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Retaliatory attitudes and violent behaviors among assault-injured youth

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Abstract

Objectives—To examine the impact of retaliatory attitudes on subsequent violent behavior and fight-related injuries among youth who presented to the emergency department with assault-injuries.

Design—Assault-injured youth were interviewed at baseline, 6 months and 18 months to assess fighting behavior, retaliatory attitudes, weapon carrying and injury history as part of a larger randomized control trial.

Setting—Two emergency departments in urban areas.

Participants—One hundred twenty-nine adolescents aged 10 to 15.

Outcome measures—Fighting behavior, assault-injury, weapon carrying, and aggressive behavior.

Results—Higher retaliatory attitudes at baseline were associated with more aggression and a higher frequency of fighting over time.

Conclusions—Retaliatory attitudes may fuel cycles of violence among youth. Medical professionals in acute care settings have an opportunity to identify youths at risk of future assault injury by assessing retaliation, providing anticipatory guidance and referring to intervention programs.

Interpersonal violence and resulting injuries and mortality are major public health challenges impacting youth. In a national survey of adolescents, 35% reported being in a physical fight one or more times in the past year and 18% reported carrying a weapon on one or more of

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Implications and Contribution Retaliatory attitudes are associated with more aggression and a higher frequency of fighting over time among assault-injured youth. Health care professionals have an opportunity to identify youths at risk of future assault injury by assessing retaliation, providing anticipatory guidance and referring to intervention programs.

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the 30 days preceding the survey.¹ In addition, more than 690,000 young people ages 10 to 24 were treated in emergency departments for violence-related injuries in 2008.² The impact of violence on the lives of African American youth is particularly grave as evidenced by the fact that homicide is the second leading cause of death for African American youth ages 10 to 15.³

The cyclical nature of violence is evident in high rates of recidivism, with some studies reporting re-injury rates as high as 44%.⁴ For many adolescents, resurfacing of previous fights and past disagreements contributes to the chronic nature of violence in their lives. By identifying youth at risk and implementing effective prevention and harm reduction strategies, health care providers can play a critical role in violence prevention efforts.

The desire for revenge is a factor that often perpetuates the cycle of violence among adolescents. Qualitative research indicates that the desire for revenge⁵ and respect can exacerbate violence among youth.⁶ In addition, a survey of adolescents' feelings and behaviors related to handgun violence revealed that revenge, perceived threats, and safety concerns were reasons given for carrying a concealed gun.⁷ According to Cota-McKinley and colleagues, revenge fulfills a number of goals including "righting perceived injustice, restoring the self-worth of the vengeful individual, and deterring future injustice."⁸ In addition, community contextual factors may influence the extent to which adolescents endorse retaliatory attitudes. For some adolescents, residing in a hostile social context may contribute to a lack of faith in the formal justice system thereby creating a "code of the street" that contributes to the cyclical nature of violence.^{6,9} The "code of the street" theory has been described as a set of informal rules that results from living in communities characterized by discrimination, poverty, and stresses associated with urban areas⁹. The "code" revolves around the idea of respect, self-protection, and the desire to establish one's reputation as someone who will retaliate if provoked.⁹ Some aspects of the "code of the street" theory have been supported in empirical research on adolescents. For example, interviews conducted among youth who reside in a high crime and high poverty area revealed that some youth felt that responding to provocation with violence was necessary to protect their reputations and to prevent future fighting.¹⁰

Social-cognitive theory¹¹ emphasizes the link between attitudes and behavior and can be used to explain the relationship between retaliatory attitudes and aggressive behavior. Having normative beliefs and attitudes in support of aggression is associated with eventual aggressive behavior.^{11,12} Fourth and fifth graders', normative beliefs about the acceptability of aggression predicted their aggressive behavior in the sixth grade.¹² Similar findings have been reported in studies conducted among middle and high school students.^{13,14,15} For example, retaliatory attitudes and positive feelings about aggression were associated with weapon carrying among 7th, 9th, and 11th grade students.¹⁵

People who approve of retaliation or desire revenge often view their aggressive behavior as justifiable, and therefore, may be at risk for further aggressive and violent behavior. The aforementioned studies were conducted among school-based samples of youth. The current study extends this body of research by examining retaliatory attitudes and subsequent violent behavior among youth who present to the emergency department following an assault-related injury. Adolescents who are injured as a result of interpersonal violence are at heightened risk for retaliatory aggression and future injury.⁴ Yet, there is little research examining retaliatory attitudes among youth who are treated for assault-injuries or the relationship between their retaliatory attitudes and future behavior. The present study assesses the impact of retaliatory attitudes on subsequent violent behavior and fight-related injuries among youth who present to the emergency department with assault-injuries. We

hypothesized that retaliatory attitudes would lead to an increase in fighting behavior, weapon carrying, overall aggression, and fight-related injuries over time.

METHODS

Subjects

A consecutive sample of youth presenting to two urban emergency departments (EDs) for assault injury were identified for a randomized trial of a community-based intervention with methods previously published in detail.¹⁶ Eligibility criteria included: adolescents ages 10–15 presenting to either a large urban children's hospital or urban university hospital; residence in the Washington DC-Baltimore metropolitan area; presentation with interpersonal assault injuries (E960, 961–966, 968–969) excluding sexual assault, child abuse, sibling fights, or legal intervention. Inclusion criteria included parent and child English-speaking ability and physical and mental capability to participate in the intervention and assessments. Families were recruited over the time period of August 2001 to August 2004. The study protocol was approved by the Institutional Review Board at the two hospitals and the National Institute of Child Health and Human Development.

Study Procedures

Eligible youth presented to the ED for assault injury. Trained research assistants identified cases from ED logs or chart copies and computer print-outs of hospitalized patients. Research assistants recruited families in the ED, hospital ward or by phone. If eligible, parent informed consent and youth assent were obtained and youth and parents were then independently interviewed during a home visit as soon as possible after the ED visit. Interviews consisted of two components: a verbal response component and an audiotape component. For the audiotape component, subjects listened to questions asked on a personal audiotape player and wrote numeric answers on an answer sheet that did not have the printed questions. Research utilizing audiotape interviewing suggests greater confidentiality and validity of these techniques than traditional interview methods.¹⁷

After completion of a baseline survey (Time 1), families were randomized into the intervention or a control group. Follow-up assessments were conducted 6 and 18 months later (Times 2 and 3, respectively) in the family's home by a research assistant. Assault-injured youth in the intervention received a mentor and completed a six session violence prevention curriculum focusing on skills-building. Parents of youth in the intervention received three home visits by a health educator. Families in both groups received case management services and usual care from clinicians in the ED as well as a list of community resources.

Measures

The analyses for the present study include a subset of measures included in the larger study. Retaliation was measured using the retaliation subscale of the Children's Perceptions of Environmental Violence.¹⁸ Youth were asked to indicate the extent to which they agreed or disagreed with eight items ($\alpha = .76$) related to payback for wrongdoing (e.g., "I believe if someone hits you, you should hit them back," "To survive you should always be willing to fight back") using a Likert Scale (1 = strongly agree; 4 = strongly disagree). A scale was created by summing the items. Regarding outcome measures, youth were queried on how many times in the last thirty days they had been in fights, fights with injury, and had carried a knife (Youth Risk Behavior Survey, Middle school version). All questions and items included in these analyses were collected at baseline, 6 and 18 month assessments. Youth aggressive behavior over the past 30 days was measured using an index based on the fighting subscale of the Modified Aggression Scale.¹⁹ The original scale was expanded to

include location (school, home, and neighborhood) and included additional measures of aggression such as encouraging others to fight. A total aggression score was computed based on the 12 items (4 behaviors at each location). We controlled for a number of demographic and other factors including: socioeconomic status, age, gender, treatment group, gang involvement, severity of injury, whether or not the youth was a victim, and youth perception of parental attitudes toward fighting. Gang involvement was assessed by asking the adolescent whether or not the fight was related to gang activity (0=No, 1=Yes). Adolescents' perceptions of the severity of the injury were assessed by asking, "How serious do you think your injury is?" For analysis, a binary variable was created ("very serious" vs. "somewhat or not serious"). Youths' perceptions of parents' attitudes toward fighting were assessed by items developed by Orpinas²⁰ in which adolescents were asked to respond to a number of statements (e.g., "Your parent would tell you, 'If someone calls you names ignore them.'") on a Likert scale (1= strongly agree; 4= strongly disagree). All scales and indices were coded such that an increased score indicated more of that behavior.

Statistical Analysis

Summary statistics were calculated including mean, standard deviation, range, and frequency. Spaghetti plots were constructed to examine individuals' responses over time. The outcomes of interest were: aggressive behavior, number of fight injuries, fighting frequency and knife carrying in the past 30 days. Due to the repeated measures at multiple time points within an individual, hierarchical modeling was used to examine the effect of baseline retaliatory attitudes on these outcomes. For the purpose of this analysis, time to follow-up interview from baseline (in months) and retaliatory attitudes at baseline were treated as continuous level-1 and level-2 predictors, respectively. Hierarchical modeling was conducted using HLM software (version 6.04, IL).

These hierarchical models assumed a random intercept (to account for individual effects on the initial mean value for the outcome) and random slope (to account for individual effects on the mean rate of change in the outcome over time). Additional models with cross-level interaction between baseline retaliation and time of visit were also explored. This cross-level interaction was used to assess whether the rate of change varied by baseline retaliatory attitudes. All models controlled for socioeconomic status, age, gender, treatment group, gang involvement, severity of injury, whether or not the youth was a victim, and youth perception of parental attitudes toward fighting as individual (level-2) variables at baseline.

Analysis of variance (ANOVA) was used to test the significance of between-individual variance, and to assess the degree of between-individual variation in the outcomes of interest. An unconditional model was then fitted with time as a level-1 predictor, excluding all of the level-2 predictors. The purpose of estimating this "null" model was to assess the degree of between-individual variation in the outcomes, and to determine whether or not the between-individual variation was significant for the intercept or the slope. That is, the null model hypothesized that the initial mean outcome status (intercept) and mean rate of change (slope) did not vary between participants. Unconditional models also tested whether the initial status and the rate of change were significantly different from zero.

For discrete outcomes (modified aggression score, number of fight injuries, fighting frequency and knife carrying in the past 30 days) with high frequency of low event counts, a Poisson distribution including a dispersion parameter was applied in the hierarchical analysis. Given that the outcome was number of event counts, model coefficients can be interpreted as the logarithm of the ratios of event rates for each unit increase in retaliation attitudes at baseline. Thus, the relative risk (RR) is obtained by exponentiating the coefficient or parameter estimate.

RESULTS

Recruitment and Participation

Figure 1 presents the study recruitment yield and follow-up at 6 and 18 months. Of the 227 eligible patients where consent was attempted, 23% refused. Of those consenting, 166 completed parent and youth baseline interviews with 4% completing partial interviews. At six and 18 month follow-up, 68% and 63% were interviewed, respectively. Five participants were excluded either because of multiple extreme outlier responses on outcome variables or partial interviews.

There was no difference between the intervention and comparison groups on age, gender, race, maternal education, family income, time between discharge from the emergency department and enrollment, or time to follow-up. Because program outcomes were not significantly different between intervention and control groups over the 18 month time period, the two groups were combined and intervention status included in multilevel models as a covariate. In addition, we examined whether or not there were age differences in retaliatory attitudes or the outcome variables. There was no difference in retaliatory attitudes between younger (10–12 year olds) and older (13–15 year olds) adolescents. However, older adolescents were more likely than younger adolescents to report carrying a knife at 6 months (OR = 4.0; 1.09, 14.6; $p < .05$) and older adolescents were less likely than younger adolescents to report aggressive behavior at 18 months (OR = .17; 0.05, 0.52; $p < .01$).

Demographic and baseline characteristics are summarized in Table 1. Of the 129 participants with follow-up data (either 1 follow-up visit (N=40) or 2 follow-up visits (N=89), the mean age was 13.0 (median = 12.9; SD=1.8); 66% of youth were males. The median time between emergency department discharge and completion of the youth baseline interview was 51 days. The median time from Time 1 to Time 2 assessment was 7 months and from Time 1 to Time 3 follow-up assessment was 24 months. There was no difference in demographic or baseline outcome variables between those who completed assessments and those who were lost to follow-up.

Statistical Findings

An analysis of variance (ANOVA) showed significant individual variation in all outcome variables ($p < .05$). Significant Chi-square tests for level-2 variance (data not shown) indicated that the individual variation was unlikely to result from sampling alone (i.e., 57%, 43%, 33% and 5% of the variance in fight injuries, knife carrying and fighting frequency and aggression scores, respectively, was distributed between individuals). Within-individual agreement on the outcomes ranged from 0.44 to 0.62. While allowing the slope at level-1 in the unconditional models to vary, significant Chi-square tests from the unconditional models confirmed significant between-individual variation in the intercept and slope across participants. Because there is no significant effect of retaliatory attitudes on the rate of change in outcome over time, Table 2 shows the results from the full (including level-1 and level-2 variables) fitted model without cross-level interaction. The follow-up data was pooled so we could assess the within and between relationship in longitudinal fashion.²¹ Baseline retaliation was associated with increased modified aggression scores (Rate Ratio = 1.08, $p < .01$) and fighting frequency (Rate Ratio = 1.08, $p < .05$), and the relationship between retaliatory attitudes and fight injury approached significance (Rate Ratio = 1.12, $p = .05$). These analyses controlled for participant's age, gender, treatment group, socioeconomic status, gang involvement, severity of injury, whether or not the youth was a victim, and youth perception of parental attitudes toward fighting. On average, for each unit increase in retaliation score at baseline, fighting frequency increased by 8% and modified aggression score increased by 8%.

DISCUSSION

Little research has explored youth retaliatory attitudes in relation to future aggressive behavior. Our study found that assault-injured youth who endorsed retaliatory attitudes at baseline reported more aggression and fighting over time. There were significant relationships between retaliatory attitudes and subsequent aggression and fighting. This suggests that retaliatory attitudes may lead youth to be vigilant or “on guard” resulting in further aggressive behavior. Our findings are consistent with the hypothesis that retaliatory attitudes fuel cycles of youth violence and may promote rumination in youths who endorse retaliatory attitudes. This has implications for identifying high risk youth for prevention efforts.

Endorsing retaliatory attitudes may be related to youths' ability to cope with social uncertainty and threat. Emotional and behavioral self-regulation are well-established risk factors for aggressive behavior.^{22,23} Specifically, two correlated constructs: irritability and hostile rumination have been proposed to describe the relationship between emotional regulation and behavior responses to perceived threat. Irritability is the tendency to react impulsively at the slightest frustration, whereas hostile rumination is defined as “the tendency to store ill feelings, attributions and desires for vengeance after provocation”.²⁴ Retaliatory attitudes may be more closely related to hostile rumination, whereas irritability may moderate the relationship between retaliatory attitudes and aggression.

Moffitt's developmental taxonomy of antisocial behavior proposes two trajectories – life-course-persistent (LCP) and adolescence-limited (AL).²⁵ In the LCP trajectory, antisocial and violent behavior develops during childhood and persists through adolescence into adulthood, whereas in the AL trajectory youth experiment with antisocial behavior in adolescence which abates in young adulthood. Our study results suggest that identifying youths who endorse retaliatory attitudes may be one strategy for identifying those who are likely to embark on more aggressive developmental trajectories over time including increased aggression and fighting frequency. The fact that there was no association between retaliatory attitudes and weapon-carrying is not surprising since weapon-carrying may be an act of aggression or self-protection.

Our study findings inform intervention and areas for further study. Assault-injury may result from victimization or perpetration and retaliatory attitudes may be related to reactive or proactive aggression. Intervention strategies to prevent youth assault-related injuries may differ based on retaliatory attitudes in this context. Reactive perpetration has been linked to peer rejection, while proactive perpetration is unrelated to victimization.²⁶ Thus, prevention strategies for reactive perpetration might focus on adaptive social behavior and problem solving, while those aimed at preventing proactive perpetration might focus on alternatives to violence. In addition, retaliatory attitudes may be reinforced by parents, peers and the environmental context in which youths develop^{9, 27}. Thus, efforts to change them may need to incorporate parent, peer and community interventions as well.

Medical professionals in acute care or other settings have an opportunity to identify youths at risk of future assault injury by talking with youths about their fighting history, retaliatory plans, and providing relevant anticipatory guidance (e.g., particularly about avoiding weapon use, and augmenting resilience factors).²⁸ The American Academy of Pediatrics has recommended a system of identification, assessment, and treatment of assault victims in the health care setting in order to reduce the risk of retaliation and reinjury.²⁹ This may include screening for access to guns in the home and other risk factors related to violence, as well as linking youths to intervention and follow-up services. In keeping with the AAP

recommendation, this research identifies specific assessment domains (questions regarding attitudes toward retaliation) that may identify youth at highest risk for future aggression.

The emergency department is uniquely positioned to identify and to initiate interventions with assault-injured youth. It has been suggested that the ED provider should 1) identify and assess violently injured youths for risk for retaliatory violence and potential for re-injury or violence-related death and 2) provide youth and their families linkages to counseling services or other resources to prevent future violence.³⁰ Though screening tools have been proposed to assess risk for future injury, there has been little research on predictive validity and none have focused on retaliatory attitudes.³⁰ Finally, while there is a strong evidence base for youth violence prevention outside of the health care setting, there is growing literature on youth violence prevention initiated in the ED. Two recent reviews of youth violence secondary prevention initiatives suggest the potential of case management and brief counseling interventions in reducing future injury and criminal involvement.^{30, 31} Evidence-based intervention may be best targeted to individuals with retaliatory attitudes, as this study demonstrates their heightened risk for future aggression.

Our study sample represents one ethnic group and the youth were recruited from two hospitals in urban areas. Therefore, these findings may not generalize to youth who represent other ethnic groups and who live in non-urban areas. Another limitation of this study includes the use of youth self-report. We could only evaluate self-reported aggressive tendencies and episodes of aggressive behavior. Individuals who are aggressive may associate with aggressive peers, or live in social contexts where violent or aggressive behavior is common. Given these benchmarks, these individuals may not rate their own behavior as being particularly aggressive. Thus, “objective” behavioral assessments of aggressive behavior or likelihood to respond aggressively may prove informative. We observed that the relationship between retaliatory attitudes and assault-related injury approached statistical significance. Since injury is a relatively rare event, we may not have adequate power to discern a significant relationship. In addition, whether one is *injured* in a fight may have as much to do with the behavior and characteristics of others in the altercation (e.g., weapon involvement, number of individuals involved) as with the respondent's behavior and attitudes. Finally, the median time between discharge from the ED and enrollment in the study was 51 days. This time span may have impacted responses, particularly those related to retaliatory attitudes. However, it is likely that the delay between injury and enrollment may contribute to an underestimate of the impact of retaliatory attitudes on subsequent violent behavior.

This study demonstrates that endorsing higher levels of retaliatory attitudes at baseline are associated with more aggression and higher frequency of fighting over time. This has important implications for identifying particularly high risk youth for prevention efforts and guiding intervention strategies. Understanding what distinguishes youths who hold retaliatory attitudes is a key aspect of designing interventions to prevent assault injuries.

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Figure 1.
Violence Prevention Project Recruitment Yield

Table 1

Description of participant demographics and baseline measures (n=129)

Demographics	
Age, mean (SD)	Mean = 12.9 (SD = 1.5)
Male	65.9%
Race – African American	98.5%
Measures	
Retaliatory attitudes – mean, SD, Range	Mean = 21.2, (SD = 4.4) 8–32
Modified Aggression Traits (>=1) (%sample)	87.6%
Fighting Injury (>=1/last 30 days)	44.4%
Fighting Frequency (>=1/last 30 days)	54.0%
Knife Carrying (>=1/last 30 days)	22.1%

Table 2

Effect of baseline retaliation on aggression, number of fight injuries, fighting frequencies and knife carrying: regression coefficients, rate ratios and 95% confidence intervals

Effect Predictor: Baseline Retaliation					
Outcomes	Coefficient	SE	Event Rate Ratio	95% C	p-value
Aggression	0.080	0.021	1.08	(1.04,1.13)	0.00 *
Fight Injuries	0.113	0.058	1.12	(0.99,1.23)	0.05
Fight Frequency	0.077	0.037	1.08	(1.01,1.16)	0.04 *
Knife Carrying	0.063	0.050	1.07	(0.96,1.18)	0.21

* p<.05