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Parenting style influences bullying: A longitudinal study comparing children with and without behavioural problems

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Abstract

Background—More optimal parenting has been linked with lower rates of bullying. However, it is not clear whether parenting can alter the trajectories of bullying among children diagnosed with ADHD or ODD as well as those who are not so diagnosed. This study examined whether parenting at age 4 to 5 years was associated with changes in bullying over the next 4 years among children with Attention-deficit/Hyperactivity Disorder (ADHD) with and without comorbid Oppositional Defiant Disorder (ODD) relative to children without these disorders.

Method—Children from the New York metropolitan area ($n = 162$) were prospectively studied over 6 annual assessment points between preschool and 9 years of age. Parenting was assessed by laboratory observations of the parent and child; teachers rated child bullying, and parents reported on children's diagnostic status (Neither ADHD nor ODD, ADHD but not ODD, both ADHD and ODD).

Results—Children with comorbid ADHD and ODD were more likely to bully than the other two groups. Hierarchical linear modeling revealed a fall in bullying over five-years. Diagnostic status was significantly associated with initial levels of bullying. Irrespective of diagnostic group, children receiving more parent support for child autonomy at age 4 to 5 years showed a significantly greater decline in bullying than those provided with little support for autonomy. There was no longitudinal link between parent negative affect, emotionally supportive parenting and quality of parent-child interactions with bullying.

Conclusions—Greater parent support for child autonomy at age 4 to 5 years is related to reduced bullying. Interventions that encourage parent support for child autonomy at the time of entry into school may reduce bullying during early school years.

Keywords

Bullying; ADHD; ODD; parent support for child autonomy

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Appendix S1: Abridged parent-child interaction scoring sheet

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Introduction

Bullying is defined as repeated physical, verbal or psychological aggression designed to harm, humiliate, isolate or intimidate a weaker person (Farrington, 1993; Olweus, 1997). It could include physical assaults such as hitting, kicking, pushing or punching; verbal attacks such as threatening, teasing and name-calling; or relational aggression using social exclusion, gossiping and spreading of rumors (Olweus, 1997; Naylor, Cowie, Cossin, de Bettencourt, & Lemme, 2006). Prevalence rates of bullying differ on the basis of a number of factors such as the source of information, time period of measurement and thresholds of frequency considered to be bullying (Solberg & Olweus, 2003). Recent data estimated 7% of U.S. school children to be engaged in bullying (Limber, Olweus, & Luxemberg, 2013). Although the trajectories of bullying have not been studied for children with Attention-deficit/Hyperactivity Disorder (ADHD) or Oppositional Defiant Disorder (ODD) versus controls, studies generally suggest a decline in bullying through childhood and adolescence (Smith, Madsen & Moody, 1999), or stability over shorter periods of time such as a year (Camodeca, Goossens, Terwogt, & Schuengel, 2002).

Children with ADHD and ODD are more likely to bully their peers relative to children without these disorders (Holmberg & Hjern, 2008; Turcotte Benedict, Vivier, & Gjelsvik, 2014). While more optimal patterns of parenting have been linked with lower rates of bullying (Baldry & Farrington, 2000; Idsoe, Solli, & Cosmovici, 2008), it is not clear whether parenting can alter the trajectories of bullying by children who are diagnosed with ADHD or ODD, as well as those who are not so diagnosed.

Indulging in bullying can help children establish dominance, social status and a sense of control (Reijntjes et al., 2013). Childhood bullies have lower levels of C-reactive protein, a marker of low grade systemic inflammation, as adults (Copeland, Wolke, Lereya, Shanahan, Worthman, & Costello, 2014). Thus bullying may have some long and short term protective influences. However, bullying has also been associated with long term negative consequences such as: a four-fold increase in the risk of serious adult criminality (Olweus, 1993), lower grades, alcohol abuse, smoking, fighting, vandalizing, delinquency and early sexual activity (Smokowski & Kopasz, 2005; Sourander et al., 2007).

In a U.S. national sample, ADHD was found in about 11% of children aged 4-17 (Centers for Disease Control, 2013) and ODD, in about 10% of the population (Nock, Kazdin, Hiripi, & Kessler, 2007). Bullies are more likely to have ADHD and ODD. Holmberg & Hjern (2008) surveyed bullying among the population of fourth graders (N=516) in a suburb of Stockholm and found that children with ADHD had more than three times greater odds of bullying relative to those who did not have ADHD (Holmberg & Hjern, 2008). Similarly, Kumpulainen, Räsänen, & Puura (2001) found that about a third of children who bullied others had ADHD and about 12.5% had ODD or CD. Given that children with ADHD often exhibit a great deal of social impairment (Hoza et al., 2005), Bacchini, Affuso, & Trotta (2008) studied bullying as a pathway between ADHD and social problems in a sample of 4th and 5th graders. They found that children with ADHD symptoms had low social preference only if they were also bullies or victims. Nevertheless, some studies have failed to find a significant pathway between ADHD and bullying (c.f. Taylor, Saylor, Twyman, & Macias,

2010; Unnever & Cornell, 2003). Therefore, it is not clear that ADHD or ODD lead to greater bullying, but there is evidence that children with these diagnoses are more likely to be involved in bullying.

Bullying in school may be a manifestation of the interactions of the child within a family system (Rigby, 1994), a complex structure with each member fulfilling a role, following rules, adapting to change and having boundaries (Bowen, 1978). Parents influence how children behave with their peers by teaching prosocial ways of interaction; they may model such interactions with significant persons in the environment, and provide positive reinforcement for socially adaptive behaviors. Parents also provide the contexts for children to learn prosocial strategies by scheduling extracurricular activities and by choosing to make the child a part of organizations and schools that nurture social competence and emotional well-being. As per a family systems approach the relationships between siblings is also likely to impact school bullying through shared personal and environmental characteristics (Duncan, 2004; Wolke & Skew, 2012).

Parents of bullies have been reported to lack warmth and acceptance while using more authoritarian and harsh discipline strategies (Farrington, 1993; Idsoe et al., 2008). Early research by Olweus (1980) suggested that maternal aggression, power assertive disciplining strategies and lack of warmth may be associated with children's bullying behaviors. Baldry and Farrington (2000) conducted a cross-sectional study of 11- to 14-year-old children (N= 238) in which they compared the personal and parenting characteristics of 'bullies/delinquents', 'only bullies', 'only delinquents', and children who were 'neither bullies nor delinquents'. Using regression analyses, they found that children who were 'only bullies' were more likely to be male, have authoritarian, punitive, and non-supportive parents, and to disagree with their mothers more than non-bullies. In another cross-sectional analysis based on child report, Idsoe et al. (2008) studied whether parent and teacher connection, regulation, and autonomy were related to child bullying. Using structural equation modeling, they provided evidence that parent factors were stronger predictors of bullying than teacher factors and that the effect of parent connection on child bullying was mediated by parent regulation and support for child autonomy. Similarly, Barber and Olsen (1997) found that greater autonomy provided by parents was associated with lower levels of antisocial behavior among both boys and girls after controlling for economic well-being, race, child depression, family connection, family regulation and a host of peer, school and neighborhood factors. Thus the above studies suggest that parenting that is less authoritarian, with consistent structure and support for autonomy might be related to children's reduced involvement in bullying. However these studies were cross-sectional and did not address the clinically relevant question of whether parenting is related to a change in bullying over a period of time.

The present study examined differences in bullying by children with ADHD, ADHD and ODD, and children without these disorders. Further, we investigate whether some dimensions of authoritative parenting – operationalized as support for child autonomy, negative affect, emotional supportiveness, and quality of interactions – diminish the risk for later bullying in these three groups. The aims of the present study were to understand whether:

- a. Child diagnostic status (Neither ADHD nor ODD, ADHD without ODD, ADHD with ODD) is associated with *changes* in bullying during early childhood;
- b. Early parenting is associated with *changes* in bullying by children without a diagnosis of ADHD or ODD, with ADHD but not ODD, and with both diagnoses.

Method

Participants and procedure

Participants were 162 preschool children (115 boys) from the New York metropolitan area who were assessed annually for 6 years. Mean (SD) age at the six assessments (T0, T1, T2, T3, T4, and T5) was 4.27 (0.49), 5.30 (0.48), 6.31 (0.54), 7.34 (0.52), 8.72 (0.65), and 9.39 (0.61) years, respectively.¹ Children were recruited from preschools from an urban area via letters sent to parents who completed the Attention-Deficit/Hyperactivity Disorder Rating Scale, Fourth Edition (ADHD-RS-IV; DuPaul, Power, Anastopoulos, & Reid, 1998). Children were accepted into the study if they had fewer than 3 items rated as 'Often' or 'Very Often' by both parents and teachers on both subscales of the ADHD-RS-IV or if they had at least 6 symptoms rated as 'Often' or 'Very Often' by either parent or teacher on either subscale. We targeted a ratio of 2:1 in favor of symptomatic children. Children were excluded if they had a Full-Scale IQ below 80, as measured by the Wechsler Preschool and Primary Scale of Intelligence (Wechsler, 2002), a pervasive developmental or neurological disorder, were taking systemic medications, including stimulants for ADHD, or if they or their parents were not fluent in English.

None of the children were taking medication at T0, but some (N=38; 23.6%) had taken medications for behavioral issues at some point of time by the age of 9 years. This study was approved by the university's Institutional Review Board. Primary caregivers (parents or guardians) signed informed consent forms. Figure 1 shows the measures used at each assessment point in this study.

The Mean (SD, high-low) SES of the families (see measures below) in the sample was 56.14 (17.78, 97-20). The sample was ethnically and racially diverse. 95(58.6%) children were White, 17(10.5%) were Asian, 19(11.7%) were Black and 31(19.2%) identified themselves as other or mixed race; 56(34.6%) were of Hispanic ethnicity.

Measures

Parenting—A modified version of the Coding System for Mother-Child Interactions (NICHD Early Child Care Research Network, 2006) was used to assess dimensions of parenting. Each caregiver-child dyad took part in three consecutive 5-minute tasks: free play (F), completing a worksheet (Structured task; S), and replicating a design with blocks (Duplo task; D). All those who participated were legal guardians of the child and all but 5 (2 fathers, 2 grand-mothers, and 1 aunt) were mothers. These interactions were videotaped and later coded by raters on a 5-point scale with higher values indicating more positive parenting

¹While on average evaluations were held a year apart, the span between T4 and T5 was less than a year. Like other longitudinal studies, our data collection was influenced by a number of factors such as the anticipated end of funding, school vacations, change in research coordinators, and anticipated family moves.

on each of the four dimensions (see Appendix S1, available online). Free play was considered a period of time when the parents and child developed comfort in interacting in the laboratory setting and was not included in these analyses. Raters were blind to children's behavioral data. All raters were trained and their scores periodically checked to maintain a reliability coefficient over .70. A mean of parent-child interaction scores during the Structured and Duplo task was calculated for each dimension of parenting.

Parent support for child autonomy was coded as the extent to which parents showed respect for the child's individuality, motives, and perspectives. Parents were considered to show low support for the child's autonomy if they intruded on the task performance without recognizing the child's goals, interests, or attempts at problem-solving. Parents who acknowledged the child's ideas and engaged the child in autonomously performing the task were rated as showing high support for autonomy.

Negative affect was the extent to which parents showed signs of hostility or rejection such as coldness, teasing with a negative comment, parroting, mimicking, exasperation or anger.

Emotionally supportive parenting was coded as the extent to which parents provided warmth and support throughout the session. The parent who encouraged the child and expressed confidence in the child's ability to accomplish the task was rated as being high on emotionally supportive parenting.

Quality of assistance was the extent to which the parent provided cognitive stimulation, suggestions, guidance and support that elicited a higher level of mastery, understanding, or sophistication through the session.

Bullying—Teachers reported on three items (bullies others; threatens to hurt others; teases others) on a four-point scale (0=Never, 1=Sometimes, 2=Often, 3=Almost Always) at five points of time (T1-T5). These ratings were summed such that higher scores indicated greater severity of bullying behaviors. There was no overlap between these items and any of the items used to assess ADHD or ODD. The coefficient alpha for these items at T1, T2, T3, T4, and T5 was .79, .73, .79, .87, and .87.

Child diagnostic status—The Kiddie Schedule for Affective Disorders and Schizophrenia: Present and Lifetime Version (K-SADS-PL; Kaufman, Birmaher, Brent, Rao, & Ryan, 1996), a semi-structured interview was used to assess the presence of psychiatric disorders in children according to DSM-IV criteria at T1. Evaluators were students with graduate training in psychopathology or Ph.D.-level psychologists.

Socio-economic status—Mothers reported on their occupation at T0 and their responses were later coded using the Nakao and Treas Socioeconomic Prestige Index (Nakao & Treas, 1994).

Data analysis

We first tested whether there were differences between the three groups (Neither ADHD nor ODD, ADHD without ODD, ADHD+ODD) on key variables. Next, we assessed

correlations between each T1 dimension of parenting with bullying at all points of time. Finally, Hierarchical Linear Modeling (HLM; Raudenbush & Bryk, 2002) was used to assess individual initial levels (intercept) of bullying and change (slope) in bullying over time. This technique allowed us to account for the lack of independence between repeated observations of each child. Additionally, it enabled a direct-likelihood estimation of missing data such that participants who do not come in at a particular point of time, but return a year or two later were included in the analysis. Restricted maximum likelihood was used to estimate the random effects models. SES was included as a covariate because it was significantly correlated with severity of bullying at T1, T2, T3, and T5.

The first HLM model designed to investigate change in bullying across 5 time-points is represented by the equations:

$$\begin{aligned} &\text{Level 1 Model:} \\ &\text{Bullying}_{ij} = \pi_{0j} + \pi_{1j} \text{Age}_{ij} + e_{ij} \end{aligned}$$

$$\begin{aligned} &\text{Level 2 Model:} \\ &\pi_{0j} = \gamma_{00} + r_{0j} \\ &\pi_{1j} = \gamma_{10} + r_{1j} \end{aligned}$$

Bullying_{ij} is the severity of bullying for time i for participant j; π_{0j} and π_{1j} are the intercept and slope respectively for participant j, Age_{ij} is the age at time i for participant j, and e_{ij} is the Level 1 regression residual for each participant at time i. In the Level 2 equations, γ_{00} and γ_{10} indicate the average intercept and average slope respectively. The Level 2 error terms r_{0j} and r_{1j} signify differences between the individual and the sample on the intercept and slope respectively.

Next, parent negative affect, parent support for child autonomy, T1 diagnostic status and T0 SES were included in the model to observe their association with changes in bullying between T1 and T5.

$$\begin{aligned} &\text{Level 1 Model:} \\ &\text{Bullying}_{ij} = \pi_{0j} + \pi_{1j} \text{Age}_{ij} + e_{ij} \end{aligned}$$

$$\begin{aligned} &\text{Level 2 Model:} \\ &\pi_{0j} = \gamma_{00} + \gamma_{01} \text{Dx}_j + \gamma_{02} \text{Parent Negative Affect}_j + \gamma_{03} \text{Parent Support for Child Autonomy}_j + \gamma_{04} \text{SES}_j + r_{0j} \\ &\pi_{1j} = \gamma_{10} + \gamma_{11} \text{Dx}_j + \gamma_{12} \text{Parent Negative Affect}_j + \gamma_{13} \text{Parent Support for Child Autonomy}_j + \gamma_{14} \text{SES}_j + r_{1j} \end{aligned}$$

Missing data

The mean (SD) number of time-points for which data on bullying was available was 3.66(1.37). 37% of the sample (N=60) had complete data for all 5 points in the study; 24.7%

(N=40) had 4 data-points; 38.3% (N=62) had 3 or fewer data points. There were no significant differences in family SES, gender, race and ethnicity between those who did, and those who did not participate at any time point (p for all $>.05$).

Results

There were no significant differences in gender or race in severity of bullying at any point of time. Mean (SD) scores on bullying at T1, T2, T3, T4, and T5 were 1.37(1.76), 1.03(1.58), 0.78(1.42), 0.84(1.66), and 0.77(1.69).

As shown in Table 1, children who did not meet diagnostic criteria for ADHD or ODD had less severe bullying at every point of time. Children who had ADHD but not ODD did not bully as much as those who had ADHD + ODD at T1 and T4, but were not significantly different at any other point of time. There were no significant differences between the groups on any of the parenting dimensions assessed at T1 except for Negative Affect, which parents of children with ADHD + ODD exhibited significantly more of. Children who had neither ADHD nor ODD had mothers with higher SES than those who had ADHD + ODD.

The only two dimensions of parenting associated with bullying were parent support for child autonomy and parent negative affect (Table 2). Given that no significant associations were evident between 'emotionally supportive parenting' and 'quality of assistance' with bullying at any time-point, these two variables were not included in longitudinal analyses.

The first HLM model showed a significant fall in bullying over the five-year period [$B(SE)=-.12(.04)$, $p=.001$] suggesting an exploration of factors which might explain this fall. Next, parent support for child autonomy and negative affect were introduced in the HLM model along with child diagnostic status and SES. As shown in Table 3, diagnostic status was associated with the initial level of bullying. Parent support for child autonomy was not significantly associated with initial levels of bullying, but was associated with a reduction in bullying over time. Parent negative affect did not predict either initial values or change in bullying once support for child autonomy, diagnostic status and SES were controlled.

Figure 2 shows differences in the trajectories of bullying for each diagnostic group by level of support for child autonomy in the upper and lower quartiles. Children whose parents showed support for child autonomy in the lowest quartile had higher initial values, and a slight increase (among children with no diagnosis), stability (ADHD children), or low rate of decline in bullying (ADHD + ODD). Children whose parents showed support for child autonomy in the upper quartile had lower levels of bullying and a fall in bullying for all three diagnostic groups.

Discussion

This study found greater bullying among children who had ADHD with or without ODD relative to those who did not have these diagnoses. Moreover, there was a steep fall in bullying over time. Child diagnostic status was marginally associated with changes in bullying when parenting and SES were controlled for. Among the four dimensions of parenting studied at the time children entered school, two of them, parent negative affect and

parent support for child autonomy were correlated with bullying at a number of points of time. However, once diagnostic group, support for child autonomy and SES were controlled for, parent negative affect was not associated with either the initial levels or change in level of bullying. In contrast, parent support for child autonomy was associated with a fall in bullying among children over the five years under study. This decline was remarkable in that bullying among those with ADHD + ODD who had parental support for child autonomy in the top quartile had similar levels to children with no diagnosis but with parent support for child autonomy in the lowest quartile. The results of this study are in consonance with literature on risk for antisocial behavior being lowered by parents who are authoritative, supportive, and allow the child autonomy (Barber & Olsen, 1997).

The strengths of the present study include the use of teacher-reported annual assessments of bullying over 5 points of time during childhood, the use of clinical interviews with parents to determine diagnostic status of the child, and the availability of data on early parent support for child autonomy based on laboratory observations of interactions between parents and children. The reliability of the study may have been enhanced by the use of multiple sources of information. Parent support for child autonomy was videotaped in a laboratory and rated by impartial observers who were blind to the diagnostic status of the child. Teachers who rated the level of bullying were generally different each year in the study. These factors likely lowered the chances of source bias influencing the results. The assessment of bullying using a measure of severity rather than a categorical measure may have provided greater variability and explanatory power to assess changes. The use of HLM enabled us to estimate changes in severity of bullying over time. This technique is relatively robust to violations of non-normality and auto-correlation between longitudinal data (Verbeke & Molenberghs, 2000).

Nevertheless, this study also had some limitations. The measure of bullying was restricted to three key items. Given the limitations of measuring bullying solely on the basis of teacher reports (Pellegrini & Bartini, 2000), the use of more comprehensive measures with multiple reporters at each point of time may have enabled a more accurate assessment of bullying. Parent-child interaction was assessed during a laboratory session at one point of time and may not have been sufficiently sensitive to capture each dimension of parenting adequately. Further, other aspects of parenting, family structure, and functioning were not considered in this study. The sample largely consisted of mothers, limiting its generalizability to fathers and other caregivers. This study did not consider conduct disorders because bullying is a symptom of CD. It is likely that bullying reached a degree of severity for it to be noticed by teachers. Subtle acts of relational bullying such as social exclusion, gossip, rumor spreading and humiliation of peers are less likely to be included in this study. Further, fewer than half the sample participated at all time-points, though there were no significant demographic differences between those with and without missing data. Non-normality of bullying data could have affected the findings. Although a consideration of extreme scores on bullying indicated the possibility of interactions, we did not have an adequate sample to test significance of such effects. Finally, this study focused exclusively on bullies and did not consider victimization, limiting our ability to tease apart those who were possibly bully-victims.

Future studies need to explore the reasons for the higher risk for bullying among children with ADHD and/or ODD. Bullying is not a symptom of ADHD or ODD, but could be viewed as oppositionality and defiance expressed towards peers. There may be commonalities in the neuropsychology of ADHD and bullying. Anomalies in frontal lobe functioning have been implicated both in ADHD (Castellanos, Sonuga-Barke, Milham, & Tannock, 2006) and in bullying (Verlinden et al., 2013). Deficits in inhibition are observed in ADHD (Barkley, 1997; Scheres et al., 2004) and have also been observed in delinquents and adolescents with conduct problems who are known to have greater risk of bullying (Coolidge et al., 1992). Further, children with ADHD tend to have greater impulsivity (Halperin, Newcorn, Matier, Bedi, Hall, & Sharma, 1995), a trait that they may share with bullies. In a study of 1,315 middle school students, Unnever, & Cornell (2003) found that children who took medication for ADHD were more likely to bully others if they were high on impulsivity and low on self-control. We did not have enough children with ODD without ADHD to consider this group. Therefore, findings cannot be generalized to this group. Notably we had a small number of girls, impeding our ability to test for gender differences.

This study adds to the literature suggesting that early parenting factors – specifically parent support for child autonomy – influence not only how children behave with their peers in school, but also how this influence is evident through the first four years of school. It is noteworthy that children who do not have a diagnosis but who have very low levels of autonomy support during early school age are at increased risk of bullying others later. This study also highlights the importance of focusing on parent support for child autonomy among children with ADHD and ODD, who are at increased risk for bullying. It is possible that low support for child autonomy may be a response to the child's behavior, and this in turn could exacerbate the behavior over time. Given the high levels of stress that parenting a child with ADHD and ODD can create, it could be particularly difficult for parents to incorporate autonomy-supportive strategies that enable the child to attain mastery over social interactions. However, parents need to develop consistent and achievable expectations of child behavior. Parents of children with behavioral issues could also be encouraged to validate the effort and difficulties in staying on task in order to nurture a child's sense of competence despite challenges. More universal parent training and supportive services to enable parents to model effective problem-solving strategies may go a long way in nurturing prosocial problem-solving strategies in children.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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References

- Bacchini D, Affuso G, Trotta T. Temperament, ADHD and peer relations among school children: The mediating role of school bullying. *Aggressive Behavior*. 2008; 34(5):4477–459.10.1002/ab.20271

- Baldry A, Farrington DP. Bullies and delinquents: Personal characteristics and parental styles. *Journal of Community and Applied Social Psychology*. 2000; 10:17–31.10.1002/(SICI)1099-1298(200001/02)10:1<17::AID-CASP526>3.0.CO;2-M
- Barber BK, Olsen JA. Socialization in context: Connection, regulation, and autonomy in the family, school, and neighborhood, and with peers. *Journal of Adolescent Research*. 1997; 12(2):287–315.10.1177/0743554897122008
- Barkley RA. Behavioral inhibition, sustained attention, and executive functions: Constructing a unifying theory of ADHD. *Psychological Bulletin*. 1997; 121(1):65–94.10.1037/0033-2909.121.1.65 [PubMed: 9000892]
- Bowen, M. Family therapy in clinical practice. New York: Jason Aronson; 1978.
- Camodeca M, Goossens FA, Terwogt MM, Schuengel C. Bullying and victimization among school-age children: Stability and links to proactive and reactive aggression. *Social Development*. 2002; 11(3):332–345.10.1111/1467-9507.00203
- Castellanos XF, Sonuga-Barke EJS, Milham MP, Tannock R. Characterizing cognition in ADHD: Beyond executive dysfunction. *Trends in Cognitive Science*. 2006; 10(3):117–123.10.1016/j.tics.2006.01.011
- Centers for Disease Control and Prevention. Attention-Deficit/Hyperactivity Disorder (ADHD): Data & Statistics. 2013. Retrieved from <http://www.cdc.gov/ncbddd/adhd/data.html>
- Coolidge FL, Reilman BJ, Becker LA, Cass VJ, Coolidge RL, Stocker R. Emotional problems and neuropsychological symptoms in juvenile non-violent offenders. *Journal of Personality and Clinical Studies*. 1992; 8(1):7–13.
- Copeland WE, Wolke D, Lereya ST, Shanahan L, Worthman C, Costello EJ. Childhood bullying involvement predicts low-grade systemic inflammation into adulthood. *Proceedings of the National Academy of Sciences*. 2014; 111(21):7570–7575.10.1073/pnas.1323641111
- Duncan, RD. The impact of family relationships on school bullies and their victims. In: Espelage, DL.; Swearer, SM., editors. *Bullying in American schools: A social-ecological perspective on prevention and intervention*. Mahwah, NJ: Lawrence Erlbaum Associates; 2004. p. 227-244.
- DuPaul, GJ.; Power, T.; Anastopoulos, A.; Reid, R. *ADHD rating scales-IV: Checklists, norms and clinical interpretation*. New York, NY: Guilford Press; 1998.
- Farrington, D. Understanding and preventing bullying. In: Tonry, M., editor. *Crime and Justice: A Review of Research*. Vol. 17. Chicago and London: University of Chicago Press; 1993.
- Halperin JM, Newcorn JH, Matier K, Bedi G, Hall S, Sharma V. Impulsivity and initiation of fights in children with disruptive behavior disorders. *Journal of Child Psychology and Psychiatry*. 1995; 36(7):1199–1211.10.1111/j.1469-7610.1995.tb01365.x [PubMed: 8847380]
- Holmberg K, Hjern A. Bullying and attention-deficit-hyperactivity disorder in 10-year-olds in a Swedish community. *Developmental Medicine & Child Neurology*. 2008; 50:134–138.10.1111/j.1469-8749.2007.02019.x [PubMed: 18177412]
- Hoza B, Mrug S, Gerdes AC, Hinshaw SP, Bukowski WM, Gold JA, Arnold EL. What aspects of peer relationships are impaired in children with attention-deficit/hyperactivity disorder? *Journal of Consulting and Clinical Psychology*. 2005; 73(3):411–423.10.1037/0022-006x.73.3.411 [PubMed: 15982139]
- Idsoe T, Solli E, Cosmovici EM. Social psychological processes in family and school: More evidence on their relative etiological significance for bullying behavior. *Aggressive behavior*. 2008; 34(5): 460–474.10.1002/ab.20259 [PubMed: 18366109]
- Kaufman, J.; Birmaher, B.; Brent, D.; Rao, U.; Ryan, N. The schedule for affective disorders and schizophrenia for school-age children present and lifetime version (version 1.0). Pittsburgh, PA: Dept of Psychiatry, University of Pittsburgh School of Medicine; 1996.
- Kumpulainen K, Räsänen E, Puura K. Psychiatric disorders and the use of mental health services among children involved in bullying. *Aggressive Behavior*. 2001; 27(2):102–110.10.1002/ab.3
- Limber, SP.; Olweus, D.; Luxenberg, H. *Bullying in U.S schools: 2012 status report*. Center City, MN: Hazelden Foundation; 2013. Retrieved from: <http://www.violencepreventionworks.org/public/index.page>
- Nakao K, Treas J. Updating occupational prestige and socioeconomic scores: How the new measures measure up. *Sociological Methodology*. 1994; 24:1–72.10.2307/270978

- Naylor P, Cowie H, Cossin F, de Bettencourt R, Lemme F. Teachers' and pupils' definitions of bullying. *British Journal of Educational Psychology*. 2006; 76:553–576.10.1348/000709905X52229 [PubMed: 16953962]
- NICHD Early Child Care Research Network. Infant–mother attachment classification: Risk and protection in relation to changing maternal caregiving quality. *Developmental Psychology*. 2006; 42(1):38–58.10.1037/0012-1649.42.1.38 [PubMed: 16420117]
- Nock MK, Kazdin AE, Hiripi E, Kessler RC. Lifetime prevalence, correlates, and persistence of Oppositional Defiant Disorder: Results from the National Comorbidity Survey Replication. *Journal of Child Psychology & Psychiatry*. 2007; 48(7):703–713.10.1111/j.1469-7610.2007.01733.x [PubMed: 17593151]
- Olweus D. Familial and temperamental determinants of aggressive behavior in adolescent boys: A causal analysis. *Developmental Psychology*. 1980; 16(6):644–660.10.1037/0012-1649.16.6.644
- Olweus, D. *Bullying at school: What we know and what we can do*. Cambridge, MA: Blackwell; 1993.
- Olweus D. Bully/victim problems in school: Facts and intervention. *European Journal of Psychology of Education*. 1997; 12(4):495–510.10.1007/bf03172807
- Olweus, D.; Limber, S.; Mihalic, SF. *Blueprints for violence prevention, book nine: Bullying prevention program*. Boulder, CO: Center for the Study and Prevention of Violence; 1999.
- Pellegrini AD, Bartini M. An empirical comparison of methods of sampling aggression and victimization in school settings. *Journal of Educational Psychology*. 2000; 92(2):360–366.10.1037/0022-0663.92.2.360
- Raudenbush, SW.; Bryk, AS. *Hierarchical Linear Models: Applications and data analysis methods*. 2nd. Newbury Park, California: Sage; 2002.
- Reijntjes A, Vermande M, Olthof T, Goossens FA, van de Schoot R, Aleva L, van der Meulen M. Costs and benefits of bullying in the context of the peer group: A three wave longitudinal analysis. *Journal of Abnormal Child Psychology*. 2013; 41(8):1217–1229.10.1007/s10802-013-9759-3 [PubMed: 23686239]
- Rigby K. Psychosocial functioning in families of Australian adolescent schoolchildren involved in bully/victim problems. *Journal of Family Therapy*. 1994; 16(2):173–187.10.1111/j.1467-6427.1994.00787.x
- Scheres A, Oosterlaan J, Geurts H, Morein-Zamir S, Meiran N, Schut H, Sergeant JA. Executive functioning in boys with ADHD: Primarily an inhibition deficit? *Archives of Clinical Neuropsychology*. 2004; 19(4):569–594.10.1016/s0887-6177(03)00122-7 [PubMed: 15163457]
- Smith PK, Madsen KC, Moody JC. What causes the age decline in reports of being bullied at school? Towards a developmental analysis of risks of being bullied. *Educational Research*. 1999; 41(3):267–285.10.1080/0013188990410303
- Smokowski PR, Kopasz KH. Bullying in schools: An overview of types, effects, family characteristics, and intervention strategies. *Children & Schools*. 2005; 27(2):101–110.10.1093/cs/27.2.101
- Solberg ME, Olweus D. Prevalence estimation of school bullying with the Olweus Bully/Victim Questionnaire. *Aggressive Behavior*. 2003; 29(3):239–268.10.1002/ab.10047
- Sourander A, Jensen P, Rönning JA, Niemelä S, Helenius H, Sillanmäki L, Almqvist F. What is the early adulthood outcome of boys who bully or are bullied in childhood? The Finnish “From a Boy to a Man” study. *Pediatrics*. 2007; 120(2):397–404.10.1542/peds.2006-2704 [PubMed: 17671067]
- Taylor LA, Saylor C, Twyman K, Macias M. Adding insult to injury: Bullying experiences of youth with Attention Deficit Hyperactivity Disorder. *Children's Health Care*. 2010; 39(1):59–72.10.1080/02739610903455152
- Turcotte Benedict F, Vivier PM, Gjelsvik A. Mental health and bullying in the United States among children aged 6 to 17 years. *Journal of Interpersonal Violence*. 2014; 30(5):782–795.10.1177/088626051453627 [PubMed: 24920001]
- Unnever JD, Cornell DG. Bullying, self-control, and ADHD. *Journal of Interpersonal Violence*. 2003; 18(2):129–147.10.1177/0886260502238731
- Verbeke, G.; Molenberghs, G. *Hierarchical linear models for longitudinal data*. New York: Springer; 2000.
- Verlinden M, Veenstra R, Ghassabian A, Jansen PW, Hofman A, Jaddoe VWV, Tiemeier H. Executive functioning and non-verbal intelligence as predictors of bullying in early elementary

school. *Journal of Abnormal Child Psychology*. 2014; 42(6):953–966.10.1007/s10802-013-9832-y [PubMed: 24337736]

Wechsler, D. Wechsler Preschool and Primary Scale of Intelligence. 3rd. San Antonio, TX: Psychological Corporation; 2002.

Wolke D, Skew AJ. Bullying among siblings. *International Journal of Adolescent Medicine and Health*, 24(1). 201210.1515/ijamh.2012.004

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Key points

- Children with ADHD and ODD tend to bully more than those without these disorders.
- There is a fall in bullying behaviors between the time children enter school and the next four years.
- Parent negative affect, emotional support, and quality of assistance observed in a laboratory at 4 to 5 years were not significantly associated with a reduction in bullying others.
- Parent support for child autonomy at 4 to 5 years is associated with decreases in bullying among children without ADHD/ODD, with ADHD without ODD, and those with both diagnoses, while lower support for autonomy is related with stability or increase in bullying.

Figure 1. Measures in the study at each point of time

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Figure 2. Changes in bullying by diagnostic status and lower and upper quartiles of parent support for child autonomy

Note: Grey lines show children with Autonomy<25%, Black lines show children with Autonomy>25%

Table 1
Differences in bullying and parenting based on diagnostic status

Variables	No diagnosis Group 0 N=89 (54.9%) Mean (SD)	ADHD Only Group 1 N=41 (25.3%) Mean (SD)	ADHD + ODD Group 2 N=32 (19.8%) Mean (SD)	F (df) [†]
Bullying T1	0.59 (1.04)	1.58 (1.32)	3.14 (2.34)	31.45 (2, 134)***; 0<1<2*
Bullying T2	0.65 (1.39)	1.36 (1.32)	1.59 (2.13)	4.05 (2, 113)*; 0<1,2*
Bullying T3	0.37 (0.85)	0.97 (1.24)	1.52 (2.20)	6.70 (2,111)**; 0<1, 2*
Bullying T4	0.33 (0.78)	1.30 (1.56)	1.80 (2.93)	8.49 (2,111)***; 0<1<2*
Bullying T5	0.21 (0.48)	1.37 (1.55)	2.13 (3.48)	12.13 (2, 104)***; 0<1, 2*
Support for autonomy T1	4.47 (0.59)	4.32 (.60)	4.30 (0.49)	1.63 (2, 159)
Negative affect T1	1.18 (0.39)	1.27 (0.42)	1.42 (0.60)	3.38 (2, 159)*; 0<2*
Quality of assistance T1	3.25(0.44)	3.28(0.50)	3.12(0.40)	1.24 (2,159)
Emotional support T1	4.39 (0.54)	4.38(0.57)	4.19(0.60)	1.70 (2,159)
SES	61.13 (16.50)	50.12 (19.10)	49.97 (15.45)	8.52 (2, 159)***; 0>1,2*

[†] 0, 1, 2 refer to groups.

p<.001;

**
p<.01,

*
p<.05

Table 2
Correlations between dimensions of parenting at T1 and bullying (T1 to T5)

Parenting dimension	Bullying T1	Bullying T2	Bullying T3	Bullying T4	Bullying T5
Respect for child autonomy	-.03	-.17*	-.29**	-.26**	-.23*
Negative affect	.17*	.21*	.22*	.27**	.32**
Emotional support	-.10	.07	-.09	-.18†	-.03
Quality of assistance	.01	.10	.06	-.09	-.08

** p<.01;
* p<.05;
† p<.10

Table 3
Longitudinal association of T1 Support for child autonomy and Negative affect on changes in Bullying between T1 and T5

Fixed Effect	Coefficient	SE	T-ratio
<i>Level 1 intercept</i>			
Intercept	-3.95	2.89	-1.36
Diagnostic Status	1.37	0.35	3.88**
Support for child autonomy	0.97	0.54	1.81
Negative affect	0.62	0.71	0.88
SES	0.00	0.01	-0.19
<i>Level 1 linear slope</i>			
Intercept	0.79	0.39	2.00
Diagnostic Status	-0.08	0.05	-1.77 [†]
Support for Child Autonomy	-0.17	0.07	-2.31*
Negative affect	0.04	0.10	0.45
SES	0.00	0.00	-0.40

Note: Diagnostic status consists of 3 categories (0: No diagnosis, 1: ADHD only; 2: Both ADHD and ODD);

*
p<.05;

**
p<.01;

[†]
p<.10