ARTICLE

The Relationship Between Children's Threats of Violence and Violent Behaviors

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Background: We sought to examine the relationship between students' threats of interpersonal violence and self-reported violent behaviors.

Methods: Anonymous self-report questionnaires were administered to students in grades 3 through 12 in schools located in Colorado, Arizona, and Ohio. A survey of 9487 students from 33 public schools was performed. Ages ranged from 7 to 19 years. Across the 3 samples, the percentage of African Americans ranged from 6% to 35%, whites from 31% to 57%, and Hispanics from 5% to 51%.

Results: Multivariate logistic regression analyses revealed that threatening others infrequently or frequently (compared with not threatening others) was significantly associated with violent behaviors. Students who infrequently threatened were about 3 to 4 times more likely to report exhibiting each of the violent behaviors than students who did not threaten others (odds ratio [OR] = 4.08-5.86). The relationship between frequently threatening others and violent behaviors was especially strong (OR = 7.19-24.30) and highest for the most severe forms of violence, knife attacks (OR = 15.39-24.30) and shootings (OR = 18.42).

Conclusions: Findings suggest that students' threats of harm toward others should be taken seriously, and that policies and procedures should be developed to ensure that children who threaten others receive proper assessment and management.

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RECENT STUDIES[1-5] and media attention have emphasized the extent to which America's youth have experienced violence in their homes,[6-10] neighborhoods,[11-17] and schools.[18-23] Simultaneously, there is a growing body of literature concerning the effect of exposure to violence on the behavioral[24-27] and emotional[28-32] development of children. While it is becoming increasingly clear that the effects of childhood victimization are extensive and complex, there is a compelling need to identify children and adolescents who may be prone to committing interpersonal violence. Such an approach is consistent with the public health model of violence prevention. While young people are disproportionately represented as victims of violence in the United States,[33] they are also major perpetrators of violence. The Youth Risk Behavior Surveillance survey from the Centers for Disease Control and Prevention (Atlanta, Ga) found that nationwide, an estimated 127.7 incidents of physical fighting occurred per 100 high school students in the 12 months preceding the survey.[34] A recent National Institute of Justice (Washington, DC) study of 4000 juvenile arrestees found that 22% of juvenile males reported carrying a gun all or most of the time and 38% of juvenile males believed that it was okay to shoot someone who hurts you.[35] From 1985 to 1994, the rate of homicides committed by 14- to 17-year-olds increased 172%; however, in this same period, homicide rates for adults older than 25 years decreased by 25%.[36] Since 1994, juvenile homicide rates in the United States have fallen 39%.[37]

In adult populations, threats have been identified as an important risk factor for the perpetration of violence and victimization from violence. Verbal threats are a common occurrence in such settings as the workplace,[38] departments of emergency medicine,[39,40] and psychiatric hospitals.[41] Health care providers are also at increased risk for interpersonal violence and threats of violence. Physicians, nurses, and other hospital staff,[42-44] emergency medical technicians,[40] mental health care providers,[39,45] and public health field workers[46] all frequently experience verbal threats associated with increased risk of interpersonal violence. Despite attention

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SUBJECTS AND METHODS

This investigation uses data from 3 separate studies of children and adolescents. While these studies used different samples and were designed independently, each employed a common set of variables to assess children's threats of violence and violent behaviors. Within each study, schools were purposely selected to be representative of schools within their geographic area. Instruments were administered to students during the usual school day by classroom teachers.

The first study (the "Ohio/Colorado high school" study)[47] was designed to investigate the relationship between exposure to violence and symptoms of psychological trauma in a large, diverse sample of high school students (N=3724). This survey study used an anonymous self-report questionnaire administered to high school students from 6 public high schools in the 1992-1993 school year during regular school hours. All students in the schools were eligible to participate. Large city schools were located in Cleveland, Ohio (2 schools), and Denver, Colo (2 schools); 1 high school was located in a northeast Ohio suburb and another was in a small city in northeast Ohio. A response rate of 68% was achieved. Students in Cleveland and Denver schools resided in neighborhoods with predominantly lower socioeconomic status. The small-city high school was located in an economically depressed area whose residents were primarily blue-collar workers. Students from the suburban high school resided in a small upper-middle-class town.

The second study (the "Ohio elementary/middle school" study)[48] was designed to investigate the relationship between violence exposure and symptoms of psychological trauma among children in grades 3 through 8 in 11 public schools in Ohio (N=2245). The study employed a survey design using an anonymous self-report instrument administered in the 1995-1996 school year during regular school hours. All students in the designated grades (3-8) were eligible to participate. The response rate was 80%. The public schools were located in Cleveland (3 schools), a small northeast Ohio city (4 schools), and a rural Ohio school district composed of several towns and villages (4 schools). Students in the Cleveland schools resided in neighborhoods of predominantly lower or lower-middle socioeconomic status. The small-city and rural schools were located in areas whose residents were primarily characterized as blue-collar workers.

The third study (the "Arizona elementary school" study)[49] was designed to test the effectiveness of a universal, school-based violence prevention program, "Peace-Builders." This longitudinal study used self-report instruments completed by children, parent reports, and teacher reports from 1994 to 1998. Data for the current study uses the 1996-1997 school year sample of children in grades 3 through 6 in 16 public schools in the Tucson, area (N=3518). All students in the designated grades (3-6) were eligible to participate. Students resided in urban and suburban neighborhoods of predominantly lower or lower-middle socioeconomic status. The response rate for this study was 85%. **Table 1** presents information on the samples used in the 3 studies.

Each study's protocol was approved by the appropriate human subjects review board. The Ohio/Colorado high school and Ohio elementary/middle school studies were approved by the University Review Committee for Human Studies at Case Western Reserve University, Cleveland; the Arizona elementary school study was approved by the Institutional Review Board for Human Subjects at the University of Arizona, Tucson.

INSTRUMENTATION

Although the goals and research questions guiding each study were different, children in all 3 studies completed a self-administered questionnaire that used a common means of assessing threats of violence and the types of violent acts they committed during the last year. A series of questions was asked of each respondent, querying the types and frequencies of violence-related behaviors they participated in during the past year. For children in the Arizona and Ohio elementary/middle school studies, the questions were: How often in the past year did you . . . (1) threaten to hurt someone? (2) slap, hit or punch someone *before* you were hit? (3) slap, hit or punch someone *after* you were hit? (4) beat someone up? and (5) attack or stab someone with a knife? The questionnaire used a 4-point Likert scale with the following response categories and values: "never" (0), "sometimes" (1), "often" (2), and "almost every day" (3). In the high school study, a sixth question was added: "shoot at or shoot someone with a real gun." This question was not asked in the other 2 studies, as it was deemed age-inappropriate for elementary and middle school children.

STATISTICAL ANALYSES

Standard univariate measures were used to report demographic information. A series of multiple logistic regressions was used to assess the degree to which threats of violence were related to specific violent behaviors in each sample cohort. The estimates were adjusted for age and sex. We excluded from our analyses respondents who had missing information on covariates. Odds ratios were calculated to approximate relative risk and are presented with the 99% confidence intervals.

Threats of violence were classified in the following categories: (1) children who threatened others infrequently (ie, indicated threatening others "sometimes") and (2) children who threatened others frequently (ie, indicated threatening others "often" or "almost every day"). Respondents who reported they did not threaten others were used as the referent group.

to the role of threats as a risk factor for interpersonal violence among adults, we know little about the relation between threats and interpersonal violence among children and adolescents, a population at high risk for violence perpetration and victimization.

Is there a relationship between threats of violence and the perpetration of violent acts among children and adolescents? This question will be addressed by examining data obtained from 3 large independent studies of children and adolescents.

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RESULTS

Table 1 describes the demographics of each study cohort. Taken as a whole, the studies represent a racially and ethnically diverse group of respondents, which was about half female. Across the 3 samples, the percentage of whites ranged from 31% to 57%, Hispanics from 5% to 51%, and African Americans from 6% to 35%. Respondents' ages ranged from 7 to 19 years, with the mean age of 10.5 years for the Arizona elementary sample; 11.3 years for the Ohio elementary/middle school sample, and 16.0 years for the Ohio/Colorado high school sample.

Table 2 displays the percentages of children in each study cohort who threatened others and who committed violent acts at least once within the past year. More than half the males in the high school and Ohio elementary/middle school cohorts had threatened someone within the past year, with slightly more than 36% of the males in the Arizona sample reporting such behavior. Levels of self-reported violent behaviors were highest in the high school and Ohio elementary/middle school samples for both sexes. In each study cohort, the most often reported violent behavior for males and females was hitting someone after being hit.

The demographic characteristics of threateners and nonthreateners are displayed in **Table 3**. In both the Arizona elementary and Ohio elementary/middle school samples, analysis of variance with post hoc Scheffé tests revealed that the mean ages of children who threatened infrequently or frequently were significantly higher than those of children who did not threaten ($F_{2,3234}=101.12$, $P<.001$ and $F_{2,2238}=57.60$, $P<.001$, respectively). Higher percentages of males threatened infrequently or frequently. When the 2 categories were combined and "threateners" were compared with "nonthreateners," χ^2 analyses revealed that for all 3 samples, significantly higher percentages of males threatened others (Arizona elementary school [N=3273]: $\chi^2_1=49.88$, $P<.001$; Ohio elementary/middle [N=2242]: $\chi^2_1=36.21$, $P<.001$; Ohio/Colorado high school [N = 3721]: $\chi^2_1=156.05$, $P<.001$). Finally, in both samples for which there were family composition data, children who did not threaten others were more likely to be living with both parents than those who threatened infrequently or frequently (Ohio elementary/middle school [N=2230]: $\chi^2_2=40.68$, $P<.001$; Ohio/Colorado high school [N=3705]: $\chi^2_2=51.14$, $P<.001$).

Table 4 presents the results of multivariate logistic regression analyses of respondents' threats of violence related to 5 violent behaviors, adjusted for age and sex. In general, there were few uniform influences of age and sex across sample cohorts. However, in one instance, consistent effects were realized: males were more

Table 1. Sample Characteristics

	Arizona Elementary School (N = 3518)	Ohio Elementary/ Middle School (N = 2245)	Ohio/Colorado High School (N = 3724)
Mean age (SD), y	10.5 (1.25)	11.3 (1.82)	16.0 (1.23)
Age range, y	8-12	7-15	14-19
Females, %	50.4	49.1	52.0
Grade range	3-6	3-8	9-12
Race/ethnicity, %			
White	30.8	57.4	33.6
African American	6.0	33.4	34.9
Hispanic	50.8	5.4	22.8
Native American*	10.1	. . .	. . .
Other	2.2	3.9	8.7

*Ellipses indicate not applicable.

Table 3. Demographic Characteristics of Threateners and Nonthreateners

	Never Threaten	Threaten Infrequently	Threaten Frequently
Arizona Elementary School (N = 3518)			
Mean age (SD), y	10.31 (1.27)	10.96 (1.08)	11.02 (1.15)
Male, %	44.9	56.8	62.5
Living with both parents, %*	. . .	. . .	. . .
Ohio Elementary/Middle School (N = 2245)			
Mean age (SD), y	10.94 (1.78)	11.84 (1.76)	12.09 (1.78)
Male, %	44.8	57.0	59.7
Living with both parents, %	59.7	49.8	39.7
Ohio/Colorado High School (N = 3724)			
Mean age (SD), y	16.02 (1.25)	16.03 (1.21)	15.92 (1.21)
Male, %	38.3	56.6	69.7
Living with both parents, %	57.5	49.2	47.4

*Ellipses indicate not applicable.

Table 2. Percentages of Respondents Reporting Threats and Violent Behaviors Within the Past Year

	Arizona Elementary School (N = 3518)*		Ohio Elementary/Middle School (N = 2245)		Ohio/Colorado High School (N = 3724)*	
Act	Males (n = 1723)	Females (n = 1750)	Males (n = 1143)	Females (n = 1102)	Males (n = 1784)	Females (n = 1939)
Threatened someone	36.4	25.1	53.5	40.9	57.6	37.1
Hit someone before being hit	47.3	35.0	54.3	44.5	57.9	47.4
Hit someone after being hit	66.7	56.5	82.2	71.5	74.6	66.7
Beaten someone	51.8	29.3	56.3	38.0	32.2	16.3
Attacked someone with knife	9.6	3.5	5.3	4.8	8.6	5.9
Shot at someone†	. . .	. . .	. . .	. . .	18.4	3.3

*Discrepancies between total sample and sum by sex reflect missing sex data.
†Ellipses indicate not applicable.

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Table 4. Odds Ratios of Violent Behaviors for Students Who Threaten Others*

Dependent Variable	Odds Ratio (99% CI)		
	Arizona Elementary School (N = 3518)	Ohio Elementary Middle School (N = 2245)	Ohio/Colorado High School (N = 3724)
Hit another child after being hit	n = 3224	n = 2235	n = 3715
Age, y	1.40 (1.29-1.52)	1.02 (0.94-1.10)†	0.82 (0.76-0.89)
Male	1.37 (1.12-1.68)	1.58 (1.19-2.08)	1.12 (0.92-1.38)†
Female	Reference	Reference	Reference
Never threatened others	Reference	Reference	Reference
Threatened others infrequently	5.04 (3.73-6.82)	5.66 (3.95-8.10)	4.41 (3.52-5.54)
Threatened others frequently	8.01 (4.49-14.31)	7.19 (3.60-14.36)	9.05 (5.02-16.28)
Hit another child before being hit	n = 3232	n = 2241	n = 3713
Age, y	1.29 (1.18-1.41)	1.08 (1.01-1.16)‡	0.88 (0.82-0.95)
Male	1.46 (1.18-1.80)	1.27 (1.00-1.62)†	1.10 (0.91-1.33)†
Female	Reference	Reference	Reference
Never threatened others	Reference	Reference	Reference
Threatened others infrequently	4.80 (3.76-6.12)	4.40 (3.41-5.68)	4.90 (4.02-5.96)
Threatened others frequently	17.76 (10.49-30.07)	11.82 (7.14-19.57)	16.77 (10.02-28.06)
Age × threaten frequently	NS	1.33 (1.02-1.75)§	NS
Beaten someone	n = 3212	n = 2219	n = 3712
Age, y	1.31 (1.20-1.43)	0.95 (0.89-1.02)†	0.97 (0.88-1.06)†
Male	2.53 (2.04-3.13)	1.87 (1.47-2.39)	1.77 (1.41-2.22)
Female	Reference	Reference	Reference
Never threatened others	Reference	Reference	Reference
Threatened others infrequently	5.10 (3.97-6.54)	4.49 (3.46-5.82)	5.86 (4.54-7.57)
Threatened others frequently	15.13 (9.17-24.97)	12.30 (7.54-20.06)	19.90 (13.46-29.41)
Attacked someone with a knife	n = 3183	n = 2225	n = 3713
Age, y	0.99 (0.83-1.18)†	1.23 (1.05-1.44)	1.06 (0.92-1.22)†
Male	2.39 (1.54-3.72)	0.92 (0.55-1.55)†	0.94 (0.66-1.34)†
Female	Reference	Reference	Reference
Never threatened others	Reference	Reference	Reference
Threatened others infrequently	4.08 (2.44-6.83)	4.16 (1.95-8.89)	5.17 (3.20-8.37)
Threatened others frequently	20.33 (12.02-34.39)	15.39 (6.97-33.96)	24.30 (14.14-41.76)
Age × sex	NS	NS	0.75 (0.57-1.00)§
Shot at someone	. . .	. . .	n = 3692
Age, y	. . .	. . .	1.00 (0.89-1.39)†
Male	. . .	. . .	5.07 (3.46-7.43)
Female	. . .	. . .	Reference
Never threatened others	. . .	. . .	Reference
Threatened others infrequently	. . .	. . .	4.66 (3.11-6.98)
Threatened others frequently	. . .	. . .	18.42 (11.40-29.78)

*P<.001 unless otherwise indicated. CI indicates confidence interval; ellipses, not applicable; and NS, not significant.
†Not significant.
‡P<.005.
§P<.01.

likely to have beaten up someone compared with females ($P<.001$).

In each sample cohort, the regression analyses revealed that threatening others infrequently or frequently (compared with not threatening others) was significantly associated with all 5 violent behaviors. Students who infrequently threatened were about 3 to 4 times more likely to report exhibiting each of the violent behaviors than students who did not threaten others ($P<.001$). The relationships between frequently threatening others and violent behaviors were especially strong and exhibited wider variation, with point estimate significance achieving $P<.001$.

Interaction effects were examined for all outcome variables and include age × sex, age × threaten infrequently, age × threaten frequently, sex × threaten infrequently, and sex × threaten frequently. Few significant results were yielded (Table 4).

COMMENT

The percentages of children and adolescents who had threatened others or had exhibited violent behaviors displayed variation across study cohorts. Such variation, however, was not present in the odds ratios relating infrequent threatening to violent behaviors. Across all 3 study cohorts, these odds ratios were remarkably similar.

Odds ratios (and relative risk) were particularly substantial among students who reported frequently threatening others. These ratios were lowest for the least severe violent behavior, hitting someone after being hit. Students who frequently threatened others were about 6 to 8 times more likely to have reported displaying such retaliatory violence than nonthreateners. Odds ratios were highest among the most severe forms of violence. For example, compared with students who did not threaten

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others, those who frequently threatened were 14 to 23 times more likely to have reported attacking someone with a knife and 17 times more likely to have reported shooting at someone.

The strong relationship between threats of violence and self-reported interpersonal violence has important implications for violence prevention. Our data suggest that students' threats of harm toward others should be taken seriously, and that policies and procedures should be developed to ensure that children who threaten others receive proper management. When a child or adolescent threatens to hurt another person, he or she should be assessed for violence potential. Appropriate protocols for such assessments have been developed[50,51] and include appraisals of previous perpetration and victimization. Most professionals who work with children and adolescents recognize the imminent danger when a student threatens self-harm, and would not release such a child from their supervision until after the completion of a proper assessment for suicide potential. We believe a similar necessity for evaluation is required when children or adolescents threaten to harm others.

The importance of educating children about the seriousness of friends, family members, or acquaintances threatening self-harm has been often emphasized by suicidologists.[52-54] We convey to students that knowledge about such self-harm must be shared with a responsible adult. In a similar manner, the results of this study suggest that students should be taught that knowledge about threats of interpersonal violence should be communicated to a responsible adult. It is imperative that children understand that it is possible to prevent others from being harmed through their own responsible actions.

Students' violent behaviors should also be taken seriously and directly addressed by teachers and other adults working with children. Children should be encouraged to report such behaviors to responsible adults and should be helped to understand that protecting someone who has caused harm to another is not appropriate.

This study provides preliminary empirical evidence of the relationship between students' threats of interpersonal violence and violent behaviors. The study, however, has several limitations. Studies were based on children's self-reports and we did not have access to official records or other sources of information. One of the study samples (Arizona) was also the site of a violence prevention program, possibly influencing children's reports of threats and violent behaviors. Data were cross-sectional and conclusions were therefore limited to correlational rather than causal inferences. Our knowledge would be advanced by prospective, longitudinal studies of risk factors for interpersonal violence among children and adolescents. Further, the robustness of our findings would be enhanced by studies that used multiple measures of children's threats and violent behaviors such as parent, teacher, and police reports. Nevertheless, this study adds to our current understanding of children's threats of violence by use of cross-sectional data obtained from 3 independent nonclinical studies. The combined samples from these studies represent more than 9400 ethnically diverse students aged 7 to 19 years who reside in urban, suburban, and rural settings.

Despite differences in levels of self-reported violence across the 3 samples, the relative risk of engaging in violence based on frequency of threats was similarly high across these cohorts. Health care providers, teachers, counselors, and other youth-serving professionals should be cognizant of the risk that exists when children make threats of interpersonal violence, especially when the threats are frequent. Our findings suggest that such risk is present across age, sex, and geographic setting. Similar to this nation's approach to self-harm, we must endeavor to promote a culture that emphasizes disclosing knowledge of interpersonal threats of violence as an important public health issue.

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