

Peer Victimization in Fifth Grade and Health in Tenth Grade



WHAT'S KNOWN ON THIS SUBJECT: Research indicates that bullying, a type of peer victimization, is related to worse mental and physical health. Most previous studies have been cross-sectional and have not examined effects of bullying over time.



WHAT THIS STUDY ADDS: This analysis examined longitudinal effects of bullying on mental and physical health from middle school to high school. Experiencing chronic bullying, especially in both the past and present, was associated with worse psychological and physical health.

abstract



BACKGROUND AND OBJECTIVES: Children who experience bullying, a type of peer victimization, show worse mental and physical health cross-sectionally. Few studies have assessed these relationships longitudinally. We examined longitudinal associations of bullying with mental and physical health from elementary to high school, comparing effects of different bullying histories.

METHODS: We analyzed data from 4297 children surveyed at 3 time points (fifth, seventh, and tenth grades) in 3 cities. We used multivariable regressions to test longitudinal associations of bullying with mental and physical health by comparing youth who experienced bullying in both the past and present, experienced bullying in the present only, experienced bullying in the past only, or did not experience bullying.

RESULTS: Bullying was associated with worse mental and physical health, greater depression symptoms, and lower self-worth over time. Health was significantly worse for children with both past and present bullying experiences, followed by children with present-only experiences, children with past-only experiences, and children with no experiences. For example, 44.6% of children bullied in both the past and present were at the lowest decile of psychosocial health, compared with 30.7% of those bullied in the present only ($P = .005$), 12.1% of those bullied in the past only ($P < .001$), and 6.5% of those who had not been bullied ($P < .001$).

CONCLUSIONS: Both chronic and current bullying are associated with substantially worse health. Clinicians who recognize bullying when it first starts could intervene to reverse the downward health trajectory experienced by youth who are repeated targets. *Pediatrics* 2014;133:440–447

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Bullying, the intentional and repeated perpetration of aggression over time against a less powerful person or group by a more powerful person or group,^{1,2} has reached the forefront of the national consciousness and garnered substantial media attention, particularly for high-profile cases of youth suicide.^{3,4} A number of studies suggest that bullying experiences, which are a type of peer victimization, are common among US youth and peak in middle school.^{2,5–8} At least 10% of middle school students report being bullied in the previous year,^{2,7} with some estimates >25%.^{2,5,7,8} Youth who have stigmatized characteristics, including health issues (eg, disabilities, obesity), or who are lesbian, gay, bisexual, or transgender, are more likely to be bullied.^{6,9–11}

Youth who experience bullying show worse physical and psychological health cross-sectionally.^{2,12–17} A small amount of longitudinal research suggests that bullying is associated with lasting mental and physical health effects.^{18–22} Although such studies have shown significant correlations between bullying and long-term health outcomes, research has not examined whether the effects of bullying experiences compound over time, with a history of previous bullying exacerbating the effects of ongoing bullying.

We examined longitudinal associations of bullying with mental and physical health from elementary to high school, comparing different bullying histories (not experienced, experienced in past only, experienced in present only, experienced in both past and present). We hypothesized that youth who experienced bullying in both the past and present would show worse health outcomes than youth who experienced bullying in the present only and youth who experienced bullying in the past only; we expected that youth who did not experience bullying would show better health outcomes than the other groups.

METHODS

Procedures

We used data from Healthy Passages, a longitudinal study of fifth-graders in 3 metropolitan areas, with follow-up in seventh grade and tenth grade.²³ The study sampled fifth-graders in regular classrooms at 118 public schools containing 11 532 students, representing >99% of all fifth-graders enrolled in regular classrooms in 10 contiguous school districts in the Birmingham, Alabama, region; 25 contiguous school districts in Los Angeles County, California; and the largest school district in Houston, Texas.^{23,24} We randomly sampled schools with probabilities designed to provide a balanced sample of youth who were non-Latino African American, Latino, and non-Latino white. Parents/caregivers of all 11 532 fifth-graders in regular classrooms of sampled schools were invited to participate.

Of the 6663 parents who agreed to be contacted or indicated uncertainty, 77% of their children ($n = 5147$) participated at baseline, and 4297 children and their parents participated in all 3 assessment waves.

Parents and children completed computer-assisted personal interviews in English or Spanish, primarily at home; audio computer-assisted self-interviews were used for sensitive questions. The same cohort of youth responded in fifth grade, about two years later when the vast majority were in seventh grade, and about three years after that when nearly all were in tenth grade. Fifth-grade data were collected from August 2004 to September 2006; seventh-grade data were collected from August 2006 to September 2008; and tenth-grade data were collected from January 2010 to June 2011. We obtained parents' written informed consent and children's assent. Each site's institutional review board and the Centers for Disease Control and Prevention approved the procedures.

Predictors

Consistent with other research,^{22,25} bullying was assessed with the 6-item Peer Experience Questionnaire, which assesses physical and emotional peer victimization (eg, "How often did kids kick or push you in a mean way during the past 12 months?"; $\alpha = 0.85, 0.86,$ and 0.77 , fifth, seventh, and tenth grade, respectively).²⁶ Response options were "never," "once or twice," "a few times," "about once a week," and "a few times a week." On the basis of literature defining bullying as frequent or repeated experiences,^{27–29} a participant was considered to be bullied if he or she rated any of the six victimization items as "about once a week" or "a few times a week." This definition aims to capture more severe instances of bullying, for which adverse health effects may be more likely. To compare combinations of past and present bullying, we used categories to represent whether frequent bullying was not experienced, experienced in the past only (in fifth but not seventh grade at grade 7, or in fifth or seventh but not tenth grade at grade 10), experienced in the current grade only, or experienced in both the past and currently (in fifth and seventh grades at grade 7, or fifth or seventh and tenth grades at grade 10).

Outcomes

Quality of Life

We used child responses on the Pediatric Quality of Life Inventory (Age 8–12 Short Form) Psychosocial Subscale ($\alpha = 0.81, 0.81,$ and 0.80 , fifth, seventh, and tenth grades, respectively) and Physical Health Subscale ($\alpha = 0.68, 0.67,$ and 0.75 , fifth, seventh, and tenth grades, respectively).³⁰

Depression Symptoms

Children completed the depression subscale ($\alpha = 0.62, 0.71,$ and 0.68 , fifth, seventh, and tenth grades, respectively) of

the Diagnostic Interview Schedule for Children Predictive Scales, which have been shown to have good reliability and validity for screening.³¹

Self-Worth

Children completed the self-worth subscale of the Self-Perception Profile³² ($\alpha = 0.70, 0.77, \text{ and } 0.77$, fifth, seventh, and tenth grades, respectively).

Covariates

Covariates included parents' baseline reports of household income, highest household educational level, parent marital status, study site, and child race/ethnicity, gender, and age. Bullying may be more likely among those with stigmatized characteristics related to health (eg, disabilities, obesity) and sexual orientation, and those with stigmatized characteristics may experience worse mental health effects from bullying.^{6,9,11,15,16,33–35} Given the potential for these characteristics to act as confounders in the relationship between bullying and mental health, we controlled for chronic illness status, BMI percentile, and sexual orientation. Parents reported whether the child had any of 5 health issues (eg, needs physical, occupational, or speech therapy), and if so, they were asked whether the issue was "because of any medical, behavioral or other health condition," and a "condition that has lasted or is expected to last for at least 12 months." Chronic illness was coded if the parent answered affirmatively to both questions for any issue. BMI was derived from weight and height obtained with standard anthropometric protocols,^{36,37} and BMI percentile was calculated based on gender and age. In tenth grade, children reported sexual orientation (100% heterosexual/straight, mostly heterosexual/straight, bisexual, mostly homosexual/gay/lesbian, 100% homosexual/gay/lesbian, or not

sure), which was dichotomized (100% straight vs other categories). Because research has found differences in bullying by school composition,³⁸ we also included school-level means for percentages of African American, Latino, and other students, and BMI percentile.

Statistical Analysis

We examined descriptive characteristics overall and by bullying category. We conducted multivariable linear regressions to predict each mental or physical health outcome, with dummy-coded bullying. Covariate-adjusted, standardized means were calculated across bullying categories to facilitate comparison of magnitudes across outcomes; differences between bullying category means indicated the magnitude of effects in terms of standard deviations, which can be interpreted as effect sizes of 0.2 (small), 0.5 (medium), and 0.8 (large).³⁹ To further illustrate magnitudes, we also translated these effect sizes into the corresponding percentages with the poorest health-related outcomes (ie, the lowest decile for positive outcomes [eg, quality of life] and highest decile for negative outcomes [eg, depression]) in each bullying category.

We conducted planned contrasts to examine the hypothesis that health is worse among those who experienced bullying in both the past and the present versus those who experienced bullying in the present only or the past only and those who did not experience bullying. To assess whether the health of those with any experience of bullying was worse than those with no bullying, we conducted planned contrasts of present bullying with no history of bullying in fifth grade and present only, past only, and both past and present bullying with no history of bullying in seventh and tenth grades. We also examined whether those with present bullying

only had worse health than those with past bullying only with pairwise contrasts comparing present only, past only, and both past and present bullying. In a supplementary analysis, we conducted similar multivariable linear regressions controlling for the baseline value of the health outcome. Whereas the main analysis tested whether present and/or past bullying is associated with worse present mental and physical health outcomes, these supplementary analyses tested whether bullying after fifth grade was associated with greater declines in health from fifth grade to seventh grade or tenth grade.

All models included baseline covariates listed earlier. For missing cases, covariates were imputed with overall weighted means for chronic illness status, marital status, sexual orientation, race/ethnicity, and tenth-grade bullying (all missing <1%). For BMI (missing 7%), both imputation and a missing indicator were included. A "missing" category was added for income (missing 9%) and education (missing 2%).

We used SAS v9.3 to account for effects of design and nonresponse weights, clustering of children within schools and stratification by site using a "sandwich"-style estimator.⁴⁰

RESULTS

Participant Characteristics

Forty-four percent of youth were Latino, followed by African American (29%), White (22%), and other (4%; see Table 1). Many had low socioeconomic status: 62% had household incomes <\$50 000/year, and 44% of parents had a high school degree or lower. Sixty-six percent of parents were married or living with a partner. Twenty-three percent of children were living with a chronic illness, 46% were obese or overweight, and 12% reported not being 100% heterosexual.

TABLE 1 Characteristics of the Healthy Passages Sample ($n = 4297$)

Characteristic	Unweighted n	Weighted % or Mean (SD)
Child characteristics		
Age	4297	11.1 (0.6)
BMI percentile	4004	72.2 (27.3)
Chronic illness	1009	22.7
Gender (male)	2105	51.1
Race/ethnicity		
White	1039	22.1
African American	1497	29.1
Latino	1512	44.4
Other	248	4.4
Sexual orientation: not 100% straight	533	11.9
Parent/household characteristics		
Education		
Some high school	755	23.1
High school graduate	850	21.4
Some college	1159	24.6
College graduate	1474	28.9
Missing	59	2.1
Income (household)		
<\$25K	1508	37.9
\$25–49K	1021	24.5
\$50–99K	796	16.4
\$100K+	670	12.4
Missing	302	8.8
Marital status (married/living with partner)	2754	66.1
Geographical setting		
Birmingham, AL	1350	31.0
Houston, TX	1462	34.6
Los Angeles, CA	1485	34.4
School composition		
Mean BMI percentile	4297	71.8 (7.1)
Percentage African American	4297	33.5 (34.7)
Percentage Latino	4297	38.4 (34.8)
Percentage other race/ethnicity	4297	5.1 (6.3)

$N = 4297$ for all variables except race/ethnicity (missing 1), married (missing 25), chronic illness (missing 15), BMI percentile (missing 293), and sexual orientation (missing 47). All characteristics are shown for fifth grade except sexual orientation (assessed in tenth grade only).

Adjusted Relationships of Bullying to Health

Overall, 30.2% of youth reported frequent bullying experiences on ≥ 1 of the survey waves. Table 2 presents covariate-adjusted, standardized means across bullying categories, and Table 3 translates results from these same regressions into the percentages of youth with worst-decile outcomes in each category. Patterns were similar across outcomes. Experiencing bullying was associated with worse psychosocial and physical quality of life, depression symptoms, and self-worth across grades. Generally, the magnitude of effects for experiencing bullying

in the present only was greater than the magnitude of effects for past bullying only, and the combination of experiencing bullying in both the past and present was associated with worse outcomes than experiencing bullying only in the past or only in the present.

As suggested by supplementary analyses (see Supplemental Information Table 4), which controlled for fifth-grade bullying experiences, current and frequent bullying experiences were generally associated with declines in health from baseline compared with those who did not experience frequent bullying in the present. However, bullying that occurred only in the past (vs

infrequent or no bullying experiences) was generally not associated with further health declines.

Quality of Life

For fifth-grade youth, current bullying was associated with large effects on worse psychological health. For example, in fifth grade, 30.7% of those who were currently bullied, versus only 4.3% of those who had not been bullied, showed low psychological health. Effects on psychological health were small-to-medium among those in seventh and tenth grades who had been bullied only in the past and were large among those who were bullied only in the present or in both the past and present. For example, the percentages of tenth grade students with low psychological health were 6.5% for those who had not been bullied, 12.1% for those who had been bullied only in the past, 30.7% for those bullied only currently, and 44.6% for those bullied both in the past and present (nearly 7 times the percentage of those who had not been bullied).

Patterns for physical health followed a similar pattern but with primarily small and small-to-medium effect sizes and fewer significant differences. For example, only 6.4% of seventh-graders who had not been bullied experienced worst-decile physical health, compared with 14.8% of those bullied in the past only, 23.9% bullied in the present only, and almost a third (30.2%) bullied in both the past and present. Effects were weaker in tenth grade: Although only 8.0% of students who were not bullied experienced the worst-decile of physical health, compared with higher percentages of students who were bullied in the past only (11.9%), bullied in the present only (25.5%), and bullied in both the past and present (22.2%), the percentage of students in the lowest decile who were bullied in both the past and present was similar to students who were bullied in the past only.

TABLE 2 Covariate-Adjusted Standardized Means From Linear Regressions Predicting Physical and Mental Health Outcomes With Bullying History

	Fifth-Grade Bullying History		Seventh-Grade Bullying History				Tenth-Grade Bullying History			
	Not Bullied (78.1%)	Present (21.9%)	Not Bullied (72.9%)	Past Only (17.6%)	Present Only (5.2%)	Past and Present (4.3%)	Not Bullied (69.8%)	Past Only (23.8%)	Present Only (3.0%)	Past and Present (3.4%)
Psychosocial quality of life vs not bullied	0.21	−0.76***	0.18	−0.22***	−0.82***	−1.08***	0.13	−0.14***	−0.70***	−1.11***
vs past only					***	***			***	***
vs present only						a				**
Physical quality of life vs not bullied	0.10	−0.37***	0.08	−0.10***	−0.37***	−0.56***	0.05	−0.06*	−0.30*	−0.40***
vs past only					**	**			a	**
vs present only						a				a
Depression symptoms vs not bullied	−0.14	0.51***	−0.11	0.17***	0.41***	0.62***	−0.10	0.12***	0.43***	0.79***
vs past only					**	***			***	***
vs present only						a			***	***
Self-worth vs not bullied	0.08	−0.30***	0.07	−0.10***	−0.28***	−0.38***	0.07	−0.07**	−0.37***	−0.60***
vs past only					*	*			*	***
vs present only						a				a

Bullying history was dummy-coded as not bullied, bullied in past only, bullied in present only, or bullied in both past and present. Weighted percentages are shown underneath each bullying category. Multivariable models controlled for child race/ethnicity, gender, age, chronic illness status, BMI percentile, and sexual orientation; household income; parent education and marital status; geographic setting; and school-level means for race/ethnicity and BMI percentile, with missing indicators for income, education, and BMI. Outcomes were not imputed; sample sizes ranged from 4267 to 4297 depending on outcome and grade.

* $P < .05$.

** $P < .01$.

*** $P < .001$.

^a $P \geq .05$.

Depression

Depression symptoms were greater for those currently experiencing bullying; the combination of past and present bullying was associated with even worse symptoms. The largest effect sizes were apparent among those who experienced bullying in both the past and present. For example, relatively small percentages of tenth-graders who had not been bullied (7.8%) or who had been bullied in the past only (12.7%) showed the worst depression symptoms, whereas higher percentages of those currently bullied (18.5%) or bullied in the past and present (30.4%) exhibited the worst depression symptoms.

Self-Worth

Consistent with other findings, greater bullying was related to lowered self-worth, with a decline from not being bullied, to being bullied in the past only (with small effect sizes), to being bullied in the present only (with small-to-medium

effect sizes), to being bullied both recently and in the past (with medium-to-large effect sizes). For example, as illustrated by the percentages of those with the lowest self-worth, a high percentage (28.8%) of tenth-graders who had been bullied in both the past and present had the lowest self-worth, compared with 20.4% of those bullied only in the present, 12.3% only in the past, and 7.8% who were not bullied.

DISCUSSION

In one of the few longitudinal studies on this topic, we demonstrated that bullying, a type of peer victimization, is associated with poorer health across a broad variety of measures from elementary school through middle school and into high school. Although bullying in the present was a stronger predictor of poor health than past bullying, past bullying predicted poorer present health after considering present bullying. No research before the present

analysis has examined the effects of different types of bullying histories on mental and physical health, including whether previous bullying experiences exacerbate the effects of ongoing bullying.

Our findings are consistent with other research indicating that being bullied and victimized by peers are associated with poor mental and physical health.^{2,12,13,33,34} Although we cannot make causal conclusions on the basis of these nonexperimental data, we extended previous research by showing that recent events may be more important than more distant ones, health consequences may compound over time, and relationships between past bullying and health decrements may remain after the bullying ends. Statistical effects were robust across a variety of outcomes, including poor physical and mental health–related quality of life, depression symptoms, and low self-worth.

TABLE 3 Percentages of Youth in the Poorest Deciles,^a Based on Covariate-Adjusted Standardized Means From Linear Regressions Predicting Physical and Mental Health Outcomes With Bullying History

	Fifth-Grade Bullying History		Seventh-Grade Bullying History				Tenth-Grade Bullying History			
	Not Bullied (78.1%)	Present (21.9%)	Not Bullied (72.9%)	Past Only (17.6%)	Present Only (5.2%)	Past and Present (4.3%)	Not Bullied (69.8%)	Past Only (23.8%)	Present Only (3.0%)	Past and Present (3.4%)
Psychosocial quality of life vs not victimized	4.3%	30.7% ***	4.8%	15.3% ***	33.9% ***	43.8% ***	6.5%	12.1% ***	30.7% ***	44.6% ***
vs past only					***	***			***	***
vs present only						b				**
Physical quality of life vs not victimized	6.4%	22.4% ***	6.4%	14.8% ***	23.9% ***	30.2% ***	8.0%	11.9% *	25.5% *	22.2% ***
vs past only					**	**			b	**
vs present only						b				b
Depression symptoms vs not victimized	6.7%	22.2% ***	7.4%	14.0% ***	18.7% ***	27.8% ***	7.8%	12.7% ***	18.5% ***	30.4% ***
vs past only					**	***			***	***
vs present only						b				***
Self-worth vs not victimized	8.0%	17.2% ***	7.8%	12.6% ***	19.4% ***	23.8% ***	7.8%	12.3% **	20.4% ***	28.8% ***
vs past only					*	*			*	***
vs present only						b				b

Note. Bullying history was dummy-coded as not bullied, bullied in past only, bullied in present only, or bullied in both past and present. Weighted percentages are shown underneath each bullying category. Multivariable models controlled for child race/ethnicity, gender, age, chronic illness status, BMI percentile, and sexual orientation; household income; parent education and marital status; geographic setting; and school-level means for race/ethnicity and BMI percentile, with missing indicators for income, education, and BMI. Outcomes were not imputed; samples sizes ranged from 4267 to 4297 depending on outcome and grade.

^a Percentages in each bullying category who would fall into the worst decile for the overall distribution, if that population had a mean equal to the covariate-adjusted standardized mean from Table 2 and the SD observed for that category (not shown).

* $P < .05$.

** $P < .01$.

*** $P < .001$.

^b $P \geq .05$.

The study has several limitations. Although the study is longitudinal, causality between bullying and poor health cannot be confirmed in the absence of an experimental design. Furthermore, generalizability beyond the 3 study sites should be done with caution. In addition, consistent with other studies, we used a psychometrically sound peer victimization scale to assess bullying. Researchers have recommended using such measures, which specify particular behaviors (eg, being hit), rather than using the term “bullying,” which is interpreted differently by age and gender.⁴¹ However, our peer victimization measure did not specify the power imbalance that definitions of bullying typically incorporate.¹ Previous research indicates a significant relationship between reporting lower status than the perpetrator and the frequency of peer victimization and that a substantial

proportion (albeit not all) of chronic victimization experiences may involve a power imbalance. Thus, our measure may have adequately captured most bullying experiences.²⁵ Taken as a whole, our findings not only bolster previous research results on the enduring consequences of bullying but also suggest that early intervention to stop the cycle of bullying could be effective in reversing the potential downward health trajectory experienced by youth who are repeated targets.

CONCLUSIONS

Research is needed to develop and rigorously test prevention interventions at all levels, to help clinicians, parents, and school staff detect bullying soon after it occurs and prevent it from continuing to occur. Few

antibullying interventions have been evidence-based or tested in randomized controlled trials, especially for schools, where most bullying occurs, or for health care providers, who are at the frontlines of identifying and treating those who have been bullied.⁴² As detailed by medical, psychological, and other policy organizational statements,^{43–49} clinicians can take concrete steps to prevent bullying through education of patients and their parents; they can also identify signs of bullying soon after it occurs to address its consequences and prevent further instances. This study reinforces the importance of not only intervening early to prevent ongoing bullying but also continuing to intervene if necessary, even when bullying is not ongoing, to address persistent effects. For example, clinicians can make mental health referrals when bullying first

starts to stem long-term negative consequences and provide youth with skills to cope with future events. Research could test effective strategies

for clinicians to detect bullying as an underlying issue contributing to health problems, as well as to determine ways for clinicians to communicate

with parents, schools, and others to provide a holistic response that both decreases bullying and strengthens youths' resilience.

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