Joint Development of Bullying and Victimization in Adolescence: Relations to Delinquency and Self-Harm

EDWARD D. BARKER, PH.D., LOUISE ARSENEAULT, PH.D., MARA BRENDGEN, PH.D., NATHALIE FONTAINE, PH.D., AND BARBARA MAUGHAN, PH.D.

ABSTRACT

Objective: To estimate trajectories of bullying and victimization in early to mid-adolescence, associations between the trajectories, and links with delinquency and self-harm. **Method:** A total of 3,932 adolescents (50% boys) reported bullying (ages 14 to 16), victimization (ages 13 to 16), delinquency (age 16), and self-harm (age 16). **Results:** Two bullying trajectories (low/decreasing, high/increasing) and three victimization trajectories (low, high/decreasing, high/increasing) were identified. Over time, victimization increased the likelihood of involvement in bullying to a greater extent than bullying increased the likelihood of victimization. Boys and girls in the high/increasing bullying and the low or high/increasing victimization trajectories (i.e., the bullies and the bully-victims) were highest in mid-adolescent delinquency. Girls following the high/increasing bullying and high/increasing victimization trajectories (bully-victims) were the highest in mid-adolescent self-harm. **Conclusions:** Youths who are victimized by their peers are at increased risk, in turn, of victimizing others. Sex-specific adjustment problems are associated with differing patterns of involvement in bullying and victimization among adolescents. *J. Am. Acad. Child Adolesc. Psychiatry*, 2008;47(9):1030–1038. **Key Words:** joint trajectories, bullying, victimization, delinquency, self-harm.

Bullying is a widespread problem among adolescents. Recent surveys across different countries have shown that bullying can affect up to half of the youths.[1] Studies indicate that being a bully or being a victim of bullying can lead to mental, behavioral, and physical adjustment problems. Children who bully others, representing approximately 10% of school-age children,[1] are at increased risk for aggressive and delinquent behaviors, school failure, and dropping out.[2–4] Victimized children, who constitute approximately 11% of school-age children,[1] experience problems including anxiety, low self-esteem, isolation, somatic symptoms, self-harm, and suicidal ideation.[5–9] Bully-victims, children who bully and are bullied by others,[5–7,10] represent about 6% of school-age children[1] and are considered to have the broadest range of adjustment problems, presenting difficulties common to both bullies and victims.[6,9,11–13]

The development of and the relations between bullying and victimization are not well understood. The few available data show that although bullying and victimization are more common among boys than girls, both phenomena decrease with age for both sexes.[6,14,15] Despite this general decrease in frequency during adolescence, both bullying and victimization show considerable association (correlation) from one year to the next, suggesting important developmental relationships. Existing evidence is limited, however, by reliance on correlation analyses or analyses of mean differences,[16,17] cross-sectional designs,[11,12] or short-term longitudinal studies.[3,18] Moreover, research examining adolescent trajectories has typically assessed general peer victimization,[19] or conduct problems that include bullying,[20] but never bullying and victimization by

bullies per se. In addition, no studies have yet investigated the joint development of bullying and victimization in adolescence. As a result, our knowledge of the development and relationships of bullying and victimization is still limited.

These issues are important for two reasons. First, effective preventive public health policies hinge on our understanding of the developmental relations between bullying and victimization.[21] Second, such information is important for understanding the processes underlying the development of bullies, victims, and, in particular, the bully-victims. Specifically, it is unclear whether bully-victims were initially victimized (i.e., bullied by others) and then started to bully others or whether they were initially bullies who then became victims because others took revenge against them.[11] Current research tends to support the first explanation. For example, a subset of bullied youths, the aggressive victims appears to use aggression in retaliatory circumstances.[10] However, it is not known whether victimization experiences increase the likelihood of bullying more strongly than bullying increases the likelihood of victimization.

To address this research gap, the present study aimed to test whether groups with distinct developmental trajectories of bullying and victimization, respectively, can be identified in adolescence and how these developmental trajectories are related. We expected to find at least two trajectories for both bullying and victimization: a high/chronic trajectory and a low/decreasing trajectory. We also expected that high/chronic levels of victimization would have a stronger association with high/chronic levels of bullying than vice versa. To validate the identified trajectories and the developmental relations between them, we also aimed to examine the adjustment problems related to specific developmental patterns of bullying and victimization trajectories in mid-adolescence. To do this, we focused on two adjustment problems relating to bullying that are highly pertinent in adolescence: delinquency and self-harm.

Bullying is part of the broader concept of conduct disorder that includes behaviors such as aggression toward people, theft, vandalism, and rule violations.[22] At this stage, however, little is known about how adolescent bullying is related to delinquent behaviors in general. One study examined externalizing symptoms, including conduct problem behaviors, among bullies, victims, and bully-victims at two time points and found

that bully-victims had higher levels of externalizing behaviors than bullies, victims, and noninvolved children.[3] We therefore expected youths in high/chronic trajectories of bullying-victimization to be higher in adolescent delinquency than other youths. Because both bullying and delinquency are more common among boys, we expected these associations to be stronger in boys than in girls.

Self-harm is understood to be a maladaptive coping strategy that is generally more prevalent among girls than boys during adolescence. For both sexes, it is the strongest predictor of completed suicide in the general population,[23] with almost half of all of the young suicide victims having a history of self-harm.[24] In cross-sectional data, high levels of self-harm have been reported in victims of bullying, but even higher levels have been found in bully-victims.[9] Because bullying experiences have been linked to both suicidal ideation and suicide attempts in cross-sectional studies,[9,12] we expected adolescents in high/chronic trajectories of victimization and bullying-victimization to show elevated levels of self-harm compared to other youths and that this effect would be greater for girls than boys.

METHOD

Sample

Participants were from the Edinburgh Study of Youth Transitions and Crime,[25] a large representative cohort of adolescents (4,597; 51% boys) constituted at age 12 years and assessed annually up to age 17. Bullying and victimization were assessed up to age 16, the end of compulsory schooling in Scotland. The initial recruiting sample, at the first wave, included 92% of the total population of young people who were enrolled as first-year pupils at Edinburgh secondary schools in the autumn of 1998. At the first data collection wave, 70% of the adolescents lived with both birth parents, 16% lived with their mother only, and 11% lived with one parent and one stepparent. A total of 94% of the sample were white.

Procedures

Parental consent was obtained for all of the adolescents who participated in the study. Trained research workers administered the self-report questionnaires in the classrooms. Absent students were captured via follow-up visits to the school and by home visitation. A guarantee of confidentiality was given to reassure participants about reporting sensitive information. Measures included self-reports on bullying (ages 14 to 16), victimization (ages 13 to 16), delinquency (age 16), and self-harm (age 16). Data on bullying at age 13 were not included in the present analysis because the response scale at age 13 differed from that used in subsequent data waves. Measures of bullying and victimization[26] were based on questionnaires developed for the Scottish[27] and British[28] Crime Surveys.

Measures

Bullying information was collected using self-reports at ages 14, 15, and 16 years with the following five items: bullied someone by hitting or spitting, bullied someone by "slagging"/name calling, bullied someone by threatening to hurt him or her, bullied someone by ignoring/excluding, and recruited someone else to bully (0 = never, 1 = less than once per week, 2 = once per week, or 3 = most days). We created a composite score, ranging from 0 to 15, which represented the frequency of bullying in the past year (Cronbach α ranged between .75 and .77).

Victimization information was collected using self-reports at 13, 14, 15, and 16 years of age with the following four items: bullied by being attacked, bullied by being "slagged"/called names, bullied by being threatened, and bullied by ignoring/excluding (0 = never, 1 = less than once per week, 2 = once per week, or 3 = most days). We created a composite score, ranging from 0 to 12, which represented the frequency of victimization within the last year (Cronbach α ranged between .80 and .84).

Delinquency at age 16 was collected with 11 self-reported items. These items asked, in the past year, how often (0 = never to 7 = more than 10 times) the participant was involved in delinquency (e.g., used a weapon in a fight, broke into a house or building, vandalized property, stole something from a shop; range 0–77, mean 3.86, SD 6.76, Cronbach α = .77).

Self-harm at age 16 was collected with six self-reported items that asked, in the past year, whether the participant (1 = yes, 0 = no) cut or stabbed self on purpose, burned self on purpose, bruised/pinched self, took tablets to overdose on purpose, pulled out hair on purpose, and hurt self on purpose some other way (range 0–6, mean 0.36, SD 0.89, Cronbach α = .66).

Attrition and Missing Data

Complete bullying data were available for 92% of the original sample at age 14 years, 90% at age 15 years, and 83% at age 16 years. Complete victimization data were available for 93% of the original sample at 13 years, 93% at 14 years, 90% at 15 years, and 84% at 16 years. At age 16, 87% of the original sample answered the delinquency questions and 84% answered the self-harm questions.

To make use of all of the available data, boys and girls with at least one data point on bullying or victimization measures were allowed into the trajectory analysis (n = 3,932; 50% boys). We compared the results presented below to models with more stringent criteria for inclusion (e.g., at least two data points for bullying and victimization), and the trajectory models and associations to delinquency and self-harm did not change. The method used to identify trajectory groups, described in the next section, is designed to accommodate missing data in a youth's assessment record.[29]

Analyses

After presenting descriptive data on trends in bullying and victimization across the study age range, the analyses proceeded in three steps. In step 1 models for the developmental trajectories were separately estimated for bullying and victimization. We used growth mixture models[30] to estimate the trajectories in Mplus version 4.1.[31] Growth mixture models are designed to identify clusters of individuals who follow unique developmental trajectories. These trajectories are described by both the shape (low, decreasing, increasing) and the proportion of individuals estimated to follow the trajectories. Missing data were handled through full information maximum likelihood. To account for the non-normal distributions of the bullying and victimization scores, we used the Huber-White covariance adjustment and an additional correction for the clustering of the scores at the scale minimums (i.e., a preponderance of zeros). These adjustments were applied to the analyses of mean trends (in the "Descriptive Statistics" section) and the estimation of the trajectories.

A series of models was fitted beginning with a one-trajectory model and moving to a six-trajectory model. Evaluation of the best fitting models was accomplished using the bayesian information criterion (BIC),[32] the Lo-Mendell-Rubin likelihood ratio test (LMR-LRT),[33] and entropy.[34] The BIC is a commonly used fit index in which lower values indicate a more parsimonious model. LMR-LRT provides a k-1 likelihood ratio–based method for determining the ideal number of trajectories; a low p value (p < .05) indicates that the k trajectory model is a better fit to the data compared to the k-1 trajectory model. Entropy is a measure of classification accuracy with values closer to 1 indexing greater precision (range 0–1).

In step 2 the joint trajectories of bullying and victimization were estimated. We used the best fitting trajectory models for bullying and victimization as the starting point for the joint models. Key outputs of a joint model are the joint probabilities and the conditional probabilities. Joint probabilities of belonging to trajectories of bullying and victimization (e.g., the probability of following chronic bullying and chronic victimization trajectories), and conditional probabilities (e.g., the probability of following a high/chronic victimization trajectory conditional on following a high/chronic bullying trajectory) are useful for describing the developmental overlap between two types of distinct but related phenomena.[29] We also evaluated sex differences across the joint trajectory groups.

In step 3 we classified the adolescents based on their probabilities of belonging to the different trajectories and examined mean differences between the joint trajectories in delinquency and self-harm at age 16. The distributional properties of the variables were examined before the analysis. To correct for skew, the measures of delinquency and self-harm required a log transformation. These scores were then standardized to a mean of 0 and SD of 1 to facilitate comparisons across trajectory groups. Because of unequal numbers in trajectory groups, mean differences were tested with a general linear model multivariate analysis of variance using PROC GLM in SAS[35] with weighted data. When data are weighted, each participant is represented in each cell as a function of his or her probability of being assigned to that joint trajectory group. This approach preserved the continuous nature of the classification variable and corrected for potential uncertainty in trajectory assignment.

RESULTS

Descriptive Statistics

Table 1 shows that for both boys and girls, overall involvement in both bullying and victimization decreased with age. To ensure that this overall declining trend was accurate, we examined linear change while adjusting for the non-normal distributions (i.e., large SDs; see "Analyses" section for details). For boys, bullying (slope −0.45, SE 0.04, t = −11.96) and victimization (slope −0.23, SE 0.02, t = −11.01) showed significant decreasing linear trends. Likewise for girls, bullying (slope −0.43, SE 0.03, t = −16.33) and victimization (slope −0.17, SE 0.02, t = −9.13) showed significant decreasing linear trends.

TABLE 1
Mean Levels of Bullying and Victimization

	Boys			Girls			Total		
	Mean	SD	No.	Mean	SD	No.	Mean	SD	No.
Bullying									
14 y	3.18	2.98	1,962	2.36	2.42	1,946	2.77	2.74	3,908
15 y	2.80	2.77	1,942	1.99	2.23	1,926	2.40	2.55	3,868
16 y	2.29	2.46	1,763	1.50	1.87	1,852	1.89	2.21	3,615
Victimization									
13 y	1.59	2.62	1,975	1.49	2.26	1,957	1.54	2.45	3,932
14 y	1.44	2.33	1,962	1.49	2.26	1,946	1.54	2.25	3,908
15 y	1.21	2.16	1,942	1.26	2.03	1,926	1.23	2.09	3,868
16 y	0.93	1.87	1,763	1.00	1.86	1,852	0.97	1.886	3,615

Note: At each year, the minimum and maximum scores were 0 and 15 for bullying and 0 and 12 for victimization.

To provide comparable statistics to research reports that have used dichotomous (yes/no) measures of bullying and victimization, we examined the proportion of adolescents who reported being involved in bullying at least twice weekly. Rates fell within the ranges reported in past studies and reflected the declining levels of involvement highlighted by the mean scales scores. For boys, involvement in bullying declined from 19% at age 14 to 10% at age 16, and rates of victimization fell from 13% at age 13 to 5% at age 16. For girls, rates of bullying ranged from 10% at age 14 to 5% at age 16, and victimization also declined (10% at age 13 to 5% at age 16).

Despite this decline in rates, correlations suggested relative stability in personal involvement of bullying and victimization. That is, correlations between bullying assessments at consecutive ages (14 to 16) varied between 0.43 and 0.48. The correlations between victimization assessments at consecutive ages (13 to 16) varied between 0.44 and 0.49. The correlations between bullying and victimization were 0.20 at ages 14 and 15, and 0.19 at age 16. All of these correlations were statistically significant at $p < .01$.

Step 1: Trajectories of Bullying and Victimization

Although sex differences were identified across scores on bullying and victimization, when estimated separately the trajectory models for bullying and victimization were highly similar for boys and girls in terms of the number and shapes of the trajectories. The joint trajectories, described below, were also highly similar for boys and girls. The trajectory models were therefore estimated for both boys and girls combined.

Bullying. We identified two groups with distinct trajectories of bullying between ages 14 and 16 years (Fig. 1, A):
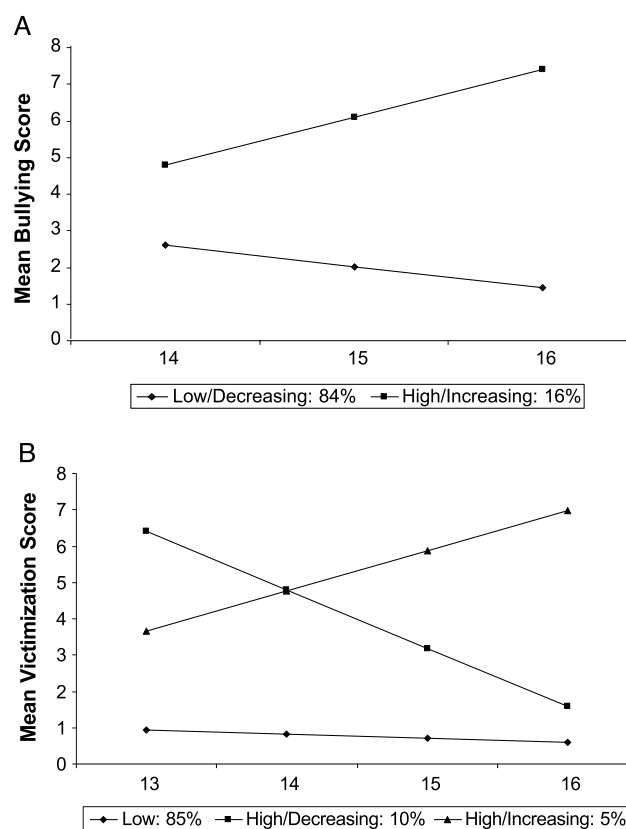

Fig. 1 Developmental trajectories of bullying (A) between 14 and 16 years of age and victimization (B) between 13 and 16 years of age. The bullying two-trajectory model (BIC = 50,544.77; entropy = 0.89; Lo-Mendell-Rubin likelihood ratio test [LMR-LRT] $p < .0001$) fit better than a one-trajectory (BIC = 53,225.10; entropy = not available; LMR-LRT not available) or three-trajectory model (BIC = 49,898.23; entropy = 0.87; LMR-LRT, $p < .14$). The victimization three-trajectory model (BIC = 61,515.16; entropy = 0.96; LMR-LRT, $p < .04$) fit better compared to a two-trajectory (BIC = 62,931.86; entropy = 0.95; LMR-LRT, $p < .0001$), and four-trajectory model (BIC = 60,394.75; entropy = 0.96; LMR-LRT, $p < .01$). The addition of trajectory specific variation minimally improved classification accuracy for the bullying and victimization models.

TABLE 2
Joint and Conditional Probabilities of Bullying and Victimization

Bullying	Victimization		
	Low	High/Decreasing	High/Increasing
	Probabilities of joint trajectory group membership (cells total 1)		
Low/decreasing	(1) 0.75	(2) 0.07	Victims: (3) 0.03
High/increasing	Bullies: (4) 0.11	Victim-to-bully transition: (5) 0.03	Bully-victims: (6) 0.02
	Probability of victimization conditional on bullying (rows total 1)		
Low/decreasing	0.88	0.08[a]	0.04[b]
High/increasing	0.68	0.20[a]	0.12[b]
	Probability of bullying conditional on victimization (columns total 1)		
Low/decreasing	0.88	0.68	0.64
High/increasing	0.12[c,d]	0.32[c,e]	0.36[d,e]

[a] 0.20 vs. 0.08, odds ratio (OR) 2.97, 95% confidence interval (CI) 2.75–3.22.
[b] 0.12 vs. 0.04, OR 3.31, 95% CI 3.00–3.61.
[c] 0.32 vs. 0.12, OR 3.45, 95% CI 3.21–3.69.
[d] 0.36 vs. 0.12, OR 4.13, 95% CI 3.82–4.43.
[e] 0.36 vs. 0.32, OR 1.18, 95% CI 0.82–1.54.

84% of the adolescents followed a low/decreasing trajectory and 16% followed a high/increasing trajectory. Slightly more girls than boys followed the low/decreasing trajectory (53% girls), whereas more boys (68%) than girls followed the high/increasing bullying trajectory.

Victimization. We identified three groups with distinctive trajectories of victimization between 13 and 16 years (Fig. 1, B): 85% of the adolescents followed a low trajectory, 10% followed a high/decreasing trajectory, and 5% followed a high/increasing trajectory. Boys and girls were equally represented in the low and high/increasing victimization trajectories (50%), whereas a higher proportion of boys followed the high/decreasing victimization trajectory (55% boys).

Step 2: Joint Trajectories of Bullying and Victimization

Joint Probabilities of Trajectory Group Membership. The joint trajectory analyses identified six groups of adolescents with distinct developmental patterns of bullying and victimization. The top part of Table 2 shows the proportion of adolescents in each group. The rows represent the two bullying trajectories, the columns represent the three victimization trajectories and the 2 × 3 combinations of the cells represent the proportion of adolescents in each of the six joint trajectory groups. Group 1 represents adolescents who were classified in

trajectories of low/decreasing bullying and low victimization; these adolescents, 75% of the sample (n = 2,933; 53% girls), had little or no involvement in bullying as either bullies or victims across the early to mid-teens. Group 2, the low/decreasing bullying and high/decreasing victimization youths, consists of 7% of the sample (n = 262; 48% girls). Group 3, the victims, comprises 3% of the adolescents who were classified in trajectories of low/decreasing bullying and high/increasing victimization (n = 127; 57% girls). Group 4 contains adolescents in trajectories of high/increasing bullying and low victimization (i.e., bullies, 11% of the sample; n = 415, 28% of whom were girls). Group 5, those in a high/increasing bullying and high/decreasing victimization trajectory (those who transitioned from victims to bullies), comprises 3% of the sample (n = 124; 41% girls). Group 6 contains adolescents in trajectories of high/increasing bullying and high/increasing victimization (bully-victims, 2% of the sample; n = 71, 38% of whom were girls). Boys were more strongly represented than girls in all of the groups except groups 1 and 3.

Probabilities of Victimization Conditional on Bullying. The middle part of Table 2 presents conditional probabilities of victimization given bullying trajectory membership. Adolescents low/decreasing in bullying were most likely to be classified in the low victimization

trajectory (probability = .88), as were those high/increasing in bullying (probability = .68). Compared to youths in the low/decreasing bullying trajectory, however, those in the high/increasing bullying group were more likely to be classified as high/decreasing in victimization (probability = .20 versus .08, odds ratio [OR] 2.97, 95% confidence interval [CI] 2.71–3.23) and high/increasing in victimization probability = .12 versus .04, OR 3.31, 95% CI 3.00–3.61).

Probabilities of Bullying Conditional on Victimization. The bottom part of Table 2 presents adolescents' conditional probabilities of bullying given their victimization trajectory. Adolescents low or high/decreasing in victimization were most likely to be classified as low/decreasing in bullying (probability = .88 and .68, respectively). Compared to the low victimization trajectory, the high/decreasing (probability = .32 versus .12, OR 3.45, 95% CI 3.21–3.69) and high/increasing (probability = .36 versus .12, OR 4.13, 95% CI 3.82–4.43) victimization trajectories were more likely to be classified as high/increasing in bullying. However, given high rates of victimization at age 13, the risk for high/increasing bullying varied little with subsequent victimization patterns over time (high/increasing or high/decreasing; probability = .36 versus .32, OR 1.18, 95% CI 0.82–1.54).

Step 3: Mean Differences in Delinquency and Self-Harm

A general linear model multivariate analysis of variance was conducted using the trajectory groups as independent variables and delinquency and self-harm as dependent variables. Mean differences in delinquency and self-harm were evaluated in a 2 (sex) × 6 (joint trajectory) factorial design. The overall general linear model multivariate analysis of variance F test was significant for the sex × trajectory interaction ($F_{10,7,169}$ = 8.44; p < .0001), and significant univariate interaction effects were identified for both delinquency ($F_{5,3,599}$ = 3.92; p < .002) and self-harm ($F_{5,3,599}$ = 14.88; p < .0001; Fig. 2). We interpreted within-sex and between-sex differences for delinquency and self-harm.

For delinquency (Fig. 2, A), boys and girls in the bullying group (group 4: high/increasing bullying and low victimization) were higher in delinquency compared to those in the high/increasing bullying and high/decreasing victimization group (i.e., victim to bully transition; group 5; $t(320)$ = 4.12 and $t(150)$ = 3.34, p < .0001 and p < .001; d = 0.57 and d = 0.59 for boys and
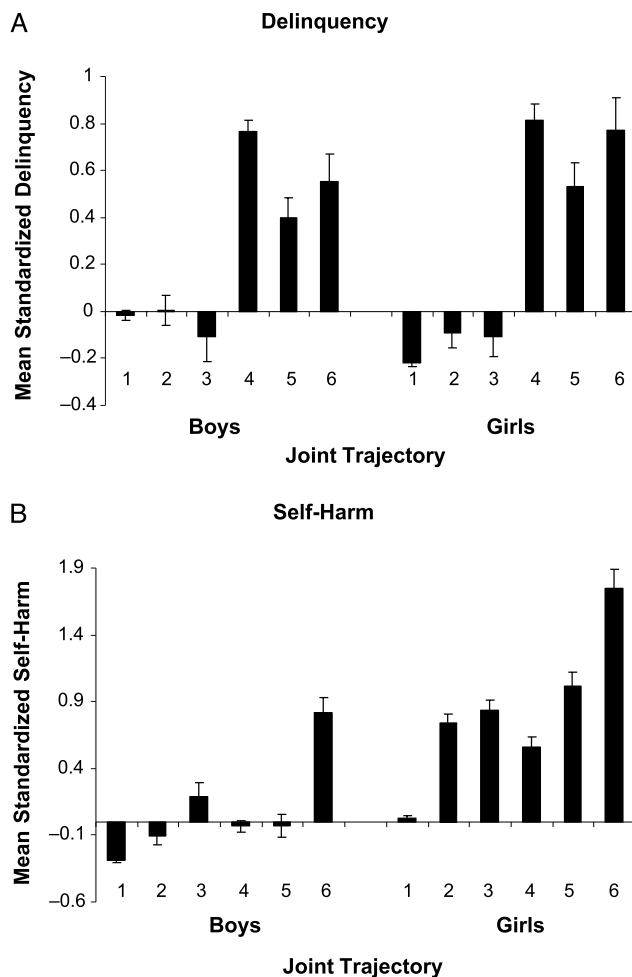

Fig. 2 Standardized means for delinquency by joint trajectory and sex (A) and standardized means for self-harm trajectory and sex (B). Group 1: low/decreasing bullying and low victimization; group 2: low/decreasing bullying and high/decreasing victimization; group 3: victims; group 4: bullies; group 5: victim to bully transition; group 6: bully-victims.

girls, respectively), but not compared to the bully-victims group (group 6: high/increasing bullying and high/increasing victimization; $t(291)$ = 1.72 and $t(71)$ = 0.39, p < . 09 and p < .70 for boys and girls, respectively). The latter two trajectory groups (groups 5 and 6) did not significantly differ from each other, nor did the boys and girls in the counterpart trajectories (e.g., boys versus girls in the bully trajectory group).

For self-harm (Fig. 2, B), boys with the highest levels were in the bully-victims group (group 6: high/increasing bullying and high/increasing victimization). These boys differed from boys in all of the other trajectories with a large effect size difference ($d_{average}$ = 1.41). Girls in the bully-victims group

(group 6: high/increasing bullying and high/increasing victimization) were also the highest in self-harm, with a large effect size difference compared to girls in the other trajectories ($d_{average}$ = 1.50). In addition, these girls had significantly higher rates of self-harm than their male counterparts (t(61) = 4.12, p < . 0001; d = 1.14).

DISCUSSION

The present study examined the development of and the relationships between adolescent bullying and victimization. We used data from a large representative sample of adolescents followed longitudinally to describe the developmental trajectories of bullying and victimization in adolescence, examine the associations between the bullying and the victimization trajectories, and examine the associations between these trajectories and delinquency and self-harm in late adolescence.

Most adolescents followed a low or declining trajectory of bullying and victimization from early to mid-adolescence. Our results thus confirmed previous findings of a general decline in the overall prevalence patterns of bullying and victimization with age.[6,14] However, the developmental trajectory analyses suggested that these general trends mask the presence of subgroups with distinctly different developmental profiles. Thus, one subgroup followed trajectories of high/increasing bullying and low victimization (bullies), a small group followed trajectories of low/decreasing bullying and high/increasing victimization (victims), and a minority followed trajectories of high/increasing bullying and high/increasing victimization (bully-victims). We also identified a joint trajectory that was not hypothesized—high/increasing bullying and high/decreasing victimization, a pattern that suggests transition from victim to bully status during adolescence.

The high increasing trajectory of bullying is consistent with previous research on juvenile delinquency during early to mid-adolescence.[36,37] Increasing trajectories of antisocial behaviors, including the use of aggression to dominate others, are expected to peak during late adolescence or early adulthood and then decline steadily during adult life.[38,39] As far as we are aware, no previous studies have examined joint trajectories of bullying and victimization in the teens. Past studies have consistently identified bully-victims as a group with a wider array of adjustment problems compared to "pure" bullies and "pure" victims,[1,9,13] but

little is known about the ways in which these joint patterns develop. Our results suggest that youths high in victimization at age 13, whether subsequently increasing or decreasing in victimization, were likely to be classified in a high bullying trajectory. Those high in bullying, however, seemed more likely to be decreasing rather than increasing in victimization. The joint analysis of the two sets of developmental trajectories thus suggests that whereas not all bullies are victimized, victims have a high probability of engaging in bullying behaviors.

What accounts for these developmental differences? Researchers have hypothesized that aggressive behaviors of victims and bullies can differ in underlying motivational states, with the former reflecting poorly modulated anger and irritability[40] and the latter reflecting a social strategy for reaching instrumental goals.[41,42] Research has described provocative victims[43] who tend to demonstrate hot tempers, hyperactivity, and aggressive patterns, and aggressive victims[10] who tend to respond to bullying with emotionally reactive aggression. Such emotional dysregulation and aggressive response styles may be important mechanisms in a developmental chain whereby victimized children learn to bully their peers.[44,45] Such a model may also suggest that those who transition from victimization to bullying learn to modulate anger in favor of more planned/instrumental aggression.

The subsequent analyses of variance revealed that for boys and girls alike, those in the increasing bullying trajectory were higher in overall delinquency and self-harm compared to adolescents following the lower and decreasing bullying and victimization trajectories, and similar to the bully-victims in elevated levels of delinquency, but lower in self-harm. Indeed, both boys and girls in the bully-victim trajectory showed markedly increased levels of self-harm compared to their same-sex counterparts in all other joint trajectory groups. These comparisons of joint trajectory groupings were thus consistent with past reports that compared both bullies and victims and highlighted bully-victims as an especially vulnerable group.[13,15]

These results have considerable significance for the prevention of adolescent delinquency and psychopathology, indicating that school- and community-based preventive interventions that focus on bullying should be a great concern in child public health policy. Also, research examining bullying or victimization should

specifically examine those who are both perpetrators and victims. Understanding children's history of bullying experiences, whether as a perpetrator or victim, may aid in understanding the risk these individuals pose subsequently either to themselves or to others, within both the school and community environments. The idea that bullies and victims may be separate groups of children may need revision: we found complexity in developmental associations between bullying and victimization trajectories such that certain groups were identified that were not originally hypothesized (i.e., transition from victim to bully status during adolescence).

This study has a number of limitations that should be borne in mind when interpreting the findings. First, all of the measures were based on self-reports, raising the possibility of shared method variance. Second, our study focused on the adolescent years. Although bullying and victimization persist throughout adolescence and adulthood, these phenomena are most common during childhood; as a result, developmentally oriented studies of younger samples are needed to test whether the associations we identified also apply in childhood. Third, past studies suggest that the form of bullying changes from predominantly physical to more indirect forms over the life span,[46] with girls in particular showing more indirect rather than direct forms of aggression with age.[47,48] Two of the five bullying and victimization items in the present study (name calling, ignoring/excluding) related to indirect forms of bullying; we may, nonetheless, have underidentified rates of bullying and victimization in girls.[47–49] Fourth, the present results may be sample dependent: more than 90% of the adolescents in the present study were white and from an urban community in Scotland. Replications are needed across broader age ranges, ethnicities, and more diverse sociocultural backgrounds. Fifth, we were unable to control for preexisting levels of adjustment problems. Because histories of such behaviors are robust predictors of both delinquency and self-harm, future research should control for previous levels when examining relations to bullying and victimization.

Despite its limitations, this study provides new insight into the developmental course of bullying and victimization during the adolescent years. Our results, based on a longitudinal population study of adolescents, suggest that programs designed to reduce bullying behavior should be concerned with victims as well as bullies because victimization increased the risk for bullying. In addition, we identified a small group of adolescents whose risk of victimization increased during the early to mid-teens, and who were at increased risk of both self-harm and delinquency in adolescence. Preventive efforts should target these youths because they may also be at risk for other adjustment problems such as alcohol use, drug use, sexual risk behaviors, and suicidal ideation/attempts.

REFERENCES

1. Nansel TR, Craig W, Overpeck MD, Saluja G, Ruan J. Cross-national consistency in the relationship between bullying behaviors and psychosocial adjustment. *Arch Pediatr Adolesc Med.* 2004;15:730–736.
2. Coie JD, Dodge KA. Aggression and antisocial behavior. In: Damon W, Eisenberg N, eds. *Handbook of Child Psychology: Social, Emotional, and Personality Development. Vol. 3.* Toronto: Wiley; 1998:779–862.
3. Kim YS, Leventhal BL, Koh YJ, Hubbard A, Boyce T. School bullying and youth violence. *Arch Gen Psychiatry.* 2006;63:1035–1041.
4. Nansel TR, Overpeck MD, Haynie DL, Ruan WJ, Scheidt PC. Relationships between bullying and violence among US youth. *Arch Pediatr Adolesc Med.* 2003;157:348–353.
5. Boivin M, Hymel S, Hodges E. Toward a process view of peer rejection and peer harrassment. In: Juvonen J, Graham S, eds. *Peer Harassment in School: The Plight of the Vulnerable and Victimized.* New York: Guilford Press; 2000:265–289.
6. Olweus D. *Bullying at School: What We Know and What We Can Do.* Oxford, UK: Blackwell Publishers; 1993.
7. Rigby K. The relationship between reported health and involvement in bully/victim problems among male and female secondary schoolchildren. *J Health Psychol.* 1998;3:465–476.
8. Sourander A, Aromaa M, Pihlakoski L, et al. Early predictors of deliberate self-harm among adolescents. A prospective follow-up study from age 3 to age 15. *J Affect Disord.* 2006;93:87–96.
9. Kim YS, Koh Y-J, Leventhal B. School bullying and suicidal risk in Korean middle school students. *Pediatrics.* 2005;115:357–363.
10. Pellegrini AD, Bartini M, Brooks F. School bullies, victims, and aggressive victims: factors relating to group affiliation and victimization in early adolescence. *J Educ Psychol.* 1999;91:216–224.
11. Nansel TR, Overpeck M, Pilla RS, Ruan WJ, Simons-Morton B, Scheidt P. Bullying behaviors among US youth—prevalence and association with psychosocial adjustment. *JAMA.* 2001;285:2094–2100.
12. Klomek AB, Marracco F, Kleinman A, Schonfeld IS, Gould MS. Bullying, depression, and suicidality in adolescents. *J Am Acad Child Adolesc Psychiatry.* 2007;46:40–49.
13. Arseneault L, Walsh E, Trzesniewski K, Newcombe R, Caspi A, Moffit TE. Bullying victimization uniquely contributes to adjustment problems in young children: a nationally representative study. *Pediatrics.* 2006;118:130–138.
14. Pepler DJ, Craig WM, Connolly JA, Yuile A, McMaster L, Jiang DP. A developmental perspective on bullying. *Aggress Behav.* 2006; 32:376–384.
15. Rigby K. *New Perspectives on Bullying.* London: Jessica Kingsley Publishers; 2002.
16. Paul JJ, Cillessen AH. Dynamics of peer victimization in early adolescence: results from a four-year longitudinal study. In: Zins JE, Elias MJ, Maher CA, eds. *Bullying and Peer Harassment: A Handbook of Prevention and Intervention.* New York: Hawthorne Press; 2007, pp. 29–42.
17. Pellegrini AD, Long JD. A longitudinal study of bullying, dominance, and victimization during the transition from primary school through secondary school. *Br J Dev Psychol.* 2002;20:259–280.

18. Nansel TR, Haynie DL, Simons-Morton BG. The association of bullying and victimization with middle school adjustment. In: Zins JE, Elias MJ, Maher CA, eds. *Bullying and Peer Harassment: A Handbook of Prevention and Intervention*. New York: Hawthorne Press; 2007, pp. 49–59.
19. Sweeting H, Young R, West P, Der G. Peer victimization and depression in early-mid adolescence: a longitudinal study. *Br J Educ Psychol*. 2006; 76:577–594.
20. Odgers CL, Caspi A, Broadbent JM, et al. Conduct problem subtypes in males predict differential adult health burden. *Arch Gen Psychiatry*. 2007;64:476–484.
21. Hanish LD, Guerra NG. Aggressive victims, passive victims, and bullies: developmental continuity or developmental change? *Merrill-Palmer Q*. 2004;50:17–38.
22. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV)*. Washington, DC: American Psychiatric Association; 1994.
23. Sakinofsky I. Repetition of suicidal behaviour. In: Hawton K, Heeringe V, eds. *The International Handbook of Suicide and Attempted Suicide*. Chichester, U.K.: Wiley; 2000:237–284.
24. Hawton K, Houston K, Shepperd R. Suicide in young people: study of 174 cases, aged under 25 years, based on coroners' and medical records. *Br J Psychiatry*. 1999:271–276.
25. Smith DJ, McVie S. Theory and method in the Edinburgh Study of Youth Transitions and Crime. *Br J Criminol*. 2005:169–195.
26. Smith DJ, Ecob R. An investigation into causal links between victimization and offending in adolescents. *Br J Sociology*. 2007;58:633–659.
27. Scottish Crime Survey 1993–2006. National Office of Statistics Web site. *http://www.esds.ac.uk/government/scs/*. Accessed January 22, 2008.
28. British Crime Survey: Measuring crime for 25 years. Home Office, Research Development and Statistics Web site. *http://www.homeoffice.gov.uk/rds/bcs1.html*. Accessed January 22, 2008.
29. Nagin DS. *Group-based Modeling of Development Over the Life Course*. Cambridge, MA: Harvard University Press; 2005.
30. Muthén B. Latent variable analysis: growth mixture modeling and related techniques for longitudinal data. In: Kaplan D, ed. *Handbook of Quantitative Methodology for the Social Sciences*. Newbury Park, CA: Sage Publications; 2004:345–368.
31. Muthén LK, Muthén BO. *Mplus. Statistical Analyses With Latent Variables. User's Guide*. 4.1 ed. Los Angeles: Muthén & Muthén; 2006.
32. Raftery AE. Bayesian model selection in social research. *Sociol Methodol*. 1995;25:111–164.
33. Lo YT, Mendell NR, Rubin DB. Testing the number of components in a normal mixture. *Biometrika*. 2001;88:767–778.
34. McLachlan G, Peel D. *Finite Mixture Models*. New York: Wiley-Interscience; 2000.
35. *The SAS System for Windows, v.8.2*. Cary, NC: SAS, Inc.; 2001.
36. Barker ED, Séguin JR, White HR, et al. Developmental trajectories of violence and theft: relation to neurocognitive performance. *Arch Gen Psychiatry*. 2007;64:592–599.
37. Sampson RJ, Laub JH. Life-course desisters? Trajectories of crime among delinquent boys followed to age 70. *Criminology*. 2003;41:301–339.
38. Tremblay RE. Why socialization fails: the case of chronic physical aggression. In: Lahey BB, Moffitt TE, Caspi A, eds. *Causes of Conduct Disorder and Juvenile Delinquency*. New York: Guilford Press; 2003: 182–224.
39. White HR, Bates ME, Buyske S. Adolescence-limited versus persistent delinquency: extending Moffitt's hypothesis into adulthood. *J Appl Dev Psychol*. 2005;26:329–346.
40. Toblin RL, Schwartz D, Hopmeyer Gorman A, Abou-ezzeddine T. Social-cognitive and behavioral attributes of aggressive victims of bullying. *J Appl Dev Psychol*. 2005;26:329–346.
41. Roland E, Idsoe T. Aggression and bullying. *Aggress Behav*. 2001;27: 446–462.
42. Dodge KA. The structure and function of reactive and proactive aggression. In: Pepler DJ, Rubin KH, eds. *The Development and Treatment of Childhood Aggression*. Hillsdale, NJ: Lawrence Erlbaum Associates; 1991:201–219.
43. Olweus D. Bully/victim problems among schoolchildren: basic facts and effects of a school based intervention program. In: Pepler DJ, Rubin KH, eds. *The Development and Treatment of Childhood Aggression*. Hillsdale, NJ: Lawrence Erlbaum Associates; 1991:411–448.
44. Vitaro F, Brendgen M, Barker ED. Subtypes of aggressive behaviors: a developmental perspective. *Int J Behav Dev*. 2006;30:12–19.
45. Dodge K, Lochman JE, Harnish JD, Bates JE, Pettit GS. Reactive and proactive aggression in school children and psychiatrically impaired chronically assaultive youth. *J Abnorm Psychol*. 1997;106:37–51.
46. Björkqvist K, Osterman K, Kaukiainen A. The development of direct and indirect aggressive strategies in males and females. In: Björkqvist K, Niemela P, eds. *Of Mice and Women: Aspects of Female Aggression*. San Diego, CA: Academic Press; 1992:51–64.
47. Crick NR, Nelson DA, Morales JR, Cullerton-Sen C, Casas JF, Hickman SE. Relational victimization in childhood and adolescence: I hurt you through the grapevine. In: Juvonen J, Graham S, eds. *Peer Harassment in School: The Plight of the Vulnerable and Victimized*. New York: Guilford Press; 2001:196–214.
48. Cote SM, Vaillancourt T, Barker ED, Nagin D, Tremblay RE. The joint development of physical and indirect aggression: predictors of continuity and change during childhood. *Dev Psychopathol*. 2007;19:37–55.
49. Frick PJ, Dickens C. Current perspectives on conduct disorder. *Curr Psychiatry Rep*. 2006;8:59–72.

Guidelines for Adolescent Depression in Primary Care (GLAD-PC): II AH Cheung, RA Zuckerbrot, PS Jensen et al.

Objectives: To develop clinical practice guidelines to assist primary care clinicians in the management of adolescent depression. This second part of the guidelines addresses treatment and ongoing management of adolescent depression in the primary care setting. *Methods:* Using a combination of evidence-and consensus-based methodologies, guidelines were developed in 5 phases as informed by (1) current scientific evidence (published and unpublished), (2) a series of focus groups, (3) a formal survey, (4) an expert consensus workshop, and (5) revision and iteration among members of the steering committee. *Results:* These guidelines are targeted for youth aged 10 to 21 years and offer recommendations for the management of adolescent depression in primary care, including (1) active monitoring of mildly depressed youth, (2) details for the specific application of evidence-based medication and psychotherapeutic approaches in cases of moderate-to-severe depression, (3) careful monitoring of adverse effects, (4) consultation and coordination of care with mental health specialists, (5) ongoing tracking of outcomes, and (6) specific steps to be taken in instances of partial or no improvement after an initial treatment has begun. The strength of each recommendation and its evidence base are summarized. *Conclusions:* These guidelines cannot replace clinical judgment, and they should not be the sole source of guidance for adolescent depression management. Nonetheless, the guidelines may assist primary care clinicians in the management of depressed adolescents in an era of great clinical need and a shortage of mental health specialists. Additional research concerning the management of youth with depression in primary care is needed, including the usability, feasibility, and sustainability of guidelines and determination of the extent to which the guidelines actually improve outcomes of youth with depression. Treatment and Ongoing Management. Reproduced with permission from **Pediatrics** 2007;120(5):e1313–1326. Copyright ©2008 by the AAP.