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Recalled Experiences of Bullying and Victimization in a Longitudinal, Population-Based Birth Cohort: The Influence of ADHD and Co-Occurring Psychiatric Disorder

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Abstract

Objective: To describe bullying experiences throughout childhood of people with and without childhood ADHD and co-occurring learning and psychiatric disorders from a population-based birth cohort.

Methods: In a secondary data analysis of 199 childhood ADHD cases and 287 non-ADHD referents ($N = 486$), reported experiences of peer interactions during elementary, middle, or high school were classified as "bully," "victim," "neither," or "both." Associations were assessed with multinomial logistic regression.

Results: Adjusted for male sex, the odds of classification as victim-only, victim/bully, or bully- only (vs. neither) were 3.70 (2.36–5.81), 17.71, and 8.17 times higher for childhood ADHD cases compared to non-ADHD referents. Victim-bullies (62.5%) and bullies (64.3%) had both childhood ADHD and other psychiatric disorders versus 38.4% of victims-only and 17.3% of those classified as "neither."

Conclusion: The list of serious lifetime consequences of having ADHD also includes bullying. We offer future research directions for determining potential causal pathways. *(J. of Att. Dis. XXXX; XX(X) XX-XX)*

Keywords

ADHD, bullying, birth cohort

Bullying has been defined in both clinical and legal circles as repeated, intentional harm inflicted by a stronger peer (or institution) on a less powerful individual (hereafter "victim"), resulting in that victim's feeling unsafe and hindered from functioning in a particular setting, usually school or work (Arora, 1996). Since Olweus first operationalized the bullying construct for social science research (Olweus, 1986, 1991, cited in Olweus, 2002), it has become well-established that bullying is a significant public health problem associated with a wide range of negative health and psychosocial outcomes, including depression and internalizing problems (Sourander et al., 2016), poor physical health and financial security, increased risk for legal problems and incarceration (Wolke & Lereya, 2015), and increased risk for suicide (Sentenac et al., 2012). These increased risks apply not only to bullies and their victims, but also to bystanders (Vanderbilt & Augustyn, 2010).

Several studies note increased rates of bullying among children with neurodevelopmental disorders, including Autism Spectrum Disorder (Anderson, 2014), Learning Disabilities, and Attention Deficit/Hyperactivity Disorder (ADHD; Mayes et al., 2015; Twyman et al., 2010). Having ADHD as a stand-alone or co-occurring disorder appears to confer additional risk for being involved in the so-called "bullying continuum": bully, victim, and bully-victim (sometimes called reactive bully-victim; Twyman et al., 2010). Interestingly, the negative consequences of having ADHD itself or having been involved in bullying are similar: increased risk for future physical and mental health problems, including suicidality; academic and occupational underachievement; relationship problems; and increased risk for future criminal involvement and high-risk behavior (Barbaresi et al., 2013; Nansel et al., 2001).

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The relationship between bullying and ADHD is complex, developmentally and psychosocially mediated, and not easily studied (Hymel & Swearer, 2015). For example, children with ADHD may lack insight into their behavior (Wiener & Mak, 2009); have different perceptions of bullying than their parents (Fonseca et al., 2019; Hu et al., 2018); and may even feel that they "deserve" to be excluded for being "different" (Shea & Wiener, 2003). Applicable studies into the effects of toxic stress and psychological trauma suggest direct and indirect pathways, some biological and some psychosocial, to increased morbidity and poor outcomes (e.g., Nurius et al., 2016). We have previously identified childhood ADHD cases and non-ADHD referents in a population-based birth cohort, and have conducted a prospective assessment of outcomes in adulthood for ADHD cases and non-ADHD referents (Barbaresi et al., 2013). As a first step toward understanding what is likely a dynamic and alinear relationship, we completed a secondary data analysis of participants in this prospective outcome study to address the following research questions:

(1) How many individuals in this longitudinally-studied cohort could be *classified* as a bully, victim, both, or neither, during childhood and adolescence, based on their responses to a psychosocial questionnaire administered in young adulthood?
(2) Does being classified as a bully, victim, both, or neither *vary* as a function of:
    (a) biological sex, given that males and females have different socialization styles (Rose & Rudolph, 2006), may have different motivations to engage in bullying (Berger & Caravita, 2016), and not only engage in different types of bullying (Carbone-Lopez et al., 2010), but also different constellations of risks, benefits, and psychological sequelae from bullying (Rigby, 1998);
    (b) having or not having childhood ADHD, given the well-established social challenges associated with ADHD (Grygiel et al., 2018; McQuade & Hoza, 2015) and given that ADHD may increase risk of victimization in girls and bullying- perpetration in boys (Bacchini et al., 2008); and/or
    (c) having or not having a co-occurring psychiatric and/or learning disorder, given established relationships between externalizing problems and perpetration of bullying (Garaigordobil & Machimbarrena, 2019), peer victimization with poor school performance (e.g., Hemphill et al., 2012) and increased risk of dropout from high school (Cornell et al., 2013), and increased internalizing problems (especially depression) as a consequence of victimization (Eastman et al., 2018)?

Methods

Study Setting and Birth Cohort

This study utilized data collected on participants in a prospective outcome study who were selected from a population-based birth cohort. The birth cohort consisted of all children born between January 1, 1976 and December 31, 1982, to mothers residing in the townships comprising Independent School District (ISD) 535 in Rochester, Minnesota, who continued to live in Rochester after 5 years of age and who granted permission for use of their medical records for the study, excluding individuals with severe intellectual disability ($N = 5{,}699$). The city of Rochester, Minnesota, is located in Olmsted County in southeastern Minnesota, and essentially all medical care for residents of Rochester is provided by the Mayo Clinic, Olmsted Medical Center, and their three affiliated hospitals. The resources of the Rochester Epidemiology Project (REP) provide infrastructure for population-based research (Rocca et al., 2012). All medical diagnoses and surgical procedures are recorded and indexed for computerized retrieval. Additionally, public and private schools in Minnesota ISD 535 participated in a contractual research agreement that gave us permission to access their cumulative educational records for children in the birth cohort. The study was approved by the institutional review boards of the Mayo Clinic and Olmsted Medical Center. Written informed consent was obtained from all participants in the prospective portion of this study.

Prior Identification of Childhood ADHD Cases

We previously described the identification process of 379 childhood ADHD cases from the birth cohort (Katusic et al., 2005). Research-identified childhood ADHD was identified by combinations of: (1) positive ADHD questionnaire results; (2) documentation of ADHD *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (DSM-IV-TR) behavioral symptoms; and (3) documented clinical diagnosis of ADHD. Non-ADHD referents were identified from the remaining members of the birth cohort who were still in the community after 5 years of age, had not fulfilled research criteria for childhood ADHD, and had not denied access to their medical records for research purposes.

Prospective Adult Outcome Study

Individuals with childhood ADHD who were not incarcerated and provided continued permission to access their medical records ($N = 362$ of 379 childhood ADHD cases) were previously recruited for a prospective adult outcome study. Detailed information about these methodologies was previously published (Barbaresi et al., 2013). A random sample of 801 adults from the birth cohort who did not meet

criteria for childhood ADHD were recruited as non-ADHD referents; five of these individuals were reclassified as childhood ADHD cases (total N for childhood ADHD cases = 367).

Identification of Bullying or Victim Experience

Participants in the prospective, adult outcome study completed an extensive psychosocial questionnaire, that included six questions that asked them to recall whether they were a receiver or perpetrator of "bad teasing, harassing, or bullying" during Elementary, Middle, and High School, respectively. Participants were not provided a formal definition of bullying as has recently been suggested by some experts in the field (e.g., Vaillancourt et al., 2008). Participants were classified as a "victim" based on endorsement of "quite a bit" or "a lot" to "How much bad teasing, harassing, or bullying did you receive" with response options of "none," "not much," "some," "quite a bit," or "a lot." Participants were classified as a "bully" based on endorsement of "quite a bit" or "a lot" to "How often did YOU tease, harass, or bully others" with response options of "none," "not much," "some," "quite a bit," or "a lot." For analytic purposes, individuals were classified as either a victim only, bully only, both, or neither based on their survey responses across their combined experience in elementary school, middle school, and high school. This classification system is very similar to one used in a comparable prospective study of childhood and adolescent bullying experiences predicting rates of young adult psychiatric disorder (Copeland et al., 2013). As these were recalled experiences of childhood bullying, we (a) considered subjects who endorsed bullying during any period of childhood as positive for bullying or victimization; and (b) erred on the side of a very conservative approach in which the top two ratings were applied to our definition and "some" was treated as the "neutral" response—in keeping with best practice using Likert scales. Cell sizes precluded our ability to conduct statistical analyses based on sequential order or change in recalled bully/victim role through each of the educational periods.

Identification of Childhood Psychiatric Disorders and Comorbid Learning Disabilities

We used the same methods used with this birth cohort, and described in the paper by Yoshimasu et al. (2012) to determine which participants were diagnosed with psychiatric disorders, not including ADHD, prior to age 19 years. As was done in the Yoshimasu study, ten psychiatric disorders were collapsed into four categories for the purpose of data analysis: internalizing-only (mood disorders; anxiety disorders, including PTSD[1]; and somatoform disorders), externalizing-only (oppositional-defiant and/or conduct disorder; impulse-control disorders; and substance abuse disorders), combined internalizing and externalizing disorders, and indeterminate (insufficient information to classify). Individuals with disorders of adjustment, personality, eating, and tics were classified into one of the four categories based on clinical descriptions in the medical record. We have previously reported on learning disabilities within the 1976–1982 birth cohort (Barbaresi et al., 2005; Katusic et al., 2001; 2009). Using the scores from all individually-administered academic achievement tests and cognitive assessments from the participant's school records, we determined if individuals met criteria for either a mathematics, reading, or written language learning disability, based on either of two regression-based formulas or one non-regression based discrepancy formula.

Data Analysis

For this secondary analysis of participants in our prospective adult outcome study (Barbaresi et al., 2013), we focused on the subset of participants who were Olmsted County residents 80% or more of the time from birth to their 19th birthday in order to have sufficient information to ascertain the presence/absence of psychiatric disorders or learning disabilities in their medical and school records. Residency was determined using the resources of the REP which has assembled a residency timeline for each individual (St. Sauver et al., 2011).

Data are descriptively summarized using frequency counts and percentages for categorical variables and mean (*SD*) for continuous variables. Participant characteristics were each evaluated univariately for an association with bully/victim role using a multinomial logistic regression model in which the four bully/victim roles (victim only, bully only, both, neither) were treated as an unordered multinomial outcome. The association of bully/victim role with each of ADHD, learning disabilities, and psychiatric disorders were summarized using the odds ratio (OR) and corresponding 95% confidence interval (CI) derived from the models, both with and without adjusting for sex. Statistical analysis was performed using the SAS version 9.4 software package (SAS institute Inc.; Cary, NC).

Results

Among the 367 eligible childhood ADHD cases, 232 (167 males, 65 females; mean (SD) age 27.0 (2.6) years) or 63.2% participated in the prospective study. We previously compared participating versus non-participating childhood ADHD cases on a wide range of variables, and found that they differed only on rates of high school graduation (graduation rate 84.3% for participating ADHD cases, versus 64.8% for non-participating ADHD cases) (Barbaresi et al., 2013). A total of 801 non-ADHD referents from the same birth cohort were invited to participate, yielding 335

Table 1. Participant Characteristics, by Bully/Victim Role During Elementary Through High School.

Characteristic	Bully/victim role				*P* value†
	Neither (*N* = 330)	Victim only (*N* = 112)	Victim and bully (*N* = 16)	Bully only (*N* = 28)	
Sex					.06
Male (*N* = 321)	215 (65.2%)	71 (63.4%)	10 (62.5%)	25 (89.3%)	
Female (M = 165)	115 (34.8%)	41 (36.6%)	6 (37.5%)	3 (10.7%)	
Childhood ADHD					<.001
Yes (*N* =199)	96 (29.1%)	67 (59.8%)	14 (87.5%)	22 (78.6%)	
No (*N* = 287)	234 (70.9%)	45 (40.2%)	2 (12.5%)	6 (21.4%)	
Any LD					<.001
Yes (*N* = 179)	97 (29.4%)	56 (50.0%)	9 (56.3%)	17 (60.7%)	
No (*N* = 307)	233 (70.6%)	56 (50.0%)	7 (43.8%)	11 (39.3%)	
Math LD					<.001
Yes (*N* = 145)	77 (23.3%)	49 (43.8%)	5 (31.3%)	14 (50.0%)	
No (*N* = 341)	253 (76.7%)	63 (56.3%)	11 (68.8%)	14 (50.0%)	
Reading LD					.003
Yes (*N* = 127)	70 (21.2%)	40 (35.7%)	5 (31.3%)	12 (42.9%)	
No (*N* = 359)	260 (78.8%)	72 (64.3%)	11 (68.8%)	16 (57.1%)	
Written language LD					.003
Yes (*N* = 150)	85 (25.8%)	44 (39.3%)	7 (43.8%)	14 (50.0%)	
No (*N* = 336)	245 (74.2%)	68 (60.7%)	9 (56.3%)	14 (50.0%)	
Psychiatric disorder‡					<.001
Yes (*N* = 186)	96 (29.1%)	58 (51.8%)	11 (68.8%)	21 (75.0%)	
No (*N* = 300)	234 (70.9%)	54 (48.2%)	5 (31.3%)	7 (25.0%)	

Note. ADHD = attention deficit/hyperactivity disorder; LD = learning disability.
†*P* value for the global Wald test with 3 degrees of freedom from a multinomial logistic regression model evaluating the association between each binary characteristic and the four bully/victim roles.
‡Psychiatric disorder prior to age 19 years, not including ADHD.

participants (210 males, 125 females; mean [*SD*] age 28.6 [2.2] years). For this secondary analysis we focused on the subset of 492 participants (202 cases and 290 non-ADHD referents) who were in the community 80% or more of the time from birth to their 19th birthday. We further restricted the cohort to 486 individuals whom we were able to classify as either a victim only, bully only, both, or neither based on their survey responses across their combined experience in elementary school, middle school, and high school. Therefore, of the 232 ADHD cases, 199 (85.8%) were included in this analysis (143 males, 56 females; mean [*SD*] age at participation 26.9 [2.6] years). Of the 335 non-ADHD referents, 287 [85.7%] were included in this analysis (178 males, 109 females; mean [*SD*] age at participation 28.7 [2.2] years).

Of the 486 individuals, 112 (23.1%) endorsed criteria for being a victim only, 16 (3.3%) for being both a victim and a bully, and 28 (5.8%) for being a bully only; 330 (67.9%) did not meet criteria for either bully or victim during their school years. Table 1 summarizes characteristics of the participants according to their bully/victim role. Among those meeting criteria for bully only, 89.3% were male compared to 62% to 65% male in each of the other bully/victim roles. As this difference approached statistical significance (p = .06), we included it as a covariate in subsequent analyses. Adjusting for (male) sex, there was a statistically significant association between bully/victim role and childhood ADHD; 59.8%, 87.5%, and 78.6% of those who met criteria for victim only, both victim and bully, and bully only, respectively, had childhood ADHD compared to just 29.1% of those who met neither criteria with adjusted odds ratios of 3.70 (2.36–5.81), 17.71 (3.93–79.80), and 8.17 (3.20–20.87) (Table 2). In addition, the odds of being both a victim and a bully, compared to victim only, was significantly higher for those with childhood ADHD 4.78 (1.04, 22.15). Likewise, the presence of a learning disorder was associated with an increase in the odds of being classified as either a victim, bully or both, as was the presence of a psychiatric disorder.

A significantly higher proportion of participants with childhood ADHD had a learning disability compared to age- and sex-matched non-ADHD referents (70.8% [141/199] vs. 13.2% [38/287], $p < .001$). Likewise, a significantly higher proportion of participants with childhood ADHD were diagnosed with a psychiatric disorder (not including ADHD) before age 19 years compared to

Table 2. Relationship Between Bully/Victim Role and Patient Characteristics, Based on Univariate Analysis.[†]

		Unadjusted odds ratio (95% CI)			Adjusted odds ratio (95% CI)[‡]		
Characteristic	Bully/victim role	Referent = Neither	Referent = Victim only	Referent = Victim and bully	Referent = Neither	Referent = Victim only	Referent = Victim and bully
ADHD case versus non-ADHD referents							
	Neither	Referent			Referent		
	Victim only	**3.63 (2.32-5.67)**	Referent		**3.70 (2.36-5.81)**	Referent	
	Victim and Bully	**17.06 (3.80-76.48)**	**4.70 (1.02, 21.68)**	Referent	**17.71 (3.93-79.80)**	**4.78 (1.04, 22.15)**	Referent
	Bully only	**8.94 (3.51-22.73)**	2.46 (0.93, 6.55)	0.52 (0.09, 2.97)	**8.17 (3.20-20.87)**	2.202 (0.82, 5.91)	0.46 (0.08, 2.64)
Any learning disability versus none							
	Neither	Referent			Referent		
	Victim only	**2.40 (1.55-3.73)**	Referent		**2.43 (1.56-3.78)**	Referent	
	Victim and Bully	**3.09 (1.12-8.53)**	1.29 (0.45, 3.69)	Referent	**3.14 (1.13-8.72)**	1.29 (0.45, 3.73)	Referent
	Bully only	**3.71 (1.68-8.22)**	1.54 (0.66, 3.59)	1.20 (0.35, 4.18)	**3.42 (1.54-7.62)**	1.41 (0.60, 3.30)	1.09 (0.31, 3.82)
Psychiatric disorder versus none^							
	Neither	Referent			Referent		
	Victim only	**2.62 (1.69-4.07)**	Referent		**2.62 (1.69-4.07)**	Referent	
	Victim and Bully	**5.36 (1.82-15.84)**	2.05 (0.67, 6.28)	Referent	**5.37 (1.82-15.87)**	2.05 (0.67, 6.28)	Referent
	Bully only	**7.31 (3.01-17.76)**	**2.79 (1.10, 7.09)**	1.36 (0.35, 5.31)	**7.23 (2.96-17.66)**	**2.76 (1.08, 7.05)**	1.35 (0.34, 5.27)

Note. ADHD = attention deficit/hyperactivity disorder; LD = learning disability.
[†]Significant ($p < .05$) associations are noted in bold with 95% CIs that do not bound.
[‡]Odds ratios are adjusted for sex.
^Psychiatric disorder prior to age 19 years, not including ADHD.

Table 3. Combinations of Patient Characteristics, by Bully/Victim Role During Elementary Through High School.

	Bully/victim role			
Characteristic	Neither	Victim only	Victim and bully	Bully only
Childhood ADHD and LD	% of 330	% of 112	% of 16	% of 28
Neither ($N = 249$)	204 (61.8%)	38 (33.9%)	2 (12.5%)	5 (17.9%)
LD only ($N = 38$)	30 (9.1%)	7 (6.3%)	0 (0.0%)	1 (3.6%)
ADHD only ($N = 58$)	29 (8.8%)	18 (16.1%)	5 (31.3%)	6 (21.4%)
Both ($N = 141$)	67 (20.3%)	49 (43.8%)	9 (56.3%)	16 (57.1%)
Childhood ADHD and/or other psychiatric disorders†	% of 330	% of 112	% of 16	% of 28
Neither ($N = 228$)	194 (58.8%)	30 (26.8%)	1 (6.3%)	3 (10.7%)
Other psych only ($N = 59$)	40 (12.1%)	15 (13.4%)	1 (6.3%)	3 (10.7%)
ADHD only ($N = 72$)	40 (12.1%)	24 (21.4%)	4 (25.0%)	4 (14.3%)
Both ($N = 127$)	56 (17.0%)	43 (38.4%)	10 (62.5%)	18 (64.3%)
Type of psychiatric disorders among participants with childhood ADHD	% of 96	% of 67	% of 14	% of 22
None ($N = 72$)	40 (41.7%)	24 (35.8%)	4 (28.6%)	4 (18.2%)
Internalizing only ($N = 40$)	17 (17.7%)	15 (22.4%)	3 (21.4%)	5 (22.7%)
Externalizing only ($N = 33$)	18 (18.8%)	11 (16.4%)	2 (14.3%)	2 (9.1%)
Both ($N = 34$)	14 (14.6%)	10 (14.9%)	4 (28.6%)	6 (27.3%)
Indeterminate ($N = 20$)	7 (7.3%)	7 (10.4%)	1 (7.1%)	5 (22.7%)
Type of psychiatric disorders† among participants without childhood ADHD	% of 234	% of 45	% of 2	% of 6
None ($N = 228$)	194 (82.9%)	30 (66.7%)	1 (50.0%)	3 (50.0%)
Internalizing only ($N = 32$)	22 (9.4%)	8 (17.8%)	1 (50.0%)	1 (16.7%)
Externalizing only ($N = 12$)	8 (3.4%)	3 (6.7%)	0 (0.0%)	1 (16.7%)
Both ($N = 1$)	1 (0.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Indeterminate ($N = 14$)	9 (3.8%)	4 (8.9%)	0 (0.0%)	1 (16.7%)

Note. ADHD = attention deficit/hyperactivity disorder; LD = learning disability.
†Psychiatric disorder prior to age 19 years, not including ADHD.

non-ADHD referents (63.8% [127/199] vs. 20.6% [59/287], $p < .001$). Therefore, to further explore which factor is "most associated" with bully/victim status, we stratified the data into a) four groups based on ADHD case status and comorbid LD and b) four groups based on ADHD case status and comorbid psychiatric disorders. These results are summarized in Table 3. Among those meeting criteria for both victim and bully or bully only, 62.5% and 64.3%, respectively, had both childhood ADHD and other psychiatric orders, compared to just 38.4% of those who were victims only and 17.3% of those who were neither victim nor bully. This differential in rates was less for the combination of childhood ADHD and comorbid LD. Further, the proportion of subjects who reported being a victim-only was highest among those with internalizing psychiatric disorders only (22.4%), and the proportion of subjects who reported being a bully-only was highest among those with an indeterminate classification (28.6%); however, cell sizes were too small to test for statistical significance.

Discussion

Having ADHD conferred a three-to-*seventeen* fold risk of being categorized as a bully, victim, or both during the school-age years—even after adjusting for sex and using a very conservative cutpoint for determining victim/bully status. Consistent with the extant literature (Biswas et al., 2020; Silva et al., 2013), boys were statistically more likely to be bullies than girls. However, having ADHD and one or more co-occurring psychiatric disorders also put study participants at the higher end of this range; and it appears that ADHD case status is more associated (than comorbid LD) with bullying/victim status given that the distributions were similar among those with ADHD with LD compared to those with ADHD without LD. Likewise, rates of bully/victim status were similar between non-ADHD controls with LD compared to non-ADHD controls without LD.

The proportion of participants categorized as victim-only was relatively even across those with and without ADHD and those with and without a co-occurring psychiatric disorder.

Of qualitative interest, and consistent with current empirical conceptualizations of aggression as a form of self-soothing (Hughes et al., 2016; Martin & Clements, 2002), the proportion of subjects who reported being a victim-only was highest among those with internalizing psychiatric disorders only, and the proportion of subjects who reported being a bully-only was highest among those with an indeterminate classification. Lack of statistical power limits our ability to draw any firm conclusions from this finding. Conversely, the majority of the sample were categorized as *never* having been a victim or bully in any of the retrospective educational periods—including nearly half of the ADHD cases. The second largest group were those who were categorized as a victim of bullying at some point during their education, with 80 self-identifying as a victim during the (more common) Elementary and Middle School years, and an additional 44 self-identifying as being a victim of bullying in High School (only six of whom were experiencing this for the first time). Self-reporting history of being a bully or reactive victim-bully was far less common—perhaps for self-presentation reasons—but these 27 individuals were disproportionately represented by participants with ADHD and one or more co-occurring psychiatric disorder. While subject number and sub-groupings were not large enough to make statistical comparisons of rates of victim, bully or both status based on combinations of ADHD, various types of psychiatric comorbidities, or sequential order of (or change in) victim/bully role over time, these findings warrant further consideration.

These findings are consistent with the extant literature showing an association between ADHD and bullying and additionally suggests that co-occurring psychiatric disorder dramatically increases this association. Hence, this paper adds to the now considerable body of evidence supporting the release of current guidelines for the assessment and management of "complex ADHD," ADHD with one or more co-occurring psychiatric conditions (Barbaresi et al., 2020; Wolraich et al., 2019). If we assume that one is born with ADHD and then encounters bullying in the social environment, some important questions arise. First, what role does bullying play in the longitudinal relationship between ADHD and future adverse outcomes? Second, can we identify clusters of children who are both diagnosed with ADHD and have experienced bullying who might be at lower or higher risk for different kinds of adverse outcomes based on demographic variables or comorbidity patterns? And third, does good management of ADHD symptoms attenuate these concerning developmental trajectories? This study benefitted from a reasonably large birth cohort sample and rigorous data extraction/empirical validation method; and even so, we were insufficiently powered to explore all of our proposed research questions and did not have access to information that would have permitted analysis of important covariates, such as socioeconomic status (Tippett & Wolke, 2014). Future research that assesses ADHD symptom fluctuation (onset, offset, and severity of co-occurring psychiatric conditions) and multimethod measures of bullying that include both self-report and indirect sociometric measures (a.k.a., "peer nomination"—Vivolo-Kantor et al., 2014; see also Bacallao & Smokowski, 2010) will be needed to fully explore these relationships and determine causation using structural equation modeling in large prospective samples.

In addition to limited statistical power for sub-analyses, several limitations merit discussion. First, bullying experiences were self-report only, and were thus subject both to the effects of memory bias and co-occurring conditions. Specifically, depressed and anxious mood may color memory, such that one may view oneself as having "always" been bullied in school even if there were interceding episodes of good social support, effective intervention, and the like. We would also expect significant *underreporting* of such undesirable social behaviors as having been a bully. Second, more sophisticated measures of bullying have been created since the creation of the psychosocial questionnaire used in this study (Hamburger et al., 2011)—including guidance for optimizing reliability and validity through multimethod assessment, setting different cutpoints to maximize sensitivity and specificity, and making a point of providing respondents with a definition of bullying (Hymel & Swearer, 2015; Vaillancourt et al., 2008)—and not all possible dimensions of victimization were explored in this sample. Hence (and third), we cannot rule out that sex differences observed in this study were skewed toward a perception of bullying that is weighted toward overt physical aggression and threatening (i.e., more "male"). Prior research on how bullying behaviors manifest among boys and girls indicates that certain relational forms of bullying are actually more prevalent among girls (Espelage et al., 2004); and we now know that ostracism and exclusion—a form of bullying that appears to be more common among females—can be just as toxic to the stress response system and neurodevelopment as overt aggression (Saylor et al., 2013). For all of these reasons, we had equal chance of over-reporting or underreporting the "objective" bullying experiences of these study participants—a common issue in social sciences research. We would therefore advise readers that these are *subjective experiences of having been bullied, a victim, or both* among members of a vulnerable population rather than make claims about the epidemiology of bullying, which has already been well-examined in the articles cited herein. Given that we erred on the side of using a conservative ("top two") cutpoint on our Likert scales to make these bully/victim categorization, one is tempted to speculate about how many cases of bullying could have been missed in our analyses—and hence whether the severity of this problem is even greater than estimated based on our results.

Notwithstanding its limitations, this paper adds bullying to the list of serious lifetime consequences of having

ADHD. Recognition of bullying as a serious public health problem has impelled the writing of the Massachusetts Anti-Bullying Law (https://www.mass.gov/info-details/massachusetts-law-about-bullying-and-cyberbullying), among other major social movements and public health initiatives. Our findings may help to inform efforts to provide appropriate supports and services to children with ADHD, who are at greater risk of being involved in the bullying cycle.

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Note

1. Under *DSM-IV-TR*, PTSD was grouped with the anxiety disorders, whereas under *DSM-5*, it is subsumed under the new category of Trauma and Stressor-Related Disorders (APA, 2000, 2013).

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