 Outsider		Model 4 Defender	
	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1	0.14**		0.01		0.02		0.08*	
Age		−0.38**		−0.08		−0.01		−0.19
Gender		−0.01		−0.04		−0.16		0.30*
Step 2	0.01		0.01		0.02		0.08	
Age		−0.38**		−0.07		−0.00		−0.20
Gender		−0.01		−0.04		−0.16		0.30*
Autism severity		−0.08		0.11		−0.14		−0.10
Step 3	0.27**		0.23**		0.11		0.08	
Age		−0.25*		−0.13		−0.07		−0.17
Gender		0.09		−0.03		−0.24*		0.26*
Autism severity		−0.05		0.00		−0.21		−0.06
SDQ: emotional symptoms		−0.24*		0.02		0.13		0.12
SDQ: conduct problems		0.51**		−0.05		−0.19		−0.03
SDQ: hyperactivity		0.09		0.29		−0.03		−0.01
SDQ: peer problems		−0.25*		0.43**		0.29*		−0.05
SDQ: prosocial behaviour		0.04		−0.05		0.16		0.23
Total R^2	0.42**		0.25**		0.16		0.18	

SDQ: Strengths and Difficulties Questionnaire.
*$p < 0.05$; **$p < 0.01$.

prediction of bullying, such that bullying behaviours decreased with age. Surprisingly, at this step, gender did not predict bullying behaviour. The inclusion of autism severity did not significantly improve model fit, whereas the inclusion of behavioural problems at the next step did significantly improve model fit, total $R^2 = 0.42$. This final model was significant, $F(8, 67) = 6.08$, $p < 0.001$, with emotional symptoms, conduct problems and peer problems all making a significant independent contribution to the prediction of bullying behaviour. Specifically, greater conduct problems and fewer emotional and peer problems

were associated with an increased likelihood of engaging in bullying behaviours.

Model 2, predicting victimisation (see Model 2; Table 3), was significant with the inclusion of the third step only, $F(8, 67) = 2.83$, $p = 0.009$, total $R^2 = 0.25$ and only peer problems made a significant independent contribution to the prediction of victimisation at this step; higher levels of peer problems were associated with an increased likelihood of victimisation.

In Model 3, predicting outsider behaviour, no step was significant, total $R^2 = 0.16$. Nevertheless, at step 3,

gender and peer problems did make a significant independent contribution to the prediction of outsider behaviour. Specifically, girls were less likely to be nominated by their peers as outsiders, and participants with greater peer problems were more likely to be nominated as outsiders.

Finally, in Model 4, predicting defending behaviours, only gender was a significant independent predictor, such that girls were more likely to be nominated as defenders compared to boys. The inclusion of steps 2 and 3 did not significantly improve model fit, total $R^2 = 0.18$.

Discussion

This study provides a broad perspective of bullying in a sample of students with ASD in a special educational setting by exploring the association between a range of bullying-related behaviours and autism severity and conduct and emotional problems. Compared to studies examining the individual-level predictors of bullying-related behaviours in TD children, for the most part, this study found similar patterns of results for adolescents and young adults with ASD (Cook et al., 2010). That is, bullying decreased with age and was associated with behavioural problems, while victimisation was associated with peer problems. Notably, however, there were few associations between individual-level predictors and outsider or defender behaviour. These findings are discussed in more detail below.

As expected, given previous findings in TD samples, adolescents with ASD were reported to bully less with increasing age. However, there was not a corresponding decrease in peer-reported victimisation, with age a non-significant predictor of victimisation, suggesting that rates of victimisation are stable across high school despite a decrease in bullying behaviour. While decreases in the rates of bullying with increased age are a relatively consistent trend in TD children (e.g. Nansel et al., 2001; Pepler et al., 2006), like the current findings, a corresponding decrease in victimisation rates with age has not always emerged (e.g. Owens et al., 2005). Overall, in this study, it appears that older students with ASD, while less likely to judge their peers as bullies, were equally likely as younger students to judge their peers as victims. This may arise when a single victim may be the target of multiple bullies in younger ages, whereas older victims may be the target of a single bully. Clearly, more detailed measures of bullying and victimisation, including information about individual victims and perpetrators of bullying, are needed to better unpack this result.

With respect to gender, girls were more likely to be nominated as defenders and less likely to be nominated by their peers as outsiders compared to boys. The latter result is somewhat surprising, as most studies among TD children found more girls among the outsiders (e.g. Gini et al.,

2008; Goossens et al., 2006; Pepler et al., 2008), although not all studies controlled for associated behavioural and emotional problems which makes a direct comparison difficult. This finding suggests that girls with ASD at a special school catering solely to ASD students may have a different position in their virtually all-male environment compared to TD children in a more gender balanced environment. For example, it may be that girls are more conspicuous in a world full of boys, making it difficult to be an outsider. However, their minority position might also put them less at the centre of social interactions, for instance, because the separation between boys and girls may be stronger among young people with ASD. If this was the case, boys may have only nominated boys as outsiders, and girls may have only nominated other girls as outsiders. The higher likelihood of girls nominated for defending behaviour reflects findings in TD samples and could thus be less of a specific issue related to ASD. This point needs to be addressed further in future studies. The small number of girls participating in this research is a limitation to unpacking this result (discussed further below) and clearly requires additional study.

In addition to age and gender, the associations between self-reported bullying-related behaviours and behavioural and emotional problems as rated by teachers were also explored. As expected, bullies were more likely to have conduct problems, and victims had greater peer problems. Although peer problems (which has sometimes been understood as an aspect of internalising problems; Goodman et al., 2010) were associated with victimisation, there was no such relation for emotional problems, arguably a closer analogue to internalising problems more broadly construed. However, this does not necessarily imply that these victims of bullying have no emotional problems but only that their emotional problems in this group of students does not predict victimisation above and beyond the prediction that can be based on peer problems. Overall, the pattern of association between bullying and victimisation, and emotional and behavioural problems broadly mirrors that found in TD samples and implies that the behavioural and emotional profiles of bullies and victims with ASD are similar to that of TD children. Furthermore, the pattern of findings provides additional support for research demonstrating that adolescents and young adults with ASD appear to be accurate reporters of their peers' bullying and victimisation behaviour as they align in expected ways with teacher reports of associated problems. Given the growing evidence that students with ASD are able to accurately report on their own behavioural and emotional problems (e.g. Ozsivadjian et al., 2014), future research examining the association between bullying-related behaviours and self-reported emotional and behavioural problems would provide further insight on the association between these two constructs in adolescents with ASD.

In contrast to bullies and victims, very few relations were found between outsider and defender behaviours and adolescent behavioural and emotional problems. Notably, while there was a bivariate association between defending and prosocial behaviour, adolescents with ASD who were nominated as defenders were no more likely to be rated as prosocial by their teachers as any other bullying-related behaviour when included in the regression model. This finding may be interpreted in a number of possible ways: adolescents with ASD who engage in defending behaviour differ from TD children in that they are not considered more prosocial than their peers (Olthof, 2011), teachers may not be aware of the prosocial actions of adolescents with ASD or alternatively, children with ASD may not be accurate reporters of their peers' defending behaviour. While the latter is certainly a possibility, recent work by Begeer et al. (2016) shows that the association between self- and peer-reported defender behaviour for children with ASD is comparable to TD children suggesting reporting biases may not necessarily account for this unexpected finding.

A noteworthy finding from this study is that adolescent's ASD severity was unrelated to their bullying-related behaviour, such that scores on the SRS did not independently predict bullying, victimisation, outsider or defender behaviours, nor was there a bivariate relation between them. When adolescents with ASD are in a mainstream school setting, the severity of their autistic traits is associated (either positively or negatively) with victimisation (Cappadocia et al., 2012; Zablotsky et al., 2013b). However, this study suggests that in a special educational setting, the severity of autism does not set the adolescent apart from their peers and is not associated with bullying-related behaviours. Thus, autism severity in the context of bullying appears to be a more meaningful predictor in mainstream education only. This is supported by research that suggests that peer-reported behavioural atypicality of classmates (i.e. when classmates' behaviour is different from the broader peer group) is associated with social problems (DeRosier and Mercer, 2009). Through this lens, it is not an adolescent's autism severity per se that makes them a target of bullying, rather it is the fact that they do not conform to peer normative behaviour that singles them out. Alternatively, it may be that autism severity in and of itself does not predict bullying-related behaviour, but rather the comorbid characteristics of the child, such as behavioural problems, are the driving cause. This interpretation is supported by the work of Montes and Halterman (2007) demonstrating that children and adolescents with ASD in the presence of comorbid behavioural problems were more likely to bully others compared to adolescents with ASD without comorbid behavioural problems. The current findings are not able to disentangle these two alternative views, and clearly further research is needed to more closely examine the associations between autism severity, behavioural atypicality, behavioural problems and bullying-related behaviours.

While this study has a number of strengths, notably the simultaneous examination of multiple bullying-related behaviours and a multi-informant approach with peer-reported bullying-related behaviours, teacher-reported behavioural and emotional problems and parent-rated autism severity, there are several limitations to this work that should be acknowledged. First, even though a multi-informant approach was used, there was only one type of informant for each type of measure. Future research should strive to use multiple informants for each measure.

Second, although we treated our peer report–based measures of involvement in bullying as indices of the frequency or intensity of such behaviour, they actually reflect the number of classmates who reported a student to behave in particular ways. Although this potentially is a limitation, the rapidly expanding body of peer nomination–based research on bullying in TD children and adolescents that is based on the seminal work by Salmivalli et al. (1996) provides strong testimony of the validity of such measures. For example, to examine whether adolescents with ASD would be equally able to report on their classmates' bullying-related behaviour as their TD age-mates, Begeer et al. (2016) examined the relations between peer- and self-report-based measures of bullying-related behaviour in ASD and TD adolescent samples. The results suggested that adolescents with ASD are no less able to report on their peers' behaviour than their TD peers.

Third, there were a small number of girls relative to boys hindering the comprehensive examination of gender differences. As such, while there were gender differences these finding should be viewed in light of the unbalanced sample. Although it is common in the ASD literature to have a small proportion of girls (e.g. Nowell et al., 2014; Rieffe et al., 2012), it is nevertheless crucial to conduct research into the characteristics and features of ASD in girls as well as boys and further research using a larger sample of girls is clearly needed Finally, all participants were cognitively able and selected from within a specific educational setting, which limits generalisability of the current findings.

Despite these limitations, this study provides an important first step in examining the individual-level characteristics that predict bullying-related behaviours in children with ASD. By demonstrating that, for the most part, age, gender and behavioural and emotional problems are associated with bullying and victimisation in a similar manner as with TD children, these findings shed light on the types of bullying interventions that are most appropriate within this population.

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