The moderating effects of religiosity on the relationship between stressful life events and delinquent behavior

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Abstract

Previous research has shown that many forms of strain are positively related to delinquency. Evidence also suggests that religiosity buffers the effects of strain on offending, but this issue requires further research. Using data from a national sample of adolescents, this study examined whether or not religiosity conditioned the relationship between strain and delinquency. This study also looked at the ability of social support, self-esteem, and depression to moderate the influence of strain on delinquent behavior. The findings here lend support to general strain theory in that strain had a direct positive effect on delinquency, yet there was little evidence that the relationship was moderated by religiosity or other conditioning variables. The roles of moderating variables on strain across genders were also considered.

Introduction

General strain theory (GST) (Agnew, 1985, 1992, 2006) has received considerable attention for its revitalization of strain concepts in criminological research. Although many aspects of the theory have not been sufficiently tested, the research that has been conducted is consistent in finding a positive relationship between strain and delinquent behavior (e.g., Agnew & White, 1992; Hoffmann & Miller, 1998; Mazerolle, Burton, Cullen, Evans, & Payne, 2000;Peter, LaGrange, & Silverman, 2003). Conversely, findings are mixed with regard to the role of conditioning effects on the strain-delinquency relationship. (e.g., Agnew, Brezina, Wright, & Cullen, 2002; Agnew & White, 1992; Aseltine, Gore, & Gordon, 2000; Hay, 2003; Mazerolle & Maahs, 2000; Piquero & Sealock, 2000).

Research also indicates that religiosity is negatively associated with delinquent behavior, as prior studies have consistently found a negative relationship between religiosity and delinquency independent of other predictors across a variety of study populations (e.g., Baier & Wright, 2001; Benda, 2002; Johnson, Jang, Larson, & Li, 2001; Johnson, Jang, Li, & Larson, 2000; Regnerus, 2003). In contrast, a smaller number of studies have found that the relationship between religiosity and delinquency is spurious when controlling for other factors (e.g., Cochran, Wood, & Arneklev, 1994; Cretacci, 2003).

In light of the findings from research on strain and religiosity as they relate to crime and delinquency, some have hypothesized that religiosity serves as a coping mechanism for strain (Jang & Johnson, 2003, 2005). If this hypothesis is true, it would provide support for a moderating effect by religiosity on the relationship between strain and delinquency. Indeed, Jang and Johnson's (2003, 2005) research lends support to the notion that religiosity serves to moderate the relationship between strain and violent behavior for African American adults, particularly among females. This study was designed to test the hypothesis that the relationship between strain and delinquency is moderated by religiosity using a national sample of adolescents living in the United States. It was hypothesized that high religiosity reduces the likelihood of delinquent behavior given the presence of strain, particularly for females. That is, as strain increases, individuals who are less religious will become increasingly more likely to engage in delinquent behavior. Additionally, three other measures expected by GST (Agnew, 1992, 2006) to moderate the relationship between strain and delinquency (social support, self-esteem, and depression) were included in the models to provide a comprehensive analysis of moderating effects based on GST.

Review of the literature

General strain theory

General strain theory (Agnew, 1992) is a revision of earlier versions of strain theory stemming from Merton (1938) and others (see Cloward & Ohlin, 1960; Cohen, 1965). Instead of primarily focusing on the disjunction between culturally defined goals and the legitimate means to obtain them, Agnew (1992) includes a variety of strains that could influence the likelihood of delinquency. The theory claims that strains associated with the loss of positively valued stimuli and presentation of negatively valued stimuli should be considered alongside the traditional concepts of strain in order to obtain a more comprehensive understanding of factors that may contribute to delinquency. Additionally, GST states that, given strain, delinquency will be more likely to occur when legitimate sources of coping, such as social support and self-efficacy, are absent. For example, although some individuals may experience similarly high levels of strain, those with low levels of social support (i.e., are easily angered, have low self-esteem, etc.) should be more likely to react to strain with delinquent behavior.

Empirical research on GST

General strain theory has garnered considerable attention since its introduction. Many of the main concepts pertaining to GST have been thoroughly tested, most specifically, the direct relationship between strain and delinquency. Overall, the research has consistently found a positive relationship between strain and delinquent behavior (e.g., Agnew, 2002; Agnew et al., 2002; Agnew & White, 1992; Aseltine et al., 2000; Brezina, Piquero, & Mazerolle, 2001; Hay, 2003; Paternoster & Mazerolle, 1994). Indeed, in almost every published test of GST, at least one measure of strain has been found to positively influence delinquency.

Research has failed to find consistent support for the conditioning hypothesis of GST in explaining delinquency (e.g., Agnew & White, 1992; Aseltine et al., 2000; Brezina, 1996; Hay, 2003; Hoffmann & Miller, 1998; Mazerolle & Maahs, 2000; Paternoster & Mazerolle, 1994; Piquero & Sealock, 2000; Robbers, 2004). A number of possible conditioning factors have been examined including social support (e.g., Robbers, 2004), self-esteem (e.g., Hoffmann & Miller, 1998), depression (e.g., Piquero & Sealock, 2000), anger (e.g., Hay, 2003), delinquent peer exposure (e.g., Piquero & Sealock, 2004), religiosity (e.g., Jang & Johnson, 2005), and others. Empirical support for the GST conditioning hypothesis varies depending on the strain, conditioning, and outcome variables measured; the sample composition; and the research design. The focus of the current review of prior research was on religiosity, social support, self-esteem, and depression; the conditioning variables involved in the present study.

Religiosity—Overall, research has shown that religiosity is negatively related to delinquency (Baier & Wright, 2001; Benda & Toombs, 2000; Johnson et al., 2001; Pearce & Haynie, 2004; Regnerus & Elder, 2003; Stark, 1996), although this finding is not universal (Cochran et al., 1994; Cretacci, 2003; Elifson, Petersen, & Hadaway, 1983; Hirschi & Stark, 1969). In general, studies have shown that individuals who are more religious commit fewer offenses. Johnson et al. (2001) found that the relationship between religiosity and crime is significant even when controlling for demographic variables and measures of social control. Additional evidence for a significant negative relationship between religion and delinquency comes from a meta-analysis conducted by Baier and Wright (2001). Their examination of sixty previous studies on religiosity and crime/delinquency found a significant moderate inverse relationship. They also noted that many of the differences in findings among studies were attributed to differing conceptualizations of religion and delinquency, as well as differing methodological approaches.

Surprisingly, there has been little research examining the role of religiosity within the GST framework. To date, a small number of studies had examined the possibility that religiosity serves as a buffer against deviant reactions to strain, with none focusing on a nationally representative sample of adolescents (Jang & Johnson, 2003, 2005; Piquero & Sealock, 2000). Jang and Johnson (2005) found that African American women were less likely to react to strain with violence partly because they tended to be more religious as compared to men; however, Piquero and Sealock (2000) found little evidence that "spiritual coping" influenced offending among a sample of incarcerated youths. There is a need for additional research examining the role of religiosity within the GST framework.

Social support, self-esteem, and depression—Social support, self-esteem, and depression have been tested as conditioning factors in some studies on GST. First, social support has been highlighted as an important resource for individuals experiencing strain (Agnew, 2006). The negative impact of stressors such as criminal victimization, school problems, health problems, and social isolation may be ameliorated when one has the material and emotional support of parents, close friends, teachers, and other family members and adults. Although social support can have a direct influence on delinquent behavior, GST suggests that its influence is also contingent on levels of strain. If strain is particularly low, social support may not have a strong influence on delinquency; however, social support may exert a strong influence on the likelihood of delinquent behavior when levels of stress are high.

A few studies had examined the moderating role of social support on the relationship between strain and delinquency. First, two studies examining the role of social support as a moderator between strain and delinquency (Paternoster & Mazerolle, 1994; Robbers, 2004) found somewhat conflicting results based on data from the National Youth Survey (NYS). Using data from the first and second waves of the NYS, Paternoster and Mazerolle (1994) did not find a moderating effect for social support. In contrast, using data from Wave 6, Robbers (2004) did find a significant interaction between social support and her measure of "failure to achieve goals," despite failing to find such moderation for other strain measures. Second, in their test of GST, Capowich, Mazerolle, and Piquero (2001) found that only the relationship between strain and shoplifting was significantly conditioned by social support.

Third, other studies had evaluated the influence of social support on the relationship between strain and offending behavior using samples of adults. For example, the previously mentioned article by Jang and Johnson (2005) included social support in their model, finding some evidence that aggression is influenced by levels of stress, and stress is influenced by social support. Additionally Silver and Teasdale (2005) found that strain and social support accounted for a substantial portion of the relationship between mental disorder and violent behavior.

Conversely, Eitle and Turner (2003) found no evidence that social support reduced the impact of strain on criminal behavior in their study of adult males.

Self-esteem has also been discussed as a moderating variable within the GST framework. Adolescents who think highly of themselves may be better able to handle some forms of strain, thereby reducing the likelihood of delinquency (Hoffmann & Miller, 1998). For example, many adolescents suffer from rejection and abuse by fellow students and even teachers at school. Youths with high self-esteem may not be affected by such strain compared to those who self-evaluate themselves in a poor light.

Several tests of GST relating to delinquency have included self-esteem as a conditioning variable (Aseltine et al., 2000; Brezina, 1996; Hoffmann & Cerbone, 1999; Hoffmann & Miller, 1998). Using data from a study conducted in a large midwestern city in the United States, Hoffmann and Miller (1998) performed a longitudinal test of GST that examined, among other things, the impact of self-esteem on the relationship between negative life events and delinquency. They found that negative life events led to higher levels of delinquency, but the effects were not conditioned by self-esteem or self-efficacy. Using the same data, Hoffmann and Cerbone (1999) found similar results regarding self-esteem using latent growth curve modeling. The extant research on GST using adolescent samples did not support a conditioning role for self-esteem, and studies using adult samples were generally concurrent (e.g., Broidy, 2001; Eitle & Turner, 2003), however, the limited research suggests further studies should incorporate self-esteem into models of GST.

Finally, depression may also influence the relationship between strain and delinquency. Depressed individuals who experience high levels of stress may engage in delinquent behavior as a way to deal with the problems associated with both depression and strain. Strain may also be involved in causing depressive symptoms that lead to delinquency (Agnew, 1992; Sigfusdottir, Farkas, & Silver, 2004).

The few tests of GST including depression as a conditioning variable have not yielded minimal for the theory. First, studies by Piquero and Sealock (2000, 2004), both using samples of incarcerated youths, did not find that depression significantly conditions the relationship between strain and property and violent offending. In addition, Sigfusdottir et al. (2004) found that family-related and violence-related strains were associated with depression and delinquency, but depression was not significantly associated with delinquency.

Gender differences—It is widely accepted that males generally are more delinquent than females. General strain theory (Broidy & Agnew, 1997) argues that males commit more acts of delinquency than females because (a) males and females experience different types of strain, and (b) males and females react differently to strain. First, although females experience as much strain (or more) as males, males experience strains more conducive to delinquency. "Among other things, research indicates that males are more often subject to financial strain, which is conducive to property crime, and to severe interpersonal conflict, which is conducive to violence" (Broidy & Agnew, 1997, p. 297). Females, on the other hand, may experience some forms of strain, such as excessive social control, that reduce opportunities for offending.

Second, Broidy and Agnew (1997) argue that gender differences in responding to strain account for differences in offending rates. Although males and females are equally as likely to respond to strain with anger, females are more likely to respond with emotions, such as depression and guilt that are not as conducive to delinquency. Thus, males more often react outwardly (e.g., aggression), while females commonly internalize the anger (e.g., guilt and anxiety).

Tests of GST that have focused on gender differences provide mixed support for Broidy and Agnew's (1997) hypotheses. For example, studies by Hay (2003) and Mazerolle (1998) found that males had higher rates of delinquency partially because they were more likely than females to experience harsh punishment. In addition, using a sample of detained juveniles, Piquero and Sealock (2004) found that household abuse was more likely to lead to delinquency for males than females. There is also evidence that females are less likely to engage in violent behavior partly because they have higher levels of religiosity, which buffers the effects of strain on aggression (Jang & Johnson, 2005), though the results failed to show any significant relationships between strain and offending for females. Other studies (e.g., Hoffmann & Cerbone, 1999; Hoffmann & Su, 1997) had failed to find gender differences in response to strain as predicted by the theory. Agnew (2006) notes that the inability of some studies to find support for the GST explanation of gender differences may be due to their limited measures of strain, and measures of offending that include trivial offenses, which distort gender differences.

Research problem

Overall, there is clear evidence that many forms of strain are positively related to delinquency. There is also some evidence that religiosity buffers the effect of strain on offending, but this issue has not been addressed with a nationally representative sample of adolescents. Additionally, published empirical evidence thus far does not suggest that variables such as social support, self-esteem, and depression substantially condition the relationship between strain and delinquency. Although it may be that these measures have little value as conditioning variables, there has not been enough evidence to make this conclusion. The goal of this study was to examine whether or not religiosity has a conditioning effect on the relationship between strain and delinquency. This study also looked at the ability of social support, self-esteem, and depression to moderate the influence of strain on delinquent behavior. In addition, the ability of GST to explain gender differences in delinquent behavior was tested. In sum, the work here sought to expand on previous research testing conditioning effects of GST using a nationally representative sample of adolescents in the United States.

Methods and measures

The sample for this research came from the National Longitudinal Study of Adolescent Health (Add Health) public use data set (Udry, 2003). This was a multi-stage stratified cluster sample of adolescents in the United States. Participants were chosen from 132 randomly selected schools and were surveyed in 1995 and 1996, with a second wave of data collection conducted one year later. The present study used the first two waves of in-home interviews with the participants ($n = 4,834$). Wave 2 variables were limited to the delinquency measures and age, with all other measures coming from the first wave.

Dependent variables

The dependent variables were violent and property offending measured during the second wave. Violent offending was measured using five items associated with self-reported violent acts. Respondents were asked how often they participated in the following behaviors during the twelve months prior to the interview: shot or stabbed someone; pulled a knife or gun on someone; got into a serious fight; used or threatened to use a weapon; and took part in a group fight. For the items shot or stabbed someone, and pull a knife or gun on someone, response options were never, once, and more than once (0–2). Response options for the other three items were never, one or two times, three or four times, or five or more times (0–3). Respondents were assigned a score of one if they reported participating in any of the above behaviors (30.8 percent), and zero if they reported no involvement. The same five items were used as a

composite scale from the first wave of data as an independent variable (Cronbach's alpha = .633).

Property offending was measured using five items of self-reported property-related delinquent acts from the second wave. Respondents were asked how often they participated in the following acts during the twelve months prior to the interview: shoplifted; stole something worth more than $50; burglarized a building; and stole something worth less than $50. Response options were never, one or two times, three or four times, and five or more times (0–3). The measure was dichotomized with respondents reporting any involvement in property offending given a score of one (22.4 percent), and all others assigned a score of zero. As with violent offending, a Wave 1 measure of property offending was included as a control variable using the same individual items (Cronbach's alpha = .761).

Independent variables

Strain—Two items were included as strain measures. First, exposure to violence was based on the following four items related to experiencing violence over the past year: saw a shooting or stabbing; had a knife or gun pulled on you; someone stabbed you; and were jumped. Response options were never, once, and more than once (0–2). Instead of creating a scale, a binary variable was created differentiating respondents based on whether or not they did (one) or did not (zero) experience exposure to violence.

The second measure of strain was school problems. Respondents were asked about problems they may have experienced during the current school year (or the prior year if the survey was administered during the summer) including: trouble getting along with teachers; trouble paying attention; trouble getting homework done; and trouble with other students. Response choices were never, just a few times, about once a week, almost every day, and every day (0–4). A summated scale was created with higher scores representing more school problems (Cronbach's alpha = .693).

Religiosity—Religiosity was measured using a four-item scale of religious behaviors and beliefs. Respondents were asked how often in the past year they attended religious services: never, less than once a month, more than once a month, and once a week or more (1–4); how important religion was to them: not important at all, fairly unimportant, fairly important, and very important (1–4); how often they prayed: never, less than once a month, at least once a month, at least once a week, and at least once a day (1–5); and how often they attended religious youth activities: never, less than once a month, once a month or more, and once a week or more (1–4). The above description of religiosity items is based on reverse coding of each indicator so high scores reflect high levels of religiosity (Cronbach's alpha = .858). Before these religious items were asked, respondents were asked to identify their religious affiliation. Those who reported none were excluded from further religiosity questions. In order to include these cases in the study, they were assigned scores at the lowest level of religiosity for each item.

Other conditioning variables—Social support, self-esteem, and depression were included as possible conditioning measures that may influence the relationship between strain and delinquency. First, a seven-item social support scale was created. Respondents were asked how much: friends cared about them; their family understood them; their family had fun together; their family paid attention to them; adults cared about them; teachers cared about them; and parents cared about them. Response options were not at all, very little, somewhat, quite a bit, and very much (1–5). The scale represents a summation of the items with higher values representing higher levels of social support (Cronbach's alpha = .786).

Second, a seven-item self-esteem scale was created from questions asking respondents if they agreed with the following statements about themselves: have lots of good qualities; are

physically fit; have a lot to be proud of; likes self as is; do everything right; feels socially accepted; and feels loved and wanted. Response choices were strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree (1–5). These items were reverse-coded so that low high scores would correspond to high self-esteem (Cronbach's alpha = .849).

The final conditioning variable was a ten-item depression scale asking respondents the extent to which they experienced the following symptoms associated with depression over the past week: bothered by things; had the blues; felt just as good as other people (reverse coded); had trouble keeping mind focused; felt depressed; too tired to do things; felt happy (reverse coded); enjoyed life (reverse coded); felt sad; and felt disliked by people. Response options were never or rarely, sometimes, a lot of the time, and most of the time or all of the time (0–3). High scores indicate more depressive symptoms (Cronbach's alpha = .803).

Control variables

Control variables in the analyses were gender, age, and race. For gender, females (49.3 percent) were coded one and males were coded zero. Age was the age of the respondent at the time of the second wave of data collection. For Wave 2, age ranged from eleven to twenty-one, but the majority of respondents were between the ages of thirteen and eighteen. Race was a dichotomous variable with Whites (68.3 percent) coded one and non-Whites coded zero.

Analytical strategy

The multivariate analyses for the purposes of this research were conducted using the survey procedure in Stata 9.2. This allowed for the clustered nature of the data to be accounted, reducing the potential for underestimated standard errors. Survey-corrected logistic regression was used for both violent and property offending models. Effects of independent variables on delinquency were considered statistically significant when $p \leq .05$. Finally, because prior delinquency was included as a predictor, the regression models were conservative tests, essentially predicting change over a one-year period. In addition, the summed scale was retained for Time 1 delinquency measures, where the level of prior delinquency predicted Time 2 prevalence.[1]

Results

Table 1 displays descriptive statistics for all variables used in the analyses, and Table 2 presents the correlation matrix.

Violent offending

Direct effects—Table 3 displays the results of the logistic regression model for violent offending. Both exposure to violence and school problems significantly predicted violent offending in the expected positive direction. Although exposure to violence had a meaningful direct effect on violent delinquency, the effect of school problems was rather weak. Regarding conditioning variables, weak but significant negative effects were found for religiosity and social support, while the effects of self-esteem and depression were not significant. In addition, all control variables were significant: males and non-Whites were more likely to report participation in violent behavior; age was negatively related to offending; and aside from exposure to violence, prior violent delinquency was the strongest predictor of violence measured during Wave 2. Overall, the direct effects indicated that strain, particularly exposure to violence, predicts violent offending. The direct effects of conditioning variables, however,

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[1]Two alternative logistic regression models were examined for both types of offending. First, models were estimated excluding prior delinquency. Second, models were estimated using a dichotomous (yes/no) Time 1 delinquency measure. Few differences were found between the regression models presented in the tables and the two alternatives.

were either weak or nonsignificant, and gender and race seemed to remain strong predictors despite the inclusion of GST measures and prior offending.[2]

Interactions—As mentioned, GST predicts that at least some of the direct effects from strain to delinquency should be moderated by certain conditioning variables. To test this, interaction effects between both forms of strain and each conditioning measure were included in separate logistic regression analyses. That is, a single interaction term between a strain and conditioning measure was added to the overall logistic regression model. Each interaction effect was modeled in a separate logistic regression. The results for all interaction effects analyzed are shown in Table 4. As can be seen, the results do not provide support for any moderating influences on the relationship between strain and delinquency. The only interaction effect that was significant over the full sample was school problems-by-religiosity; however, the strength of the coefficient was trivial. A more detailed discussion of the theoretical implications for these findings is provided below, but it is clear that the conditioning hypothesis was not substantiated for this model.

When examining interaction effects, it is often difficult to appreciate a moderating relationship by only looking at numerical aspects of a model. Thus, it may be helpful to have a visualization of moderating effects on the relationship between strain and violent behavior. To do this, the predicted probability of violent offending as exposure to violence and (in separate graphs) school problems increased was plotted based on varying levels of conditioning variables (minimum, twenty-fifth percentile, mean, seventy-fifth percentile, and maximum), with all other variables held at their respective means. For all combinations of interactions, it was found that the predicted probability of offending increased as strain increased, but the increase was the same regardless of the level of any conditioning variable. For example, Fig. 1 shows the predicted probability of violent offending as exposure to violence goes from zero to one based on five levels of religiosity (minimum, twenty-fifth percentile, mean, seventy-fifth percentile, and maximum). The figure shows that those who experienced exposure to violence were more likely to participate in violent offending, and that those with lower religiosity scores were somewhat more likely to participate in violent offending. Experiencing exposure to violence, however, had a similar influence on probability of offending regardless of religiosity level.

Gender differences—One of the most consistent findings in delinquency research is that males commit considerably more acts of violence than females, and the results here do not suggest otherwise. Based on GST (Agnew, 1992, 2006; but especially Broidy & Agnew, 1997), females are less likely to engage in delinquency not because they experience less strain, but because they experience different types of, and react differently to strain. Particularly salient to the current study was the previously mentioned hypothesis that females are less likely to offend because they tend to be more religious than males, and this added religiosity serves to buffer the effects of strain on future offending (Jang & Johnson, 2005).

The extent to which gender differences in violent offending could be attributed to differences in levels of strain, religiosity, and other conditioning variables was examined. First, *t*-tests were conducted to see if males and females had significantly different mean scores for school strain, religiosity, social support, self-esteem, and depression. A chi-square test was conducted to explore gender differences in reporting exposure to violence. Although the differences were not substantial for every variable, females had significantly higher mean scores for religiosity (11.91 compared to 11.05), social support (28.46 compared to 28.20), and depression (7.16 compared to 5.83). Males had a significantly higher mean score for school problems (4.64 compared to 3.80) and self-esteem (29.41 compared to 28.00), and were significantly more

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[2]Models were estimated excluding religiosity and self-esteem to see if self-esteem and/or depression had significant effects on their own. These results showed that depression was significant in the reduced models, while self-esteem was not.

likely to report exposure to violence. Although most of these differences were small, they were in the expected theoretical direction.

The next step was to conduct separate logistic regression models based on subsamples of males and females to see if the multivariate relationships mirror initial mean differences. The results (Table 3) show no substantial gender differences on strain and conditioning measures for violent offending. Interestingly, the major gender differences were due to age and prior offending. The negative effect of age on delinquency was stronger for females and the positive effect of prior offending was substantially stronger for females.

In addition to the strain-by-conditioning variable interactions for the entire sample, Table 4 displays the same models based on gender. Only models limited to males yielded significant interactions and not unlike the interaction effects for the full sample, the effect sizes were weak. Thus, the multivariate analyses conducted here were not supportive of the GST explanation for gender differences in violent delinquency.

Property offending

Direct effects—Results for the logistic regression model predicting property offending are shown in Table 5. The model was similar to the violent offending model in many ways. Both strain measures were significant in the theoretically expected direction. The effects of exposure to violence on property offending were moderate, while school strain was only weakly associated with offending. Another similarity was that there were no substantive direct relationships between conditioning variables and property offending. In fact, none of the relationships were statistically significant. Additionally, age had a significant negative effect on property offending, and prior offending was a strong positive predictor of property delinquency. An important departure from the violent offending model was the finding that gender and race failed to have a significant effect on property offending.

Interactions—As with violent offending, interactions between both strain measures and each conditioning variable were included in separate logistic regression analyses for property offending (see Table 6). The models revealed no interactions exerting a substantial effect on property offending. Only interactions between school problems and religiosity, school problems and social support, and school problems and self-esteem were significantly associated with property offending, however, these effects were trivial, with odds ratios of 1.01 for each.

The graphical techniques used for violent offending were also used to evaluate property offending in an attempt to uncover interactions that were not revealed from the logit models. Increases in strain were associated with increases in the probability of property offending, but levels of conditioning variables were not influential in the relationships between strains and offending. For example, Fig. 2 shows the predicted probability of property offending as school problems increases, based on values of social support (minimum, twenty-fifth percentile, mean, seventy-fifth percentile, and maximum). Again, although low social support was associated with a higher probability of offending, it did not influence the degree to which school problems affect offending. Thus, as with violent offending, statistical and graphical interpretations of the interactions do not support a conditioning impact on the relationship between strain and property offending.

Gender differences—Gender differences were also compared for the property offending models. As noted above, only the two strain measures, age and prior offending, were significant predictors of property offending for the entire sample. Table 5 also shows that when gender was modeled separately, the strain measures were significant only for males. In addition, a

look at Table 6 shows that any significant (though weak) interactions between strain and conditioning variables were limited to models for males.

Discussion

Summary of findings

Using a nationally representative sample of adolescents in the United States, a test of GST was conducted that: (1) tested the direct effects of two important forms of strain (exposure to violence and school problems) on both violent and property offending; (2) tested the hypothesis that conditioning variables (religiosity, social support, self-esteem, and depression) moderate the influence of strain on delinquency; and (3) examined gender differences for each model. Overall, the findings were consistent with much of the prior research in that measures of strain (particularly exposure to violence) had a direct effect on delinquency, though there was little to suggest any moderating effects from the conditioning variables.

Regarding direct effects of strain on delinquency, the results were not surprising. The effects of exposure to violence on both measures of delinquency were meaningful and in line with the idea that experiencing such stressful events can have a negative impact that may lead to multiple types of offending. The effects of school problems on delinquency were significant for both violent and property offending, but were rather weak. In addition, the direct effects of conditioning variables for both offending models were either nonsignificant or trivially significant.

Contrary to GST, there was little evidence to suggest any of the conditioning variables moderated the relationship between strain and delinquency. Of particular interest for this study was the influence of religiosity on the relationship between strain and delinquency. The results failed to show that religiosity buffered the effects of either strain measure on property or violent offending. Results were similar for interactions using social support, self-esteem, and depression as moderating variables.

Finally, the extent to which the models differed by gender was assessed. As expected, males were more likely than females to participate in violent offending, and to a lesser extent, property offending. As mentioned, GST argues that these differences are associated with gender differences, not in the amount of strain, but in the types of strain experienced and responses to strain, however, the results did not support this assertion. Males were more likely to report experiencing exposure to violence and higher levels of school strain. Additionally, gender differences in religiosity, social support, and self-esteem were small. Females reported higher levels of depression, but main effects and moderating analyses did not indicate that depression played a major role in predicting delinquency. Therefore, it seems that differences in strain levels accounted for some of the gender differences in offending.

Limitations

Although this article adds significantly to the empirical literature on GST, it is not without limitations. First, as with all prior tests of GST, it was not possible to test every type of strain that may be associated with delinquency. Exposure to violence and school problems are two of the more important strain measures (Agnew, 2006), yet others should be considered. Measures tapping into the disjunction between expectations and actual achievements, more extensive measures of criminal victimization (including sexual abuse and parental abuse), and discrimination measures would have added to the validity of the findings. Unfortunately, the data did not include such measures.

Another limitation involves the exclusion of variables hypothesized to condition the effects of strain on delinquency including delinquent peer associations, situational and dispositional

anger (e.g., Capowich et al., 2001), negative emotionality/low constraint (e.g., Agnew et al., 2002), social bonding (e.g., Mazerolle, 1998), and exposure to delinquent peers (e.g., Paternoster & Mazerolle, 1994). Again, the data did not permit such inclusion.

The study would have also been improved if the data contained additional time periods. Although two waves were better than one, three or more annual waves of data collection would have improved the ability to assess developmental relationships between strain and delinquency, as well as assess panel conditioning that might have occurred from Wave 1 to Wave 2. Finally, the study used limited measures of offending. It would have been helpful to include additional forms of property and violent offending in the model.

Despite the limitations, this study provided needed empirical evaluation of important aspects of GST. The inclusion of religiosity, social support, self-esteem, and depression as conditioning variables was an improvement over many prior studies that did not include such variables and/ or included fewer moderators. In addition, the use of nationally representative longitudinal data was an improvement over prior studies examining samples of limited generalizability. Continued research is needed to further clarify the nature of relationships between strain, delinquency, and conditioning variables.

Acknowledgements

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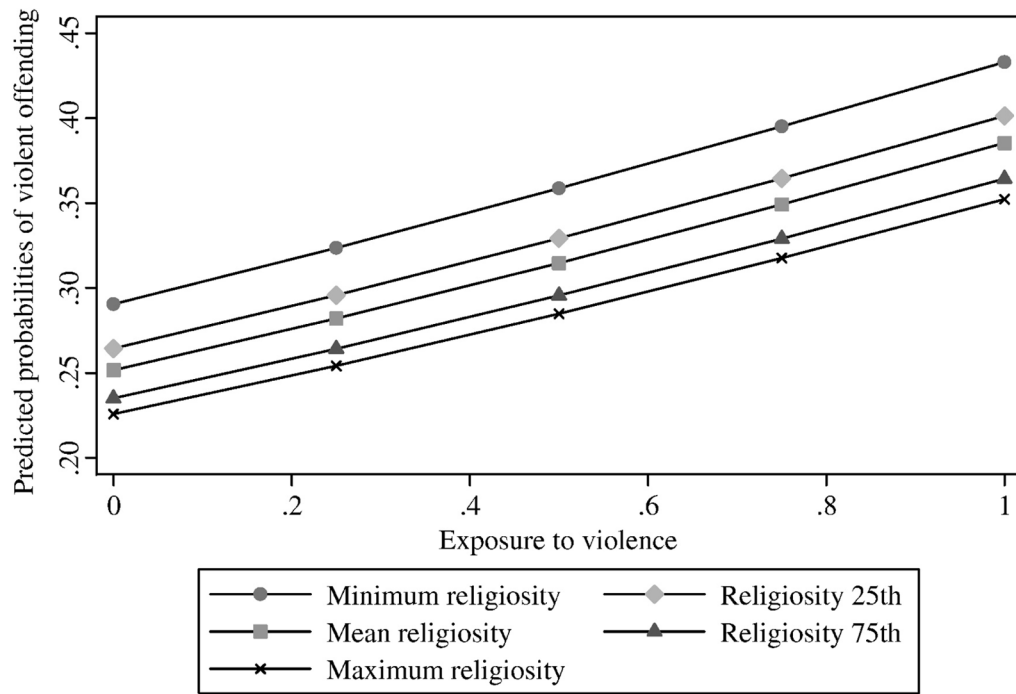
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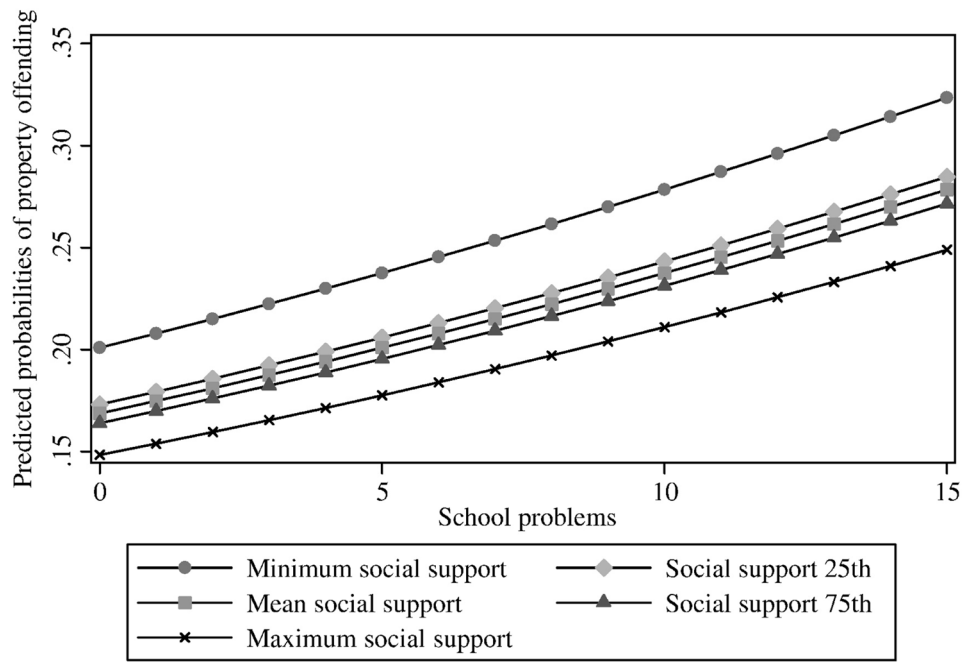
Fig. 2.

Table 1

Descriptive statistics

Variable	Mean	SD	Minimum	Maximum
Age	16.02	1.62	11	21
School problems	4.20	2.94	0	15
Religiosity	11.50	4.31	4	17
Social support	28.33	4.13	12	40
Self-esteem	28.68	4.06	13	25
Depression	6.52	4.64	0	25
Time 1 violent offending	0.86	1.43	0	7
Time 1 property offending	0.82	1.72	0	8
Exposure to violence	0.24	0.43	0	1
Gender	0.52	0.50	0	1
Race (White = 1)	0.62	0.49	0	1
Time 2 violent offending	0.30	0.46	0	1
Time 2 property offending	0.33	0.42	0	1

Table 2

Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Time 1 violent offending	1.00												
2. Time 2 violent offending	.51*	1.00											
3. Time 1 property offending	.36*	.21*	1.00										
4. Time 2 property offending	.21*	.31*	.48*	1.00									
5. Exposure to violence	.56*	.40*	.26*	.18*	1.00								
6. School problems	.32*	.24*	.27*	.19*	.24*	1.00							
7. Religiosity	-.09*	-.08*	-.13*	-.08*	-.07*	-.15	1.00						
8. Social support	-.19*	-.17*	-.22*	-.16*	-.19*	-.30*	.21*	1.00					
9. Self-esteem	-.07*	-.04*	-.16*	-.11*	-.07*	-.22*	.13*	.46*	1.00				
10. Depression	.18*	.13*	.16*	.11*	.17*	.32*	-.11*	-.40*	-.49*	1.00			
11. Gender (female = 1)	-.19*	-.17*	-.10*	-.06*	-.19*	-.14*	.10*	.03*	-.17*	.14*	1.00		
12. Race (White = 1)	-.13*	-.11*	-.01	.01*	-.15*	.01*	-.14*	.02	-.04*	-.11*	-.25*	1.00	
13. Age	--	-.02	--	-.05	.09	.03	-.09	-.15	-.09	.13*	-.05*	-.03*	1.00

*
$p \leq .05$.

-- = not applicable.

Table 3

Survey corrected logistic regression predicting violent offending

Variable	Total sample		Females		Males	
	OR	SE	OR	SE	OR	SE
Exposure to violence	1.87[*]	0.198	1.83[*]	0.330	1.88[*]	0.269
School problems	1.04[*]	0.015	1.05[*]	0.021	1.04[*]	0.021
Religiosity	0.97[*]	0.009	0.96[*]	0.013	0.99	0.011
Social support	0.97[*]	0.012	0.97	0.018	0.97	0.016
Self-esteem	1.01	0.013	1.02	0.022	1.00	0.018
Depression	1.02[*]	0.012	1.03	0.016	1.00	0.017
Gender (female = 1)	0.70[*]	0.059	--	--	--	--
Race (White = 1)	0.75[*]	0.061	0.79	0.105	0.72[*]	0.077
Age	0.90[*]	0.021	0.83[*]	0.037	0.95	0.031
Time 1 violent offending	1.66	0.071	2.14[*]	0.158	1.49[*]	0.070

[*]
p ≤ .05.

Table 4

Results for interaction analyses predicting violent offending

Interaction	Total sample		Females		Males	
	OR	SE	OR	SE	OR	SE
Exposure to violence × religiosity	1.03	0.020	1.03	0.030	1.02	0.023
Exposure to violence × social support	0.98	0.030	1.00	0.040	0.97	0.034
Exposure to violence × self-esteem	1.01	0.030	1.05	0.040	0.99 *	0.011
Exposure to violence × depression	0.98 *	0.020	1.01	0.030	0.94 *	0.027
School problems × religiosity	1.01 *	0.000	1.01	0.000	1.01	0.005
School problems × social support	1.01	0.000	1.00	0.010	1.01 *	0.004
School problems × self-esteem	1.00	0.000	1.01	0.000	1.01 *	0.004
School problems × depression	1.00	0.000	0.99	0.000	0.99 *	0.004

*
$p \leq .05$.

Table 5

Survey corrected logistic regression predicting property offending

Variable	Total sample		Females		Males	
	OR	SE	OR	SE	OR	SE
Exposure to violence	1.27*	0.129	1.08	0.191	1.41*	0.171
School problems	1.04*	0.019	1.04	0.027	1.05*	0.024
Religiosity	0.99	0.010	1.00	0.015	0.99	0.014
Social support	0.99	0.013	0.98	0.017	0.99	0.018
Self-esteem	0.99	0.014	0.98	0.022	1.00	0.020
Depression	1.02	0.011	1.02	0.017	1.01	0.017
Gender (female = 1)	0.90	0.071	--	--	--	--
Race (White = 1)	1.14	0.117	1.09	0.172	1.20*	0.152
Age	0.86*	0.024	0.83*	0.032	0.88*	0.030
Time 1 property offending	1.51*	0.042	1.67*	0.078	1.43	0.046

*
p ≤ .05.

Table 6

Results for interaction analyses predicting property offending

Interaction	Total sample		Females		Males	
	OR	SE	OR	SE	OR	SE
Exposure to violence × religiosity	1.01	0.023	1.03	0.033	0.99	0.027
Exposure to violence × social support	1.04	0.026	1.00	0.036	1.06*	0.031
Exposure to violence × self-esteem	1.04	0.029	1.05	0.040	1.06*	0.032
Exposure to violence × depression	0.96*	0.021	1.01	0.031	0.95	0.030
School problems × religiosity	1.01*	0.004	1.08	0.047	1.01	0.005
School problems × social support	1.01*	0.003	1.00	0.042	1.01*	0.004
School problems × self-esteem	1.01*	0.003	0.98	0.046	1.01*	0.004
School problems × depression	0.99	0.004	0.98	0.035	0.99*	0.004

*
p ≤ .05.