

Traditional Bullying, Cyber Bullying, and Deviance: A General Strain Theory Approach

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Abstract

Agnew's general strain theory (GST) has received significant empirical attention, but important issues remain unresolved. This study addresses three such issues. First, the authors examine the effects of bullying—a source of strain that may be consequential, but that has been neglected in GST research to date. Second, drawing from recent research on deliberate self-harm among adolescents, the authors examine the effects of bullying not just on externalizing deviance (aggressive acts committed against others and their property) but also on internalizing deviance directed against the self. Third, the authors examine these relationships separately for males and females to assess sex differences in responses to strain. These three issues are examined with self-report data collected from a sample of middle and high school students in a Southeastern state. The analysis reveals that bullying is consequential for both externalizing and internalizing forms of deviance and that these relationships are in some instances moderated by sex.

Keywords

bullying, cyber bullying, delinquency, self-harm, strain

Agnew's (1992, 2001) general strain theory (GST) has received significant empirical scrutiny, with much of it supporting the theory. Most tests confirm its central hypothesis that strainful events and relationships are positively related to involvement in

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delinquency (e.g., Broidy, 2001; Capowich, Mazerolle, & Piquero, 2001; Hoffmann & Miller, 1998; Paternoster & Mazerolle, 1994). Moreover, the effects of strain on delinquency appear to be partially explained by heightened levels of anger and frustration (e.g., Brezina, 1998; Mazerolle & Piquero, 1997; Piquero & Sealock, 2000). With these favorable results, it is not surprising that GST has moved to the “forefront of criminological theory” (Hoffmann & Miller, 1998, p. 83).

And yet, important empirical issues remain unresolved or even largely unexplored in GST research. The purpose of this study is to address three issues that we see as neglected, substantively important, and logically linked to one another. The first of these involves the need to learn more about the criminogenic effects of bullying. In a significant elaboration of GST, Agnew (2001) identified bullying—or “peer abuse”—as a strain that should be especially consequential for delinquency. Yet even as bullying has received continued attention as an adolescent social problem (e.g., White & Loeber, 2008) GST research has neglected its effects on crime and delinquency. This study addresses this void, and we do so with data that allow us to examine not only traditional notions of bullying (e.g., physical and verbal harassment) but also cyber bullying, which has garnered significant recent attention (Hinduja & Patchin, 2009; Wang, Iannotti, & Nansel, 2009).

A second goal of our study is to examine the effects of bullying not just on crime but also on noncriminal, internalizing forms of deviance. GST tests often assess the effects of strain on “externalizing” crimes—acts committed against others or their property. Some individuals, however, may respond with “internalizing” acts that harm themselves. Although neglected, this possibility is consistent with GST’s position that individuals cope in different ways and deviant adaptations can come in many forms (Agnew, 1992). We consider this issue by examining the effects of bullying not just on crimes committed against others but also on internalizing deviance, including suicidal ideation and acts of self-harm such as “cutting” or burning oneself. These outcomes are especially important to consider when examining the effects of bullying—those who are bullied may be socially isolated and ostracized, and this may lead to self-directed responses to strain (Moon, Morash, McCluskey, & Hwang, 2009).

Our final focus is on the possibility that these relationships vary across males and females. Broidy and Agnew (1997) identified important ways in which strain–crime relationships may be moderated by sex, and a number of empirical studies support their arguments (e.g., Piquero & Sealock, 2004). This issue has not, however, been examined with respect to the above two issues—issues that may especially call for a consideration of sex-specific patterns. There still is uncertainty about whether males and females experience bullying to the same degree and whether they react to it in similar ways (see Espelage, Mebane, & Swearer, 2004). Sex differences also are important to consider when studying the effects of strain on internalizing deviance. As Broidy and Agnew noted, when confronted with strain, males may resort to externalizing responses, whereas females may be more susceptible to internalizing responses. This hypothesis rarely, however, has been tested in GST research, and it has not been examined with respect to bullying. Also, recent evidence contradicts the conventional

wisdom that internalizing deviance is largely a problem among females—rates of deliberate self-harm and suicidal ideation are far from trivial among males in industrialized nations (Kerr, Owen, Pears, & Capaldi, 2008; Patton et al., 2007).

This study examines these three issues in conjunction with one another: Bullying is assessed in terms of its effects on both externalizing and internalizing deviance, and these relationships are examined separately for males and females. This is done with survey data collected from a sample of students in a nonmetropolitan county of a Southeastern state. First, however, we consider in more detail both GST's positions on these various issues and the findings from prior research.

Prior Theory and Research

Bullying as a Source of Strain

Although being the victim of bullying has always fit within GST's broad conception of strain (Agnew, 1992), attention to it emerged most notably from Agnew's (2001) elaboration of GST in which he identified the strains that should be most consequential for crime. One of these was bullying (or "peer abuse"), which, unlike such strains as parental rejection and negative experiences at school, "has been neglected as a type of strain" (Agnew, 2001, p. 346). Agnew (2001) contended that bullying should be consequential because it satisfies four conditions that should characterize consequential strains: (1) It should be perceived as unjust (because bullying often will violate basic norms of justice), (2) it should be perceived as high in magnitude (because peer relations often are central in the lives of adolescents), (3) it should not be associated with conventional social control (because bullying often will occur away from adult authority), and (4) it should expose the strained individual to others—the bullies themselves—who model aggressive behavior.

Despite these suggestions of an important effect, exposure to bullying largely has been ignored in GST research and, more broadly, in research on the causes of crime. Some exceptions to that pattern suggest that bullying—or the related concept of criminal victimization—is important for delinquency (Agnew, 2002; Agnew, Brezina, Wright, & Cullen, 2002; Baron, 2004; Hay & Evans, 2006). Baron's study of homeless youths, for example, revealed that being a property victim significantly increased delinquency, even after controlling for a wide array of alternative explanatory variables. Of more direct relevance to the effects of bullying, Agnew et al. (2002) found that subjects who were picked on by neighborhood peers were more involved in delinquency, although this was true only for those with personality characteristics conducive to delinquency. More recently, findings from Moon et al. (2009) contradicted GST's position: Bullying victimization was not associated with general delinquency in their study of Korean youths.

This dearth of criminological research stands in contrast to the extensive scholarship that reveals effects of bullying on many forms of social psychological maladjustment, including low self-esteem, loneliness, and depression (see Hawker & Boulton, 2000).

When behavioral outcomes have been considered, however, the focus generally has been limited to school absenteeism or antisocial behavior in the preadolescent years, prior to the point in which serious crime and delinquency is pervasive. A few recent studies (e.g., Hinduja & Patchin, 2007; Ybarra & Mitchell, 2004) provide important exceptions to that pattern and find that bullying increases adolescent crime or deviance. Thus, there is potentially much to be gained from giving further attention to Agnew's (2001) hypothesis about the important effects of bullying on adolescent behavior.

It also is important for such research to focus on the newly emerging issue of cyber bullying (Hinduja & Patchin, 2009), which involves using the Internet or cell phones to mistreat others. This includes abusive e-mails or text messages, insulting messages or pictures on online message boards, and Web sites that disseminate degrading content. Recent surveys of adolescents indicate their potential exposure to cyber bullying—nearly 90% frequently use the Internet and 50% have their own cell phone (Lenhart, Madden, & Hitlin, 2005; Ybarra & Mitchell, 2004). These media often are used to harass or embarrass others (Ybarra & Mitchell, 2004), but little is known about how this victimization may affect behavior. There is reason for concern because, unlike face-to-face bullying, cyber bullying may be especially difficult to escape from. Its electronic nature may allow it to occur without attracting the attention of teachers or parents. Also, because many adolescents—for legitimate reasons—carry their cell phones at all times and frequently use the Internet, they can be exposed to cyber bullying even when physically removed from bullies. And once information is posted to the Web, it may be difficult for the bullying victim to have it removed from all of the sites in which it may have appeared. It also can reach a much wider audience than what may be possible with traditional bullying. Mason (2008, p. 324) comments on the relentless nature of cyber bullying, noting that it “can harass individuals even when [they are] not at or around school. . . . [U]nlike traditional forms of bullying, home may no longer be a place of refuge.” Thus, if bullying is to be examined as an important source of strain, attention to cyber bullying should be a key consideration.

Internalizing Responses to Strain

GST predicts that individuals will respond to strain in different ways (Agnew, 1992). Tests of GST, however, have disproportionately focused on criminal responses, especially acts that harm another person either through violence or through the theft or damage of their property. When internalizing responses have been considered, the focus generally has been limited to substance use. Thus, an entire class of internalizing acts—aggression against oneself with acts of deliberate self-harm—has been ignored. This type of behavior includes such things as cutting or burning oneself, jumping from heights, running into traffic, poisoning, hanging, and self-battery, with each of these acts sometimes resulting in suicide (Hawton, Rodham, & Evans, 2006).

Ignoring this type of response to strain could be a significant omission in GST research. First, by not considering a broader array of responses to strain, prior studies may have misclassified some subjects. Specifically, some adolescents may have been

seen as coping with strain in prosocial ways simply because their harmful responses were not captured by a study that focused only on criminal outcomes. Insight on this comes from a study by Sharp and her colleagues (Sharp, Terling-Watt, Atkins, Gilliam, & Sanders, 2001), who found that 23% of a sample of college females reported some type of eating disorder, and this outcome was affected by strain. Given that these individuals may have committed few crimes against others, their responses to strain might have been overlooked in a more conventional test of GST.

A second reason to consider acts of deliberate self-harm is that they may be more common than is typically recognized. This issue has been studied extensively outside the United States since the 1960s, with many studies finding higher than expected rates of self-harm. For example, in the United Kingdom, more than 20,000 adolescent hospital admissions occur each year because of self-inflicted overdoses, poisonings, or injuries (Hawton et al., 2006). Comparable prevalence rates were observed in such countries as France, Ireland, and Australia (Hawton et al., 2006). This issue has garnered recent attention in the United States from the Centers for Disease Control and Prevention (2008), who found that nearly 14% of high school students in a national survey seriously contemplated suicide in the prior year.¹

The neglect of self-harm in criminological research is understandable, given our focus on law-violating behavior. However, there is a trend in criminology in recent decades toward general theories that can explain a wide range of deviant or harmful outcomes. Gottfredson and Hirschi's (1990) self-control theory, for example, often is lauded for its ability to explain many noncriminal behaviors that are rewarding in the short-term but carry long-term costs. GST may be a similarly general theory—in addition to explaining criminal outcomes, it may also explain involvement in many harmful, self-directed actions that are used to cope with intense feelings of stress.

One final point should be emphasized: Self-harm may be especially important to consider when studying the effects of bullying. As many studies in psychology reveal, bullying victims suffer from a wide array of social psychological maladjustments and tend to be socially isolated. Thus, rather than responding to this strain with normal delinquent or criminal acts (many of which are committed in the context of adolescent peer groups), bullied individuals may respond with acts committed against themselves.

Male–Female Differences in the Response to Strain

Broidy and Agnew (1997) systematically introduced to criminology the idea that males and females may differ in their levels of exposure and responses to strain. They offered several relevant hypotheses. First, relative to females, males should be exposed to criminogenic strains at higher levels. Second, because of sex differences in stress coping, males should have emotional reactions to strain that are conducive to externalizing responses (crime), whereas females should have emotional reactions more conducive to internalizing responses. For example, although both males and females may get angry in response to strain, females may also experience self-directed emotions like guilt, shame, and depression. And last, net of any differences in emotions, males should have

behavioral reactions to strain that are more criminal, in part because they have lower personal coping resources and fewer social constraints to criminal coping.

These arguments have received at least moderate support, suggesting that higher male crime is partially explained by GST processes. For example, males are exposed to some criminogenic strains at higher levels than females (Baron, 2004; Hay, 2003), and they are more likely to respond to a given strain with crime (Agnew & Brezina, 1997; Hay, 2003; Piquero & Sealock, 2004).² Sex differences have not yet been considered, however, in the few GST studies of bullying and peer victimization. Moreover, questions about sex differences remain in the larger study of bullying. The belief that bullying is largely a male problem disappeared when conceptions of bullying broadened to include “relational” forms of bullying (Espelage et al., 2004) like gossip, ridicule, and friendship withdrawal. All of these appear to be common among both male and female adolescents (see Crick & Grotpeter, 1995). And with respect to cyber bullying, strong conclusions on sex differences have yet to emerge, although it may be more common among females (Hinduja & Patchin, 2009).

These patterns leave open the question of whether males or females are exposed to bullying at higher levels, and they suggest that the answer to this question may depend on the type of bullying being considered. Just as important, the research on bullying has yet to examine Broidy and Agnew’s (1997) hypotheses regarding the ways in which male and female adolescents differ in their responses to bullying. Thus, there is a clear need for research that examines sex-specific responses to bullying and does so for multiple outcomes that include both externalizing and internalizing forms of deviance.

The Present Study

The purpose of this study is to examine the effects of bullying on externalizing and internalizing forms of deviance and to assess whether these relationships vary across males and females. Our central hypothesis is that, consistent with GST, bullying is significantly related to both types of deviance. Testing this hypothesis reveals insight on the accuracy of Agnew’s (2001) claims regarding the importance of exposure to bullying, and it clarifies whether GST can be extended to explain aggression directed against the self. With respect to sex differences, two hypotheses are tested, both of which draw from Broidy and Agnew (1997) and the related research. We predict that the effects of bullying should be greater for males than females when the dependent variable is externalizing behavior. Conversely, the effects of bullying should be greater for females for dependent variables that involve internalizing deviance. We should emphasize, however, that these hypotheses are offered tentatively. The stress and coping literature upon which Broidy and Agnew based their arguments has not focused on adolescent stressors like bullying. Moreover, its concern with internalizing deviance often has emphasized emotional (e.g., depression) rather than behavioral outcomes. Thus, our test of how these relationships vary according to sex is exploratory to some degree.

Data

These issues are considered with data collected from a sample of roughly 400 adolescents in a Southeastern state of the United States in the spring of 2008. Respondents were sampled from two participating schools—one high school and one middle school—located in a rural and relatively poor county.³ Using the standards set by the school district, a passive consent procedure was followed. Permission forms were distributed to all students 1 week prior to the survey administration, and students were excluded from the study if parents returned the form asking that their child be excluded. Each participating student then completed an anonymous, self-administered questionnaire during normal school hours and was given a small reward (a candy bar) for completion. This procedure allowed for a near complete census of the two schools' populations, with 93% of attending students participating in the study.⁴ This produced a fairly diverse sample. The average age of participants was 15 but ranged from 10 to 21. The sample was split evenly between males and females, and non-Whites represent 34% of the sample. Additionally, family disruption was common, with only 50% of respondents living in a household with both biological parents.

Admittedly, the use of a school sample from a nonmetropolitan county raises concerns about the sample's generalizability. Again, however, our sample is diverse, and there is nothing about it that would appear to bias the results in one direction or another. Moreover, the dearth of studies on this set of issues justifies smaller-scale efforts that are more feasible and less costly. We hope that an initial test of this kind may stimulate and inform more elaborate data collection efforts in the future.

Measures

The survey allowed for multiple-item scales for most variables, and there are two features common to the measures that we used. First, all items in multiple-item scales included ordinal response categories, with almost all using a 4-point scale. For measures that assess frequencies, responses ranged from 1 = *never* to 4 = *often*. For items asking respondents to rate themselves on some characteristic, responses ranged from 1 = *strongly disagree* to 4 = *strongly agree*. Second, with respect to scale construction, each scale was computed by averaging its constituent items.

Independent variables. To assess the effects of bullying, two measures were used. The first is a 6-item measure ($\alpha = .85$) that captures the traditional emphasis on physical and verbal harassment. Respondents indicated how often during the prior 12 months they were (a) the target of lies or rumors; (b) the target of attempts to get others to dislike them; (c) called names, made fun of, or teased in a hurtful way; (d) hit, kicked, or pushed by another student; (e) physically threatened by other students; and (f) picked on by others. Our second bullying measure is a 3-item scale ($\alpha = .80$) that captures the more recent interest in cyber bullying. Respondents were asked to indicate how frequently during the previous 12 months they were (a) the target of "mean" text

messages; (b) sent threatening or hurtful statements or pictures in an e-mail or text message; and (c) made fun of on the Internet.

Dependent variables. Externalizing delinquency was measured with a 5-item scale ($\alpha = .86$) of self-reported offending during the prior 12 months. Respondents indicated how often they had (a) stolen something worth less than \$50; (b) stolen something worth more than \$50; (c) damaged, destroyed, or tagged property that did not belong to them; (d) entered a building or house without permission from the owner; and (e) hit, kicked, or struck someone with the idea of seriously hurting them. Two measures of internalizing behavior were used, with both measured with a single item. The first is a measure of suicidal ideation in which respondents were asked how often “you think about killing yourself.” Self-harm was measured by asking respondents how often “you purposely hurt yourself without wanting to die,” with “cutting or burning” offered as examples.

Control variables. A number of demographic control variables were included in the analyses to protect against concerns about spuriousness. These included five demographic variables: age (measured in years), sex (*male* = 1, *female* = 0), race (*non-White* = 1, *White* = 0), nonintact family structure (*nonintact* = 1, *living with both biological parents* = 0), and place of birth (*foreign-born* = 1, *native born* = 0). Also, to better isolate the independent relationship between exposure to bullying and the outcomes of interest, controls were included to capture key aspects of respondents’ school, family, peer, and personal characteristics. This included measures of school grades (as indicated by self-reported grades on the most recent report card); parental control, as indicated by a 10-item scale ($\alpha = .92$) of parental monitoring and discipline; and unstructured time spent with peers, as indicated by a 2-item scale ($r = .56$) measuring time spent with friends with no adults present and time spent with friends at a mall, restaurant, or street corner. And last, all analyses include an 8-item measure ($\alpha = .85$) of self-control, which included the 8 items used in the Grasmick et al. scale (Grasmick, Tittle, Bursik, & Arneklev, 1993) to measure impulsivity and risk seeking.⁵

Results

The first step in the analysis was to consider the effects of bullying on our externalizing and internalizing outcomes. Given the high correlation ($r = .67$) between traditional and cyber bullying, the effects of the two were estimated in separate equations. Thus, with two measures of bullying and three outcomes of interest (delinquency, self-harm, and suicidal ideation), we estimated six ordinary least squares (OLS) equations, each of which included all of the controls.

The results for these equations are shown in Table 2, which reveals a consistent effect of bullying—the effects of bullying are statistically significant and relatively large in all six equations (with betas ranging from .22 to .41).⁶ Cyber bullying has modestly higher effects than traditional bullying—standardized effects of .33 for delinquency, .39 for self-harm, and .41 for suicidal ideation, which compares to effects of .22, .33, and .39 for traditional bullying. Also, both types of bullying have greater

Table 1. Descriptive Statistics

Total sample	N	M	SD	Minimum	Maximum
Age	424	14.99	2.18	10.00	21.00
Male	420	0.50	0.50	0.00	1.00
Non-White	422	0.34	0.48	0.00	1.00
Foreign-born	423	0.07	0.26	0.00	1.00
Nonintact family	407	0.50	0.50	0.00	1.00
Poor school grades	391	2.02	1.04	1.00	5.00
Parental control	416	3.08	0.76	1.00	4.00
Time spent with peers	407	2.65	1.78	0.00	5.00
Self-control	422	2.79	0.64	1.00	4.00
Cyber bullying victimization	417	1.33	0.64	1.00	4.00
Traditional bullying victimization	419	1.74	0.72	1.00	4.00
Delinquency	415	1.23	0.51	1.00	4.00
Self-harm	418	1.31	0.75	1.00	4.00
Suicidal ideation	417	1.33	0.76	1.00	4.00
Male sample					
Cyber bullying victimization	204	1.30	0.62	1.00	4.00
Traditional bullying victimization	205	1.76	0.72	1.00	4.00
Delinquency	205	1.28	0.54	1.00	4.00
Self-harm	205	1.25	0.70	1.00	4.00
Suicidal ideation	204	1.31	0.74	1.00	4.00
Female sample					
Cyber bullying victimization	209	1.37	0.65	1.00	4.00
Traditional bullying victimization	209	1.72	0.72	1.00	4.00
Delinquency	205	1.16	0.43	1.00	4.00
Self-harm	210	1.37	0.80	1.00	4.00
Suicidal ideation	210	1.35	0.79	1.00	4.00

effects on self-harm and suicidal ideation than on delinquency. For traditional bullying, for example, the effect on suicidal ideation ($B = .39$) is nearly 80% higher than the effect on delinquency ($B = .22$). The pattern is less extreme but still true for cyber bullying, which has an effect on suicidal ideation ($B = .41$) that is 24% higher than its effect on delinquency ($B = .33$). Thus, bullying has a consistent, relatively strong association with delinquency, self-harm, and suicidal ideation, but this is especially true for cyber bullying in particular and for outcomes that involve internalizing rather than externalizing deviance.⁷

Our next step in the analysis was to examine whether these relationships vary across males and females; in short, do males and females differ in their response to traditional and cyber bullying? It is first useful to consider whether there were sex differences in exposure to these forms of bullying. The descriptives provided in Table 1 reveal that there were not. On scales that ranged from 1 to 4 (indicating exposure as 1 = *never*, 2 = *rarely*, 3 = *sometimes*, or 4 = *often*), both males and females had average

Table 2. OLS Regressions of Dependent Variables on Traditional and Cyber Bullying Victimization

Predictor	Delinquency (N = 363)			Self-harm (N = 365)			Suicidal ideation (N = 364)		
	b	SE	B	b	SE	B	b	SE	B
Age	0.02	0.012	0.07	0.00	0.017	0.01	0.02	0.017	0.05
Male	0.09	0.049	0.09	-0.18	0.070	-0.12**	-0.08	0.071	-0.05
Non-white	0.14	0.055	0.13*	0.21	0.079	0.13**	0.19	0.080	0.12*
Foreign-born	0.01	0.098	0.00	0.06	0.141	0.02	0.27	0.142	0.10
Nonintact family	0.10	0.051	0.10*	0.09	0.073	0.06	0.10	0.073	0.07
Poor school grades	0.00	0.025	0.01	-0.01	0.036	-0.02	-0.06	0.037	-0.09
Parental control	-0.16	0.035	-0.24**	-0.14	0.050	-0.14**	-0.17	0.051	-0.17**
Time with peers	0.04	0.014	0.13**	0.03	0.020	0.06	0.00	0.020	0.00
Self-control	-0.04	0.042	-0.05	-0.21	0.061	-0.18**	-0.13	0.062	-0.11*
Traditional bullying	0.15	0.035	0.22**	0.34	0.050	0.33**	0.41	0.051	0.39**
Constant	1.10	0.264	—	1.62	0.379	—	1.29	0.382	—
Adjusted R ²	—	0.21	—	—	0.24	—	—	0.26	—
Age	0.01	0.011	0.02	-0.02	0.016	-0.06	-0.01	0.017	-0.03
Male	0.12	0.047	0.12*	-0.14	0.069	-0.10*	-0.04	0.070	-0.03
Non-White	0.13	0.053	0.12*	0.18	0.077	0.11*	0.15	0.078	0.10
Foreign-born	0.02	0.094	0.01	0.09	0.137	0.03	0.31	0.140	0.11*
Nonintact family	0.12	0.048	0.12*	0.14	0.070	0.09	0.16	0.072	0.11*
Poor school grades	0.01	0.024	0.01	-0.01	0.035	-0.01	-0.05	0.036	-0.07
Parental control	-0.17	0.034	-0.24**	-0.15	0.049	-0.15**	-0.18	0.050	-0.18**
Time with peers	0.02	0.014	0.08	0.00	0.020	0.01	-0.02	0.020	-0.05
Self-control	-0.05	0.040	-0.06	-0.24	0.058	-0.21**	-0.18	0.059	-0.16**
Cyber bullying	0.26	0.038	0.33**	0.45	0.054	0.39**	0.49	0.055	0.41**
Constant	1.21	0.231	—	2.08	0.336	—	1.94	0.344	—
Adjusted R ²	—	0.27	—	—	0.29	—	—	0.28	—

*p < .05. **p < .01.

Table 3. Z-Score Test for Differences in Effects of Bullying for Males and Females

Type	Delinquency			Self-harm			Suicidal ideation		
	<i>b</i>	SE	Z	<i>b</i>	SE	Z	<i>b</i>	SE	Z
Traditional bullying									
Males	0.135	0.057	-0.54	0.366	.067	0.46	0.454	0.074	0.63
Females	0.174	0.044	—	0.319	.077	—	0.389	0.071	—
Cyber bullying									
Males	0.274	0.062	0.12	0.578	.069	2.20*	0.648	0.078	2.41*
Females	0.265	0.045	—	0.342	.082	—	0.382	0.078	—

Note: All equations included controls for age, non-White, foreign born, nonintact family, poor school grades, parental control, time spent with peers, and self-control.

* $p < .05$.

values of approximately 1.75 for traditional bullying and 1.35 for cyber bullying. (The differences between males and females were not significant.) Thus, if bullying victimization is to produce divergent outcomes for males and females, it will result not from their differing extent of exposure, but instead, from their differing reactions.

To consider this possibility, we estimated OLS regression equations identical to those presented in Table 2, except that they were estimated separately for males and females. Table 3 provides a summary of the key results from these equations. For each male–female comparison, we provide the unstandardized coefficient and standard error for the bullying measure in question. Also, we provide the z-score statistic used to determine whether the coefficients for males and females significantly differed. We used the formula recommended by Paternoster and his colleagues (Paternoster, Brame, Mazerolle, & Piquero, 1998) that takes $b_1 - b_2$ (the difference between the two coefficients) as the numerator and the square root of $SE b_1^2 + SE b_2^2$ (the estimated standard error of the difference) as the denominator. If this formula yields a value for z that exceeds 1.96, the null hypothesis that $b_1 = b_2$ is rejected for a two-tailed test with an alpha level of .05.

The figures in Table 3 reveal that in four of the six bullying–deviance combinations, there are no significant differences in effects between males and females. Traditional bullying has effects (shown in the top panel of Table 3) that are similar for males and females across all three dependent variables—each effect is significant, and the differences between the coefficients for males and females are negligible and insignificant. This pattern also is true for cyber bullying (shown in the bottom panel of Table 3) when delinquency is the dependent variable—the effect of cyber bullying on delinquency is almost identical for males and females.

A different pattern emerges, however, for the effects of cyber bullying on self-harm and suicidal ideation—these effects are significantly greater for males. To be clear, exposure to cyber bullying is associated with heightened internalizing deviance for both males and females. For males, however, the effects on these two outcomes are

about 70% higher than what is observed for females, and these effects for males are quite large in absolute terms, with standardized effects (not shown) of .52 on self-harm and .54 on suicidal ideation. Indeed, these effects of cyber bullying on male self-harm and suicidal ideation are nearly double the standardized effect of cyber bullying on male delinquency ($B = .29$).

Taken as a whole, these results are consistent with the possibility that males and females sometimes differ in their responses to strain. However, support for this idea emerged only when considering the effects of cyber bullying on internalizing deviance. Moreover, the exact pattern of differences was unexpected—internalizing responses to strain were higher among males rather than females.

Discussion and Conclusion

This study used Agnew's GST as the theoretical foundation for studying the effects of bullying on both externalizing and internalizing forms of deviance. Moreover, given prior theory and research on sex differences in stress coping, we were interested in examining how the effects of bullying would vary across males and females. Three key conclusions emerged from the analysis.

The first is that both forms of bullying victimization—a "traditional" measure based on physical and verbal harassment and a "cyber" measure based on online or electronic harassment—were significantly related to delinquency. This finding confirms the conclusions from other recent studies (e.g., Hinduja & Patchin, 2007) that bullying has important effects on delinquency. Also, although the differences were not extreme, we found that effects were greater for cyber bullying. It will be interesting to observe whether this pattern emerges in other studies. As noted previously, there are reasons to suspect that cyber bullying could indeed be the more problematic form of bullying. Its electronic form allows it to occur in ways that are less visible and overt; it, therefore, may not attract the attention of parents or teachers. Moreover, cyber-bullied youths may find it more difficult to gain a reprieve than those who are bullied in more traditional ways, because being physically removed from bullies offers little relief, and the bullying may reach a wider audience. Thus, although the significant effects of both types of bullying support Agnew's (2001) position that bullying is a more consequential form of strain than earlier believed, our findings especially suggest the importance of moving "beyond the schoolyard" to consider bullying that is linked to adolescents' growing use of the Internet and cell phones (Hinduja & Patchin, 2009).

Our second key finding is that both forms of bullying affected not simply delinquency (which was measured in terms of externalizing acts against other people or their property) but also internalizing forms of deviance like intentional self-harm and suicidal ideation. Indeed, these relationships were of greater magnitude than those observed between bullying and delinquency. One possible explanation for this involves the way in which bullying may socially isolate its victims—if victims are rejected by others or voluntarily withdraw from social interactions, this may encourage internalizing rather than externalizing emotional and behavioral responses. Again, this pattern

needs to be confirmed in future studies. This is an important issue to consider, however, given that GST research rarely has considered internalizing behavioral responses to strain. The findings in this study suggest that GST processes are relevant to a potentially wide array of harmful, self-defeating actions not typically evaluated by criminologists.

Our final key finding is that these relationships were moderated by sex in some instances. Specifically, the effects of bullying on self-harm and suicidal ideation were greater for males, and this difference was large and statistically significant with respect to cyber bullying in particular—its effects on self-harm and suicidal ideation were approximately 70% greater for males. This finding contradicts the specific GST arguments that have been made (Broidy & Agnew, 1997)—compared to females, males were expected to respond to strain with externalizing rather than internalizing deviance.

This unexpected pattern calls for speculation on what may explain it. Given that rates of self-harm and suicidal ideation are almost always higher among females (Hawton et al., 2006), males do not seem predisposed to respond to stress with internalizing deviance. Thus, a more plausible explanation for our finding could involve the focus on bullying in particular. Indeed, Hawton and colleagues reached a similar conclusion in their study of bullying—exposure to bullying increased the odds of internalizing deviance more among males than females. There may be two explanations for why bullying generates greater internalizing deviance from males. Both follow from the premise that while externalizing deviance often is facilitated by social engagement with peers (Warr, 1996), internalizing deviance often is the opposite—it is especially likely when a person is socially isolated (Hawton et al., 2006). Thus, one explanation may be that bullying victimization socially isolates males to a greater degree than what is observed for females. In connection, some have observed that relational forms of bullying are normative to some degree in female peer groups (Crick & Grotpeter, 1995); thus, rather than severing the victim's ties to the social network, some degree of bullying may be part and parcel of female network membership. With males, however, the victimization may be less consistent with one's membership in the group and may denigrate or emasculate the victim in ways that sever his or her ties with it (thus prompting internalizing deviance). A second and related possibility is that the bullying that males experience may be notably more severe or threatening than what is experienced by females, and this may prompt greater social withdrawal. Physical bullying is in fact more common among males (Espelage et al., 2004). Moreover, Hinduja and Patchin (2009) provided evidence on sex-differentiated emotional responses to bullying that may encourage greater social avoidance from males—males and females both expressed anger and frustration in response to bullying, but males were twice as likely to report being scared.

Taken as a whole, these conclusions can potentially advance and redirect future GST research, but they also should be viewed in the context of our study's limitations. First, our analyses were based on cross-sectional data gathered at one point in time. Thus, rather than assessing acts of deviance that necessarily followed exposure to

bullying, our incidents of deviance and bullying occurred during the same time period (the prior 12 months). Our study, therefore, offers no guarantee of capturing the appropriate causal order (Lauritsen, Sampson, & Laub, 1991). To correct for this, future studies may use longitudinal data to examine lagged effects of bullying on deviance. It should be noted, however, that with temporal lags often amounting to 1 year or more, this approach provides a less than ideal match with theoretical arguments about the relatively short-term or instantaneous effects of strain (Agnew, 2001). A second limitation of our study involves the sample, which came from students from just two schools in a nonmetropolitan county. Although this sample does not appear to bias the results in favor of the observed findings, different results could emerge with samples that are more representative of the national population of adolescents. Last, and similar to other studies (although see Moon et al., 2009, for a recent exception), we were not able to confirm that those who experienced bullying perceived this to be strainful. Instead, we inferred the presence of strain from the significant positive relationships between bullying victimization and deviance. A fuller test of GST could consider this issue in a more direct way.

In concluding, it bears emphasizing that our findings suggest the notable gains in knowledge that may come from greater attention to the effects of bullying on adolescent behavior. Moreover, and in the spirit of GST's attention to general rather than narrow social dynamics, bullying should be examined in ways that emphasize the variety of forms in which it comes and the variety of consequences it may have.

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Notes

1. It also should be noted that acts of deliberate self-harm often are quite serious. Even nonfatal incidents are injurious and suggest the emotional and mental suffering of those involved (Vajani, Annet, Crosby, Alexander, & Millet, 2007). Moreover, nonfatal incidents often use the same techniques (especially poisoning, cutting and piercing, and suffocation) that are common in suicide attempts. Indeed, more than 50% of those admitted to a hospital for nonfatal self-harm have a history of suicidal behavior or ideation (Vajani et al., 2007).
2. See Hoffmann and Cerbone (1999) and Mazerolle (1998) for contrary evidence.
3. The data were collected as part of a larger project concerned with improving the quality of data collected and reported by public schools in the state.
4. Exceptional and special education students were not eligible for the study and were excluded from the sampling design.

5. Table 1 provides descriptive statistics for the full sample and for the males and females subsamples (for key variables of interest).
6. The effects of bullying are relatively high when compared to the effects of other variables in the model. To be clear, several of the controls (especially non-White, parental control, and self-control) had relatively consistent effects. In the case of self-control, these significant effects were limited to the models for self-harm and suicidal ideation—self-control had no effect on delinquency. Because self-control has a significant bivariate correlation ($-.23$) with delinquency, our best explanation for its lower-than-expected multivariate effect is its correlation with other variables in the model ($-.27$ with poor grades, $.27$ with parental control, $-.28$ with traditional bullying, and $-.16$ with cyber bullying). Some recent studies find that the effects of self-control (or related concepts) are diminished in equations that include controls for other key theoretical variables (Agnew et al., 2002; Antonaccio & Tittle, 2008).
7. We estimated additional equations to consider how sensitive our results were to various modifications in measurement or modeling. First, we considered whether verbal and physical bullying—which were combined in our traditional bullying measure—had effects that differed from one another. We found that the effects of physical bullying were consistently stronger. However, both measures were significantly related to the dependent variable in all equations. Second, we considered whether the effects of bullying were greater on violent or property crime. We found significant effects on both types of offending, but the effects were greater for property offending. However, this pattern could be the result of our limited measure of violent offending. It was measured with a single item pertaining to assaults against others, whereas property offending was measured with a 4-item scale. And third, we considered whether the effects of traditional and cyber bullying could be estimated in the same equation. The two have a correlation of $.67$, and including them in the same model produced variance inflation factors that often approached 2.00; this level is seen as problematic by some standards (Fox, 1991). That being said, these equations generally found cyber bullying to be the more consequential form of victimization. Its effects were significant and substantively larger than the effects of traditional bullying in all equations. Indeed, although traditional bullying continued to have significant effects on self-harm and suicidal ideation, its effect on delinquency was reduced to zero in the model that also included cyber bullying.

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