



Published in final edited form as:

Pers Individ Dif. 2015 January 1; 73: 1–6. doi:10.1016/j.paid.2014.09.012.

Peer victimization and subsequent disruptive behavior in school: The protective functions of anger regulation coping

Övgü Kaynak^a,

Treatment Research Institute, Philadelphia, PA

Stephen J. Lepore^b,

Temple University

Wendy Kliewer^c, and

Virginia Commonwealth University

Lena Jaggi^d

Virginia Commonwealth University

Abstract

Peer victimization is linked to adjustment problems in youth, including aggressive behavior, yet not all victimized youth are aggressive. The present study investigated whether youth's anger regulation coping might attenuate the positive association between peer victimization and subsequent aggressive behavior. Longitudinal data from 485 7th-grade students (55% female, mean age = 12.84 years) and their teachers were collected in the fall and six months later. Teacher ratings of youth aggressive behavior at follow-up were the primary outcome, with statistical adjustments for baseline aggressive behavior and demographics. Results from multilevel models showed significant interactive effects of baseline anger regulation and peer victimization on residualized teacher-rated aggressive behaviors that were consistent with the hypothesis that anger regulation played a protective role: under high levels of peer victimization, youth with higher levels of anger regulation displayed lower levels of aggressive behavior than their counterparts with lower levels of anger regulation. These findings suggest that targeting and improving students' ability to regulate their anger may be protective in the face of peer victimization and reduce subsequent aggressive behavior.

Keywords

anger regulation; peer victimization; aggression; adolescents; school

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^cCorresponding author: Dr. Wendy Kliewer, Department of Psychology, Virginia Commonwealth University, PO Box 842018, Richmond VA 23284-2018, wkliewer@vcu.edu, phone: 804 828-8089, FAX: 804 828-2237.

^aÖvgü Kaynak: ovgu.kaynak@temple.edu

^bStephen J. Lepore: slepore@temple.edu

^dLena Jaggi: jaggil@vcu.edu

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1.0 Introduction

Peer victimization is a significant public health problem that contributes to psychological, social, and school maladjustment problems in children and adolescents, including aggression (Arseneault, Bowes, & Shakoor, 2010; Hunter, Boyle, & Warden, 2007; Iyer, Kochenderfer-Ladd, Eisenberg, & Thompson, 2010; Nakamoto & Schwartz, 2010; Ostrov, 2010; Prinstein, Boergers, & Vernberg, 2001; Sullivan, Farrell, & Kliewer, 2006). Youth can be victimized overtly (e.g., being hit) and relationally (e.g., being excluded) (Crick & Bigbee, 1998). Between 40 and 80% of school-aged youth have experienced peer victimization; 10 to 15% of youth are victimized chronically (Juvonen & Graham, 2001). Teen suicides that are linked to victimization have increased public awareness of the seriousness of this issue, and many schools have adopted anti-violence programs as a result. However, the focus of these programs has been on primary prevention – reducing the incidence of peer victimization; many programs do not address secondary prevention – coping in ways that decrease the likelihood of subsequent victimization (Terranova, 2009). Toward that end, it is important to identify factors that could potentially protect youth from negative outcomes related to victimization. One potential factor is anger regulation, which can influence how youth respond to victimization and whether they become aggressive themselves.

Youth respond to victimization in different ways with two types of response profiles possibly perpetuating the cycle of violence (Hanish & Guerra, 2004). Passive and unassertive victims are more likely to be depressed and socially anxious with lower rates of self-esteem and higher rates of aggression inhibitions (Batsche, 1994; Schwartz, Proctor, & Chien, 2001). Passive victims are seen by their aggressors as non-threatening and tend to experience chronic victimization. On the other end of the spectrum are aggressive or provocative victims, who are more likely to be disruptive, argumentative, hot-tempered, and to retaliate against their aggressor (Schwartz, 2000; Schwartz et al., 2001; Batsche, 1994). These aggressive victims in particular are at high risk for victimization due to their overly reactive behavior (Schwartz et al., 1997; Pope and Bierman, 1999). The current study focuses on this latter group who become more aggressive in the face of violence because they are not only increasing their risk of being victimized, but they also pose a risk to others as a result of their aggressive behaviors.

One reason that victims of violence may become aggressive is that experiences of victimization can undermine the development of effective emotion management and coping strategies in some youth (Rudolph, Troop-Gordon, & Flynn, 2009). Emotion regulation includes the ability to evaluate, monitor, and modify emotional reactions and is a vital component of communicating, influencing, and empathizing with others (Southam-Gerow & Kendall, 2002). Experiences of victimization may contribute to restraint problems in some adolescents by overwhelming them with hostile or retaliatory feelings that cause them to behave in an angry, defensive way (Crick & Dodge, 1996; Jaggi, 2013; Raine et al., 2006). Victimized adolescents report significantly more self-restraint problems, particularly an inability to control anger (Crick & Bigbee, 1998).

To the extent that victimized youth are better able to regulate their anger, they might not become aggressors themselves. This logic is supported by research linking greater anger

regulation coping to lower levels of physical aggression with peers (Sullivan, Helms, Kliewer, & Goodman, 2010). Based on this previous research, we predict that greater anger regulation coping would be protective against increased levels of aggression among victimized youth. That is, the positive relation between violence exposure and subsequent aggressive behavior will be attenuated among youth who have better anger regulation coping skills relative to youth who have poorer anger regulation coping skills. Protective factors reinforce healthy development by counteracting the effects of risk factors (Fergus & Zimmerman, 2005). Protective effects would be indicated by a significant interactive effect of anger regulation coping and peer victimization on teacher-reported aggressive behaviors. This study contributes to the literature by examining longitudinal associations between peer victimization and teacher-rated aggressive behavior, and by examining the moderating role of anger regulation. Strengths of the study include a large and diverse sample of adolescents, a longitudinal design and utilization of youth and teacher report.

We hypothesized that: (a) peer victimization would be positively associated with teacher-reported youth aggressive behaviors at baseline and follow-up, and (b) a higher level of anger regulation would attenuate the positive relation between peer victimization and teacher-reported youth aggressive behaviors.

2.0 Method

2.1 Participants and Setting

This study used survey data from a large multi-site randomized controlled trial designed to reduce the adverse effects of exposure to community and peer violence. In the trial, the experimental group wrote expressively on six occasions about their different experiences with violence, whereas the control group wrote about six neutral topics (i.e., healthy diet, healthy advertising to teens, daily physical activity, sleep and relaxation habits, school and community supported physical activity). Research assistants from the university read the instructions aloud to the students while they followed along in a booklet. The study was implemented in three middle schools: one urban school in Philadelphia, PA, and two from suburbs of Richmond, VA. Two of the schools had a high percentage of students from low-income families with between 61% (Richmond school 1) and 81% (Philadelphia) meeting the eligibility requirement for the federal free or reduced-price lunch program. The second Richmond-area school served middle income families, with just 6% of students eligible for free or reduced-price lunch. All 7th-grade classrooms in the three schools participated in the trial. Of the 1,280 students eligible to participate, 999 received parental consent and provided assent to participate (78% accrual rate). Only adolescents who participated in the control arm of the intervention were included in the current analysis. The present longitudinal analysis used data from baseline (pre-intervention) and the first follow-up (wave 2, post-intervention), six months later. These data were collected in one academic year, so they include the same teacher raters at baseline and wave 2. Participants included 498 seventh-grade youth (55% female). The majority self-identified as white (47%) followed by Latino/Hispanic (22%), black/African American (16%), biracial/multiracial (15%), Asian (6%) or American Indian/Alaskan Native/Pacific Islander (1%). The mean age of the sample was 12.84 ($SD = .44$). Thirteen adolescents were lost to follow-up (wave 2)

due to relocation away from the school district, lowering the total sample at wave 2 to 485. There were no differences between the 13 students and the rest of the sample based on race, sex, school, or age.

2.2 Measures

Peer victimization—Peer victimization was measured at baseline using the relational and overt victimization subscales of the Problem Behavior Frequency Scales (PBFS). The PBFS is a valid and reliable measure (Farrell, Kung, White, & Valois, 2000). The 12-item measure assesses the frequency (1 = never, 2 = 1–2 times, 3 = 3–5 times, 4 = 6–9 times, 5 = 10–19 times, 6 = 20 or more times) of victimization by peers in the previous 30 days and consists of two subscales: relational victimization and overt victimization. The relational victimization subscale assesses peer threats or attempts at harming the youth’s peer relationships (e.g., “Had someone spread a false rumor about you”). The overt victimization subscale assesses peer threats or attempts to harm the youth’s physical well-being (e.g., “Been hit by another kid”). Mean item scores were computed for analyses, with a maximum score of 6. The two subscales were highly correlated ($r = .62$) and when analyses were run separately the models were identical. In order to simplify interpretation and results, the subscales were combined into one scale of total peer victimization. Cronbach’s alpha was $\alpha = .86$ for the combined scale.

Anger regulation—The anger regulation coping scale from the Children’s Anger Management Scale (CAMS) was administered at baseline to assess the extent that youth can control and deal with their anger (Zeman, Shipman, & Suveg, 2002). The scale is reliable and valid (Zeman et al., 2002). The five-item scale measures how often in the prior two weeks (1 = hardly ever, 2 = sometimes, 3 = often) youth regulated their anger (e.g., “I tried to calmly deal with what was making me feel mad”). A summed score was used in the analyses. The possible maximum score was 15 with higher scores indicating a higher level of anger regulation. Cronbach’s alpha was $\alpha = .83$.

Teacher-reported aggression—The Teacher Report Form (TRF) was completed by teachers to assess aggressive and rule-breaking behaviors in students at baseline and wave 2. The TRF is a reliable and valid measure that is part of the Achenbach System of Empirically Based Assessment (Achenbach, 1991). The 20-item aggressive behavior subscale of the TRF assessed whether the teacher observed aggressive behaviors in their students (e.g. “physically attacks people”). Mean item scores were computed for the subscale, with a possible maximum of 3. Cronbach’s alpha for aggressive behavior in the current sample was $\alpha = .97$ at both measurement waves.

Control variables—Gender (0 = female, 1 = male) and age (continuous) were used as covariates in all multivariate analyses, along with the baseline level of aggression.

2.3 Procedure

The Institutional Review Boards at the respective study institutions reviewed and approved all procedures. Measures were administered using a computer-assisted survey interview (CASI, Sawtooth Software, Inc.). Each respondent was provided with a headset-equipped

laptop and completed the CASI during a scheduled class period. The CASI makes it possible for the respondent to hear each question through a headset while simultaneously reading the question on the laptop monitor before selecting an answer. Research staff members were available during the assessments to answer any questions and to keep respondents on task. Teachers also used CASI software to complete student assessments. Participating schools received compensation for allowing students and teachers to participate in the study.

3.0 Data analytic strategy

To examine the relationship between adolescent's peer victimization and changes in aggressive behavior across classrooms, we used a multilevel modeling (MLM) approach. This strategy was used due to the nested structure of the data (students within classrooms). Models were built using Mplus version 6.11 (Muthén & Muthén, 2012), using maximum likelihood estimation with robust standard errors. The total amount of missing data was < 2%; correlations to investigate potential bias revealed no significant relation between missing values and any included variables, suggesting that data was missing completely at random. A comparison of results showed no differences in outcomes using maximum likelihood estimation for missing values versus exclusion of missing data points, further supporting the conclusion that data was missing completely at random. Thus, all models were estimated without missing data. A sequential approach in building the models was used to predict teacher reported aggression at wave 2 (Heck, Thomas & Tabata, 2014). Starting from an unconditional model with no predictors (Model 1) we built a model with all predictors (i.e., victimization and anger regulation coping) and control variables (i.e. gender, age and baseline teacher rated aggression). The best fitting structure for this model (Model 2) was then expanded to a final model which additionally included the interaction term (Model 3).

4.0 Results

4.1 Assumptions of Multilevel modeling (MLM)

Inspection of residual plots, histograms and p-p plots showed non-normality of the errors, as well as a floor effect of aggressive behavior in the full model. Inverse transformation (value/1) of all non-normal variables remediated some of the distributional assumptions of the residuals and provided increased model fit. All predictor variables (i.e., victimization and anger regulation coping) as well as baseline aggressive behavior were grand mean centered. The residual plots following data transformation still showed some inequality in distribution of residuals, however, there were no univariate or multivariate outliers, indicating that assumptions of regression were sufficiently met. Table 1 presents correlations among and descriptive information on the study variables prior to transformation.

4.2 Relationship between victimization and aggressive behavior

In terms of exposure, 75% of the sample reported experiencing at least one instance of peer victimization in the past 30 days. Prevalence rates ranged from 4% of youth being threatened or injured by someone with a weapon to 39% being pushed or shoved by another kid and being yelled at or called names by another kid.

The unconditional model without predictors (Model 1) revealed that 47.0% of the variance in aggressive behavior was explained on the classroom level. In the next step, all predictors and control variables (minus the interaction term) were entered into the model as fixed effects. Fixed effects mean that while the mean of the outcome (intercept) is allowed to be randomly different across classrooms, the relationship between the predictors and outcome is held constant. Comparison of this model with a model with random effects showed that a model with all fixed effects best fit the data (Sample-size adjusted BIC -28.691). The model with a random slope for victimization fit less well (Sample-size adjusted BIC -17.325) and revealed no significant random slope. The random effect allowed the relation between victimization and aggressive behavior to be randomly different across classrooms. The non-significance of the random slope thus indicated that there was no variability in the relation between the predictors and the outcome between classrooms. Table 2 shows an overview of the results for the best-fitting model (Model 1). Within-level differences are differences between individuals, while between-level differences represent the effects of being in the same classroom. There was a significant main effect of baseline aggressive behavior ($B = .677, SE = .086, \beta = 7.909, p < .001$) as well as victimization during the past year ($B = .076, SE = .037, \beta = 2.084, p < .05$). As expected in a multi-level model, classroom means of aggressive behavior differed significantly (random intercept, $B = .821, SE = .206, \beta = 3.990, p < .001$), however, the non-significance of the random slope or the residual variance of the between level indicated that this difference was contained to differences in overall levels of reported aggressive behaviors, and was not due to differences in the nature of the relationship between the predictors and aggressive behavior at wave 2. Gender, age and anger regulation coping did not significantly influence aggressive behavior.

4.3 Attenuating role of anger regulation coping

To investigate the moderating effect of anger regulation coping on the relation between victimization and aggressive behavior, an interaction term was added to the previous model (Model 3). This revealed a significant interaction between anger regulation coping and victimization ($B = -.026, SE = .011, \beta = -2.376, p < .02$; Table 3). Figure 1 depicts the interaction effect. The interaction shows that the relation between victimization and teacher-rated aggression varied as a function of children's levels of anger regulation: the positive association between victimization and aggressive behavior is strong and significant among youth with low anger regulation coping and not significantly different from zero among youth with high regulation coping.

5.0 Discussion

The purpose of the current study was to examine the attenuating effects of anger regulation on the association between peer victimization and aggressive behavior. Our data indicated that almost half of the variance in aggressive behavior was accounted for by classroom effects. As this measure was teacher-rated, this points to significant contributions of teacher-level explanations, such as overall tolerance for disruptive behaviors and classroom climate. Analyses also revealed significant variance across classrooms in overall amount of aggressive behavior, but no variation in the nature of the relation between individual reports of victimization and subsequent teacher-rated aggressive behavior. Finally, as predicted,

there was a significant interaction of victimization and anger regulation coping on aggressive behavior. This supports the notion that an individual's emotion regulation can mitigate the relation between victimization and aggressive behavior, and that this relation holds true regardless of the overall level of aggressive and victimizing behaviors within a classroom. Across all classrooms, victimization at wave 1 was associated with a higher level of aggressive behavior at wave 2, above and beyond baseline levels of teacher-rated aggression.

Moderator analysis can only explicate the conditions under which an effect is observed; the reasons anger regulation coping is protective still need to be determined. Experiences of victimization may contribute to restraint problems in some adolescents by overwhelming them with hostile or retaliatory feelings that cause them to behave in an angry, defensive way (Crick & Dodge, 1996; Raine et al., 2006). These "reactive-aggressive" youth are prone to perceive their peers as hostile or threatening, that in some cases may be accurate but in other cases inaccurate (Crick & Dodge, 1996). The current findings suggest that youth who are better able to regulate their anger in the face of peer victimization also may be better able to exercise behavioral control, thus interrupting a cycle of repeated victimization. This control could reduce the enjoyment victimizers get from seeing those whom they victimize react (Mahady Wilton, Craig, & Pepler, 2000; Spence, De Young, Toon, & Bond, 2009). The significant negative correlation between anger regulation and peer victimization in the current study implies that poor regulators could be at increased risk for further peer victimization and the associated psychological and behavioral consequences.

While not measured in the present study, physiological mechanisms might explain why anger regulation is protective. In a recent study, Kliewer and colleagues (2012) posited that repeated exposure to peer victimization may prime the body to be reactive to stress. The majority of youth in that study reacted physiologically when describing a recent stressful event while nonvictimized youth showed no increase in physiological response to stress. Low anger regulation may further increase the physiological response to the stress of victimization (Kliewer et al., 2012). Research suggests that immature self-regulatory skills and negative peer relations may stimulate physiological responses in children (Dettling, Gunnar, & Donzella, 1999). Victimized youth who have difficulty regulating their anger may be experiencing an exaggerated increase in physiological responses that could be leading to increased aggression.

5.1 Limitations

Despite the strengths of the study, including the longitudinal design, large diverse sample size, and utilization of both youth and teacher report, there are limitations to consider. First, despite the longitudinal study design, there are still possible non-causal, alternative explanations of the association between victimization and aggression, due to potential spurious influences on the predictors and outcome. Second, the scale used to measure aggression focuses on general aggression and not on aggression in response to peer victimization. Although this is typical of most measures of aggression, it reduces the opportunity to specifically link peer victimization and aggression. Third, the use of a school-based sample is less likely to include students with poor attendance, a factor that is

associated with peer victimization (Peter et al., 2004), hence limiting generalizability of the results. Fourth, this study only examined anger regulation as a protective factor. There could be other protective factors that might further influence the relation between peer victimization and aggression. For example, friendship and perceived social support may buffer victimized youth from the negative effects of victimization including aggression (Prinstein et al., 2001). Importantly, however, anger regulation coping is considered a malleable skill and hence a good target for intervention (Candelaria, Fedewa, & Ahn, 2012), whereas other protective factors, (i.e. friendship) may be less amenable to change.

5.2 Clinical and Research Implications

Schools have a responsibility to provide a safe environment for their students. When considering peer victimization interventions, understanding how schools approach and handle peer victimization is important (i.e., presence of anti-bullying and peer support programs) (Smith, 2010). In particular, the existence of prevention programs within the school may impact peer victimization frequency (Biggs & Vernberg, 2010). In a perfect school environment where peers do not victimize one another, emotion regulation may not matter because there are systems in place to prevent negative outcomes. However, when confronted with peer victimization, the ability to regulate emotions appropriately may be more effective in preventing negative outcomes in a supportive school environment than a non-supportive school environment (Rodkin & Hodges, 2003). Thankfully, a number of school-based prevention programs that include a focus on emotion regulation now exist. These include the PATHS curriculum (Greenberg, Kusche, Cook, & Quamma, 1995), the Resolving Conflict Creatively Program (Brown, Roderick, Lantieri, & Aber, 2004), and Second Step (Frey, Hirschstein, & Guzzo, 2000).

Acknowledgments

The study was funded by NIH R01MH081166 awarded to Wendy Kliever and Stephen J. Lepore. We thank the principals, teachers, and students at our participating schools.

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Highlights

- Peer victimization is associated with higher levels of teacher-rated aggressive behavior across the school year.
- Anger regulation coping attenuates associations between peer victimization and aggressive behavior.
- The association between peer victimization and aggression is similar across different classrooms of youth.

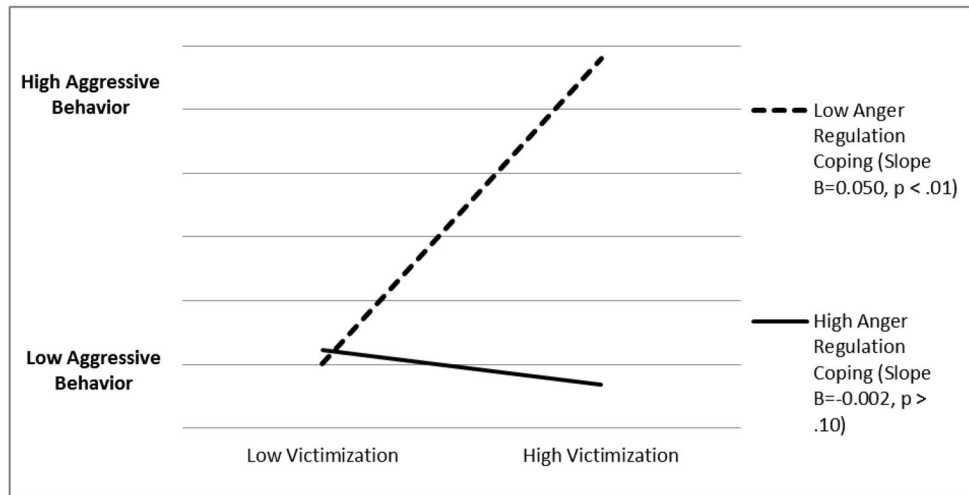


Figure 1. Relations between victimization and changes in aggressive behavior at wave 2 by low (1 SD below the mean) and high (1 SD above the mean) levels of anger regulation coping.

Table 1

Correlations among and descriptive information on the study variables

| | 1 | 2 | 3 | 4 | 5 | 6 |
|-----------------------------------|---------|---------|--------|--------|--------|-------|
| 1. Gender (1 = male) | -- | | | | | |
| 2. Age | .10* | -- | | | | |
| 3. Aggressive behavior (Baseline) | -.15*** | -.15*** | -- | | | |
| 4. Aggressive behavior (wave 2) | -.17*** | -.16*** | .79*** | -- | | |
| 5. Victimization | -.06 | -.10* | .20*** | .23*** | -- | |
| 6. Anger regulation coping | -.10* | .27*** | .27*** | .28*** | .27*** | -- |
| <i>Mean</i> | 44.6% | 12.84 | 1.20 | 1.15 | 1.38 | 11.38 |
| <i>SD</i> | | 0.44 | 0.41 | 0.30 | 0.52 | 2.65 |

Note. W2 = 6-month follow-up.

N = 464

* $p < 0.05$

*** $p < 0.01$.

Table 2

Model with fixed effects predicting aggressive behavior at wave 2

| | B | <i>S.E.</i> | β |
|--------------------------------|----------|-------------|---------------------------|
| Within Level | | | |
| Gender | -0.018 | 0.014 | -1.240 |
| Age | 0.004 | 0.016 | 0.224 |
| Aggressive behavior (baseline) | 0.677 | 0.086 | 7.909** |
| Victimization | 0.076 | 0.037 | 2.084* |
| Anger regulation coping | 0.003 | 0.002 | 1.742 |
| Residual variance | 0.012 | 0.002 | 5.700** |
| Between Level | | | |
| Intercept | 0.821 | 0.206 | 3.990** |
| Residual variance of intercept | 0.003 | 0.003 | 1.148 |

 $N = 468$ * $p < 0.05$ ** $p < 0.01$.

Table 3

Interaction effect of anger regulation coping and victimization on aggressive behavior at wave 2

| | B | S.E. | β |
|--------------------------------|----------|-------------|---------------------------|
| Within Level | | | |
| Age | 0.005 | 0.016 | 0.345 |
| Gender | -0.019 | 0.014 | -1.420 |
| Aggressive behavior baseline | 0.669 | 0.083 | 8.020** |
| Victimization | 0.063 | 0.035 | 1.772 |
| Anger regulation Coping | 0.004 | 0.002 | 2.004* |
| Victimization x coping | -0.026 | 0.011 | -2.376* |
| Residual Variance | 0.012 | 0.002 | 5.585** |
| Between Level | | | |
| Intercept | 0.803 | 0.202 | 3.981** |
| Residual Variance of intercept | 0.004 | 0.003 | 1.191 |

 $N = 468$ *
 $p < 0.05$ **
 $p < 0.01$.