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## Delinquent Friends and Reactions to Strain: An Examination of Direct and Indirect Pathways

Ryan E. Spohn

*University of Nebraska-Omaha*

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**Abstract:** *Strain theorists acknowledge that only some strained individuals become involved in delinquency. Thus, a necessary research objective is to determine the conditions under which strain results in deviant adaptations. The goal of this research is to examine the conditioning effects of exposure to delinquent friends/peer pressure on the relationship between strain and delinquency. Whereas Agnew (1992, 2001, 2006) argues that a criminogenic environment will increase the effect of strain on delinquency, Warr's (1993) research indicates that other correlates of delinquency lose their influence when adolescents are enmeshed in a network of delinquent peers. In testing these competing hypotheses, the current research finds a preponderance of evidence supporting the latter position. Peer pressure and having friends that commit delinquency tend to reduce the direct effect of strain on serious delinquency, as well as reducing the indirect effects of strain on negative emotions and negative emotions on serious delinquency.*

**Keywords:** abuse, anomie theory, delinquent friends, and general strain theory.

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### INTRODUCTION

Exposure to delinquent friends and peers is consistently found to be a strong correlate of adolescent delinquency (see Warr 2002 for a review). Moreover, the impact of delinquent peers and friends, concepts generally associated with differential association, social learning, and subculture theories of delinquency, has for decades served as an issue of contention within the field of criminology in debates on the theoretical supremacy on control theories.<sup>1</sup> However, simply examining the additive effect of central variables from various theories of delinquency, such as peer delinquency, represents an overly simplistic attempt to model a reality that is rarely additive in form. Rather, the social context and causes of juvenile delinquency are almost certain to involve the interaction of variables from

multiple sociological theories of delinquency. Consequently, it is likely that delinquent friends and peers, in addition to their strong main effect on delinquency, also exert a *conditioning* effect within the context of criminological theories which do not include these measures as primary theoretical variables (for example, see Agnew 1991).

The current research represents an effort to increase our theoretical knowledge of the conditioning role of delinquent friends within the framework of Agnew's General Strain Theory (GST). In his theoretical development and empirical tests of GST, Agnew (2001, 2006) suggests that the social environment of adolescents in general will influence whether they react to strain in a delinquent fashion. Regarding delinquent peers and friends specifically, he predicts that associations with criminal others will increase the likelihood of coping with strain in

a criminal fashion, primarily because delinquent peers/friends are empirically associated with beliefs favorable to crime “that define crime as a desirable, justifiable, or excusable response to strains” (Agnew 2006:101).

A number of studies empirically examine the conditioning effect of delinquent peers on the relationship between strain and delinquency, but results are mixed and theoretical conclusions remain elusive. Moreover, although Agnew (1992) argues that strain has a substantial indirect effect on delinquency via its impact on negative emotions, empirical and theoretical attention is sorely lacking regarding the conditioning effect of delinquent peers on these indirect pathways. Consequently, a primary goal of the current research project is to more thoroughly and explicitly develop our theoretical understanding of the conditioning effect of peer deviance on the direct and indirect effects of strain on serious delinquency. Towards this goal, theoretically derived hypotheses are empirically tested on a nationally representative sample of adolescents.

## GENERAL STRAIN THEORY

Within the anomie/strain perspective made popular by Merton (1938), strain is viewed as the blockage of goal-seeking behavior. In contrast, Agnew (1985) argues that the blockage of *pain avoidance* is a source of strain that is particularly salient for adolescents, because youth often find themselves in aversive situations from which they have no legal means of escape. Adolescents are obliged to live with their family, go to a certain school, and live in a certain neighborhood where they must interact with certain people. Moreover, adolescents’ lack of freedom over the people and environments in which they live has been found to affect their vulnerability to victimization in the forms of both abuse and street crime (Finkelhor and Hashima 2001). Aversive conditions found in any of these contexts are generally unavoidable, and Agnew (1985) suggests that the inability to avoid these aversive situations produces frustration within adolescents that heightens their propensity to commit delinquent behavior. Delinquency may result from an aversive environment through attempts by the adolescent to avoid the situation (e.g. running away from home or school), or frustration and anger may cause the adolescent to strike out at the source of the strain or an unrelated target (e.g. assault, vandalism).

According to the tenets of General Strain Theory, motivation for delinquency stems from anger and other negative emotions that result from negative relations with others (Agnew 1992). Agnew defines negative relationships with others quite broadly as “relationships in which others are not treating the individual as he or she would like to be treated” (Agnew 1992:50). These negative relationships are hypothesized to result in three different types of strain: (1) the failure to achieve positively valued goals, (2) the removal of positively valued stimuli, and (3)

the presentation of negative stimuli. Each of these forms of strain is hypothesized to increase the likelihood that adolescents will experience negative emotions such as depression, fear, and anger. Agnew (1992) places an emphasis on anger and negative emotionality as factors that intervene between strain and delinquency because anger can increase an individual’s level of felt injury, create a desire for revenge, and/or motivate an individual for action. Consequently, strain that produces anger and other negative emotions is most likely to increase adolescents’ predisposition for delinquency.

## Empirical Support for General Strain Theory

Numerous researchers have found that measures of social-psychological strain influence juvenile delinquency (e.g., Agnew 1989; Agnew and White 1992; Agnew et al. 1996; Hoffmann and Miller 1998; Hoffmann and Su 1997; Mazzerolle 1998; Paternoster and Mazerolle 1994), while additional studies examine the mediating effect of negative emotions on the relationship between strain and delinquency (for example, Agnew 1985; Aseltine et al. 2000; Brezina 1996; Brezina 1998; Broidy 2001; Mazerolle and Piquero 1997; Mazerolle and Piquero 1998). Research has also attempted to model the complexity of delinquency causation through a focus on factors that might condition the impact of strain on delinquency (for instance, Agnew et al. 2002; Agnew and White 1992; Aseltine et al. 2000; Baron 2004; 2007; Eitle and Turner 2002; 2003; Harrell 2007; Hoffmann and Miller 1998; Mazzerolle et al. 2000; Mazerolle and Maahs 2000; Mazerolle and Piquero 1997; Morash and Moon 2007; Paternoster and Mazerolle 1994).

## Strain and Delinquent Friends

The presence or absence of delinquent friends is one of the best predictors of delinquent behavior, and this empirical relationship plays a central role in a number of common theories of delinquency such as social learning theory, differential association theory, and subculture theories (Warr 2002). Although the number of delinquent friends reported by adolescents generally has a substantial, positive main effect on one’s own delinquency, the conditioning effect of delinquent peers or friends on the relationship between strain and delinquency is less clearly documented. Agnew (1992) views exposure to delinquent role models as an important factor influencing an adolescent’s disposition to delinquency, and predicts that adolescents facing exposure to delinquent peers and peer pressure will be more likely to respond to strain with delinquency than youth that are insulated from these peer influences. Adolescents with delinquent friends are more likely to adopt delinquent forms of coping with strain because these associates can serve as delinquent role models that instill delinquent values (Agnew 1999; Agnew

and White 1992; Aseltine et al. 2000) or provide additional opportunities for delinquency (Agnew and White 1992; Warr 2002). I refer to this as the *vulnerability hypothesis*.

Whereas Agnew asserts that exposure to delinquent peers makes adolescents more vulnerable to the criminogenic influence of strain, a competing hypothesis suggests that exposure to strain would have little impact on the delinquent behavior of adolescents with many delinquent friends. In part, this alternative hypothesis is a testament to the strength of the delinquent peers/delinquency relationship. For example, research by Warr (1993) indicates that attachment to parents does not reduce the impact of delinquent peers among those adolescents who have already been exposed to delinquent peers. In his analysis of the direct effects and interaction effect of parents and peers on delinquency, Warr concludes that, "Although attachment to parents may inhibit the development of delinquent friendships, it apparently does little to reduce delinquency among those who already have delinquent friends" (1993:257).

I argue that a similar process might be applicable when considering exposure to strain in the context of delinquent peers/friends, such that *strain will have little impact on youth who are exposed to friends with high levels of delinquent involvement and are exposed to peer pressure to commit delinquency, yet will retain a significant, positive impact on youth with few or no delinquent peer influences*. I will refer to this as the *irrelevance hypothesis*, in that a high level of exposure to friends that are delinquent, combined with an exposure to a high level of peer pressure to commit delinquency, might render the presence or absence of strain irrelevant as a cause of delinquency. In addition to these hypotheses that delinquent friends cause youth to become more or less vulnerable to strain, the null hypothesis is that exposure to delinquent friends has no conditioning effect on the relationship between strain, negative emotionality, and delinquency.

### **Moderation of the Indirect Effect of Strain on Delinquency**

In describing general strain theory, Agnew suggests that, in addition to any direct impact that strain has on delinquency, strain should have an indirect effect on delinquency via negative emotions such as anger. Although it is clear that youths' social contexts might condition the direct effect of strain on involvement in juvenile delinquency, an obvious omission in this literature is an analysis of the impact of conditioning factors on the pathways that reflect the *indirect* effect of strain on delinquency specified by Agnew's general strain theory. In other words, aspects of one's social environment might alter the relationship between strain and feelings of anger/negative emotions, and social context might also alter the relationship between anger/negative emotions and

a youth's involvement in juvenile delinquency. The current study will examine the conditioning effect of one particularly salient factor for juvenile delinquency causation, exposure to delinquent friends and peer pressure, on both the direct and indirect relationships between strain and delinquency.

The vulnerability and irrelevance hypotheses are applicable to these indirect effects as well. For instance, the impact of strain on negative emotions might be more or less substantial in the presence of delinquent peers/peer pressure. Similarly, the impact of negative emotions on delinquency might be more or less substantial in the presence of delinquent peers and peer pressure.

### **Previous Research on GST and the Conditioning Effect of Delinquent Peers**

A number of previous studies have addressed the conditioning effect of delinquent peers within general strain theory. The *vulnerability hypothesis* found some support in these studies. In an early test of GST examining a sample of New Jersey adolescents, for instance, Agnew and White (1992) detect a positive interaction between strain and delinquent friends. In their cross-sectional models, strain has a more substantial impact on adolescents who score higher on a measure of delinquent friends, supporting the idea that a criminogenic environment causes adolescents to be more susceptible to strain. In research on a sample collected from a suburban high school in the Midwest, Mazerolle et al. (2000) found a positive interaction between strain and a measure of the criminal involvement of the adolescents' friends and family members. A study by Mazerolle and Maahs (2000) has the advantage of utilizing a nationally representative sample, the National Youth Survey. These researchers also find that adolescents exposed to higher levels of delinquent peers are more susceptible to the criminogenic influence of strain. A potential shortcoming of this study is its reliance on contingency table analysis that does not allow for the use of statistical controls. Although these findings appear to confirm the vulnerability hypothesis, it is unclear whether these results would persist in a multivariate context. An additional study (Baron and Hartnagel 2002) examines interactions between labor market strain and a variety of types of crime among street youth. It was found that delinquent peers increase the impact of labor market strain on property crime, but not on violent crime or drug use. In another study of street youth, Baron (2004) found that deviant peers made youth more vulnerable to strain in the form of relative deprivation. However, a follow-up study indicated that this finding held for males only (Baron 2007). Examining a sample of South Korean youth, Morash and Moon (2007) found that vulnerability to a variety of forms of strain was increased by associations with delinquent peers for females. In comparison, associations with delinquent peers caused

males to be more vulnerable only to strain in the form of abuse by teachers. In summary, these findings indicate that delinquent peer/friend associations can increase the vulnerability of certain samples of youth to certain types of strain. The contingent nature of these findings suggests that additional research is obviously needed to determine the robustness of these results.

Despite studies supporting the vulnerability hypothesis, other research lends support only to the *null hypothesis* that levels of delinquent peers/friends do not condition the relationship between strain and delinquency. For example, in Agnew and White's (1992) study described above, their longitudinal models failed to find a significant interaction between strain and delinquent friends. Paternoster and Mazerolle (1994) report similar null findings in an analysis of GST using the National Youth Survey and Mazerolle and Piquero (1997) also report null findings in an additional study examining a sample of college students. Finally, Agnew et al. (2002) did not find significant interactions between strain and troublesome friends in a national sample of adolescents.

In contrast to studies consistent with vulnerability hypothesis or null hypothesis, other research supports the *irrelevance hypothesis*, suggesting that the impact of strain on delinquency tends to become irrelevant at higher values of exposure to delinquent peers/friends. For example, a study by Hoffmann and Miller (1998) examining strain theory through a latent variable analysis indicates that adolescents with high levels of delinquent peers are less vulnerable to strain than adolescents with low levels of peer delinquency. Moreover, Hoffmann and Miller report that under certain conditions, strain can actually reduce delinquency. Specifically, negative life events measured at time two of their study have a negative effect on delinquency measured in the following year among adolescents with high peer delinquency, and this coefficient is significantly less than the corresponding coefficient for youth with low levels of peer delinquency. Similarly, Aseltine et al. (2000) found that stressful life events did not predict delinquency in the context of high peer delinquency, but were strongly related to delinquency in the context of more conventional peers. These studies rely on non-representative samples, however, so the findings may not be generalizable to the general population of adolescents. Finally, Harrell's (2007) analysis of data from the National Youth Survey also supports the irrelevance hypothesis, in that the impact of strain was actually reduced in the presence of delinquent peers. Harrell provides no theoretical explanation for this finding, but rather explains it away as a possible artifact of collinearity within the model.

In summary, the existing literature on the conditioning effect of delinquent peers within general strain theory

provides mixed results from studies that suffer methodological shortcomings such as non-representative samples or the absence of important control variables. The strengths of the current research project include the use of a nationally representative sample of adolescents, the inclusion of relevant control variables, and the use of negative binomial regression to properly model the dependent variables. The most unique contribution of the current research, however, is addressing the possibility that exposure to delinquent friends and peer pressure conditions the *indirect effect* of strain on delinquency.

## DATA, MEASURES AND METHODS

### Data

Data for this study come from the National Survey of Adolescents in the United States (Kilpatrick and Saunders 1995). These data provide a household probability sample of 4,023 adolescents aged 12-17 who were interviewed via telephone. Of this total, 3,161 were a national probability household sample of adolescents and the remaining 862 individuals were an oversample of adolescents from households in areas designated as central cities by the 1990 U.S. Census. The central city oversample was designed to increase the number of racial/ethnic minority subjects. To correct for any demographic discrepancies between the final sample and U.S. population proportions, the data are weighted on the basis of age, race, and gender. This weighting coefficient is used to bring the sample in line with U.S. Bureau of Census 1995 estimates in terms of these three characteristics.

This study may have potentially excluded adolescents residing in institutional settings, adolescents without a parent or guardian, or adolescents whose parents did not speak English or Spanish. According to the 1990 census, 5% of households do not have telephones. In addition, methodologists estimate that 2% of parents of adolescents from households with telephones do not speak English or Spanish (Kilpatrick and Saunders 1995). As a result, it is estimated that the sampling frame covers approximately 93% of U.S. adolescents living in households. Of 5,367 eligible household, 4,023 adolescents agreed to participate and completed the interviews, for a participation rate of 75%.

The sample is approximately half male (51%) and half female (49%). The ages of the adolescents ranges from 12 to 17, with a mean age of 14.48. Regarding race, the largest proportions of the sample are white (72%), African American (15%), and Hispanic (8%). Descriptive statistics are found in Table 1.

**Table 1.** Descriptive Statistics

Variable	Mean or Percent*	Standard Deviation	Min	Max	N
Dependent Variable:					
Serious delinquency	0.63	5.13	0	100	3920
Strain Variables:					
Negative life events	2.20	1.77	0	10	3939
History of victimization	7%		0	1	3924
Recent victimization	11%		0	1	3924
History of abuse	8%		0	1	3942
Recent abuse	2%		0	1	3942
Intervening Variable:					
Negative emotionality	1.73	2.96	0	18	3850
Conditioning Variable:					
Delinquent friends	2.88	4.24	0	36	3927
Control Variables:					
Household income	5.42	1.96	1	9	3718
Parental education	5.99	1.47	1	9	3933
Violent community	1.22	0.85	0	3	3942
Witnessed violence	1.29	1.11	0	5	3915
White	72%		0	1	3942
Black	15%		0	1	3942
Hispanic	8%		0	1	3942
Other Race	5%		0	1	3942
Age	14.48	1.70	12	17	3934
Male	51%		0	1	3942
Female-headed household	21%		0	1	3939
Number of children	2.39	1.22	1	9	3916
Social support	91%		0	1	3939
Early deviance	8%		0	1	3942

\* Mean and standard deviation are presented for continuous variables. Percentages are presented for categorical/dummy variables.

## Strain

Due to data considerations, this research will primarily focus on strain in the form of negative stimuli. Such noxious stimuli might lead to delinquent behavior if the adolescent attempts to escape from the negative stimuli or seeks revenge against the negative stimuli or similar targets (Agnew 1992). In addition, exposure to negative stimuli and the resulting anger and negative emotions may lead to general acting out behaviors and delinquency such as vandalism.

The five measures of strain adopted in this study are a stressful life event, past harsh physical punishment, recent harsh physical punishment, past victimization in the form of assault, and recent assault victimization. The scale of *stressful life events* is composed of ten items reflecting events that might have occurred in the last year. Some examples of life events include a parent losing a job, the death of a close friend, or getting a failing grade on a report card. The alpha level for the stressful life events scale is 0.550, but reliability analysis is generally not an

appropriate strategy for life event scales because many such life events are assumed to be independent (Newcomb and Harlow 1986; Thoits 1983). Life event scales are generally presented as count scores, because researchers are interested in the cumulative impact of life events on the manifestations of stress (Agnew 1992). A complete list of the items composing this scale is found in the appendix.

Each measure of *harsh physical punishment* is a categorical variable reflecting physical actions taken against the adolescent by a parent or guardian as a form of punishment. This measure includes spankings that left marks, bruises, cuts, or welts, as well as spankings so severe that the youth had to see a doctor. The measure also includes punishments that involved burning, cutting, or tying up the child. Agnew (1992) suggests that recent stressful events should be more influential than distant events. To reflect the influence of recency, a dichotomous variable is created to reflect the experience of harsh physical punishment in the last year. Although Agnew

stresses the recency of strain, other research suggests that long-lasting abuse, such as a history of child abuse, is most likely to result in negative emotionality (Terr 1991). Consequently, a second variable reflects a history of harsh physical punishment that occurred more than one year ago.

The final measures of strain reflect being a *victim of assault* at the hands of strangers, family members, or friends. The variables indicate whether an adolescent was a victim of physical assault, including being beaten up with fists, threatened with a weapon such as a gun or knife, or attacked with a stick, club, bottle, gun, knife or other weapon. Similar to the previous measure, one variable reflects recent victimization, while a second dichotomous variable reflects victimization more than one year ago.<sup>2</sup>

### Negative Emotionality

Agnew (1992) theorizes that individually experienced strain increases the likelihood that adolescents will experience a range of negative emotions, and that anger is a central emotional reaction for testing GST. Negative emotions such as anger are of central importance for the production of delinquency, according to Agnew, because they increase an adolescent's level of felt injury, might create a desire for revenge against the source of the strain, and have the potential to lower an adolescent's inhibitions, increasing the propensity for deviance. The current study will examine the intervening effects of a twenty-item scale reflecting negative emotions consistent with symptoms of post-traumatic stress disorder (PTSD)<sup>3</sup>. A complete list of the items composing this scale is included in the appendix.

This measure has a number of strengths. First, this scale provides significantly more information than a single-item indicator of anger or a dichotomous variable reflecting a diagnosis of PTSD. Second, the scale includes an item reflecting heightened feelings of anger, the emotion that Agnew stresses as an important mediator of the direct effect of strain on delinquency. Third, a primary characteristic of PTSD is an individual's involuntary recollection of a stressor or stressors. In other words, the individual psychologically re-experiences the original trauma or victimization. PTSD also produces arousal symptoms such as irritability, anger, hyperalertness, fearfulness, and strong physiological reaction to trauma-related situations (Haapasalo and Pokela 1999). As such, PTSD is an excellent indicator of negative emotionality that serves as a link between past strain and current delinquent involvement among adolescents. In fact, psychologists have developed a "trauma", or "post-traumatic", model of violence in which traumatic experiences in childhood, such as physical abuse, may cause short- and long-term post-traumatic symptoms, which can promote subsequent deviant behavior (Haapasalo and Pokela 1999). Finally, empirical evidence shows that criminal victimization is linked to the experience of PTSD (Andrews et al. 2000; Berton and

Stabb 1996; Freedy et al. 1994; Kilpatrick et al. 1987; McCloskey and Walker 2000; Resnick et al. 1992), family violence is predictive of PTSD (McCloskey and Walker 2000; Riggs et al. 1992), negative life events are linked to PTSD (McCloskey and Walker 2000), and PTSD serves as a mediator between experiences of victimization and subsequent deviance (Epstein et al. 1998).

### Delinquent Friends and Peer Pressure

The measure of delinquent friends takes into account not only the involvement of the adolescents' friends in delinquent behavior, but also the extent to which their friends encouraged them to become involved in activities in violation of the law (peer pressure). The benefits of this measure are twofold. The first advantage of this measure is in relation to a critique developed by Gottfredson and Hirschi (1987). Specifically targeting the National Youth Survey, they argue that the correlation between friends' delinquency and subjects' own delinquency is a methodological artifact, because the delinquent peers questions ask how often adolescents' friends have committed various delinquent acts whereas the measure of delinquency is based on questions asking adolescents how often they themselves have committed the identical acts. Gottfredson and Hirschi (1987) suggest that the relationship between the two measures may be a result of a response effect as adolescents refer to their own activities in responding to each set of questions. In the current survey, the questions addressing friends' delinquency include a number of behaviors that are not included in the list of questions referring to the adolescent's own delinquency, and the questions addressing similar behaviors are worded differently. Due to the differences in the behaviors they address and the language used, the possibility of a response effect is substantially reduced in the current sample.

A second advantage of the measure of delinquent friends is its explicit inclusion of "peer pressure" in capturing the influence of friends on the behavior of adolescents. To operationalize the construct, the adolescent reported the number of delinquent activities in which his or her friends have participated, and this value is multiplied by the proportion of friends suggesting that they should do something against the law, ranging from "none or very few of them" (coded as "1") to "all of them" (coded as "4"). The result is a scale, ranging from 0 to 36, representing friends' involvement in delinquency *and* the peer pressure that adolescents face as their friends encourage them to participate in delinquent acts. Items included in this scale are listed in the appendix.

### Delinquency

Delinquency is represented by a modified version of the index offenses scale from the National Youth Survey

(Elliot and Huizinga 1983). The scale captures six serious offenses: 1) stealing or attempting to steal something worth more than \$100, 2) stealing or attempting to steal a motor vehicle, 3) breaking and entering, 4) gang fighting, 5) strong-arm tactics, and 6) serious assault. The scale is a summation of six items reflecting counts or frequencies in which the adolescents have committed each offense within the last 12 months.<sup>4</sup>

## Controls

A series of control variables is included in the multivariate regression models to ensure that the effects of the theoretical variables are not spurious. Due to their consistent association with delinquency, the *age* and *sex* of the adolescents are included in the multivariate models. Controls are also included to represent *female-headed households* and the *number of children in the household* aged eighteen and under. These two variables have represented proxy measures of “direct” parental control within the social control literature (Wells and Rankin 1988). The female-headed household variable is scored as a “1” if the household consists of a mother alone, the mother with a relative (not a stepfather), or a single female guardian. In contrast, the variable is scored as “0” if the household consists of a mother with stepfather, father alone, father with relative, father with stepmother, single male guardian, or foster parents.

A measure of *social support* is also included in the models. This variable represents whether the adolescent had someone to count on or depend on throughout childhood, parent or otherwise. Scales for head of household’s *education* and household *income* were included as controls for socio-economic status. Descriptions of the scales are found in the appendix.

Two questions were used to determine the youths’ racial category. First, adolescents were asked if they were of Spanish/Hispanic origin. Next, adolescents were asked if they fell in the category of White/Caucasian, African-American (Black), Asian (Oriental), American Indian or Alaskan Native, or Pacific Islander. Respondents of Spanish/Hispanic origin, regardless of racial category, were classified as Hispanic. All non-Hispanics were classified as White, Black or Other Race.

Measures of self-reported level of *violence in one’s community*, as well as the number of *violent events witnessed*,<sup>5</sup> are included in the models as controls for environmental or neighborhood context. For the former measure, youth were asked “how much of a problem is violence in your community” with four response categories ranging from “not a problem at all” to “a very big problem.”<sup>6</sup> Regarding the latter, youth were asked how often they had seen violent attacks in their school, neighborhood, home, or elsewhere. This measure could vary from zero to five, as youth were asked if they had seen someone 1) shot, 2) stabbed or cut with a knife, 3)

mugged or robbed, 4) threatened with a knife, gun or other weapon, and/or 5) beaten up, hit, punched, or kicked such that they were hurt pretty badly. The alpha level for this scale was 0.607.

The final control variable is a measure of *early deviance* indicating whether the adolescent began smoking or drinking regularly more than one year prior to their interview. Because the mean age of the sample is 14.5 years, this measure is capturing deviant substance use occurring early in the lives of the youth. Consequently, this is a proxy measure controlling for an early propensity for deviant behavior.

## Analytical Strategy

The dependent variable in this analysis is a count variable reflecting the number of self-reported serious delinquent acts each adolescent committed over the last twelve months. Because the conditional variance of this count variable exceeds the conditional mean<sup>7</sup> (a condition known as overdispersion), negative binomial regression is the most appropriate technique for conducting multivariate analysis (Osgood 2000).

## RESULTS

The conditioning effect of delinquent friends/peer pressure is tested through the inclusion of multiplicative terms between each measure of strain and the measure of delinquent friends in a series of negative binomial regression models. Prior to computing the multiplicative terms, each continuous variable (delinquent friends/peer pressure, negative emotionality, and negative life events) was centered at its mean. Centering allows one to interpret main effects in models that contain multiplicative terms as the effect of one variable on the dependent variable for respondents who have average values on the other main effect (Aiken and West 1991). Centering also alleviates multicollinearity among the main effects and interaction terms. Variance inflation factors (VIF) were calculated for all of the independent variables, including the interaction terms, one at a time, in the same fashion that the interactions are entered in the subsequent models. The largest VIF scores are associated with *delinquent friends* (1.812) and the interaction term of *recent victimization x delinquent friends* (1.807) and these scores are well below those that would indicate a concern with multicollinearity. VIF scores below 1.800 were found for all other independent variables in the models.

The variables representing delinquent friends/peer pressure and number of children under age 18 in the household were logged-transformed to reduce skewness. Values presented in the table of descriptive statistics represent the non-transformed variables in their original metric.

**Direct Effects**

To test for conditioning influences on the direct effects, a separate model is run for each of the five measures of strain, including a product term between the delinquent friends/peer pressure and the relevant measure of strain, controlling for all other forms of strain and control variables included in the main effects model. The final weighted sample size for each model, including each individual with full information on all variables in the analysis, is 3493. Models testing for conditioning effects of delinquent friends/peer pressure on the direct effect of strain on delinquency are displayed in Table 2. In each of the first three models, the main effects of strain and

delinquent friends/peer pressure are positive and, with the exception of the measures of physically abusive punishment, significant. In contrast, the interaction terms are significant and negative: a history of abusive punishment and delinquent friends/peer pressure ( $\beta = -0.59$ ), recent abusive punishment and delinquent friends ( $\beta = -1.13$ ), and a history of victimization and delinquent friends ( $\beta = -0.53$ ). In the other two models, the interaction terms are also negative, but are not significant. Thus, the general trend is that the effect of strain on delinquency decreases as levels of delinquent friends/peer pressure increases.

**Table 2.** Negative Binomial Regression Coefficients Representing the Conditioning Effect of Delinquent Friends on the Direct Effect of Strain on Serious Delinquency, With Relevant Controls (N = 3493)

	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)
History of abuse	0.82 (.44)	0.29 (.31)	0.30 (.30)	0.30 (.30)	0.30 (.30)
Recent abuse	0.34 (.51)	1.15 (.53)*	0.27 (.48)	0.34 (.49)	0.34 (.47)
His. of victimization	0.71 (.23)*	0.64 (.24)*	1.10 (.31)*	0.70 (.24)*	0.69 (.24)*
Recent victimization	1.20 (.21)*	1.17 (.22)*	1.15 (.22)*	1.37 (.31)*	1.19 (.21)*
Negative life events	0.18 (.04)*	0.17 (.04)*	0.17 (.04)*	0.18 (.04)*	0.23 (.06)*
Household income	0.06 (.06)	0.05 (.06)	0.05 (.06)	0.06 (.06)	0.06 (.06)
Parental education	-0.09 (.06)	-0.10 (.06)	-0.10 (.06)	-0.09 (.06)	-0.09 (.06)
Violent community	0.13 (.11)	0.13 (.11)	0.12 (.11)	0.14 (.11)	0.14 (.11)
Witnessed violence	0.27 (.08)*	0.30 (.07)*	0.27 (.08)*	0.27 (.08)*	0.27 (.08)*
Delinquent friends	1.71 (.13)*	1.67 (.12)*	1.71 (.13)*	1.68 (.14)*	1.69 (.14)*
Black	0.66 (.27)	0.64 (.29)	0.67 (.29)	0.69 (.29)*	0.67 (.29)*
Hispanic	0.66 (.23)*	0.64 (.23)*	0.66 (.22)*	0.64 (.23)*	0.66 (.23)*
Other race	0.66 (.38)	0.66 (.37)	0.68 (.38)	0.69 (.37)	0.70 (.38)
Age	-0.10 (.05)	-0.09 (.05)	-0.09 (.05)	-0.09 (.05)	-0.09 (.05)
Male	1.04 (.17)*	1.02 (.17)*	1.00 (.16)*	1.03 (.17)*	1.04 (.17)*
Female-headed hshold	0.14 (.17)	0.10 (.17)	0.15 (.17)	0.12 (.17)	0.14 (.17)
Social support	-0.46 (.23)	-0.50 (.23)*	-0.45 (.24)	-0.44 (.24)	-0.44 (.24)
Children in household	0.11 (.16)	0.12 (.16)	0.13 (.16)	0.14 (.17)	0.15 (.17)
Early deviance	0.69 (.19)*	0.67 (.19)*	0.72 (.19)*	0.69 (.19)*	0.69 (.19)*
His. Abu. X Friends	-0.59 (.28)*				
Rec. Abu. X Friends		-1.13 (.38)*			
His. Vic. X Friends			-0.53 (.25)*		
Rec. Vic. X Friends				-0.21 (.24)	
Neg. events X Friends					-0.06 (0.05)
Constant	-3.18 (.86)*	-3.17 (.89)*	-3.15 (.88)*	-3.37 (.91)*	-2.92 (.89)
Log-likelihood	-1433.30	-1432.26	-1433.56	-1435.44	-1435.17

\*  $p < .05$  (two-tailed test)

To facilitate the interpretation of these interactions, the effects of strain are calculated at the minimum, the maximum, the mean, one standard deviation below the mean, and one standard deviation above the mean of the delinquent friends/peer pressure variable.<sup>8</sup> These data are presented in Table 3. Examining the effect of strain across

the range of the delinquent peers/peer pressure variable indicates substantial variation in how exposure to strain influences adolescent delinquency. For example, a history of harsh physical punishment actually has a negative effect (-0.742) on the serious delinquency of adolescents who are exposed to the highest levels of delinquent friends/peer



pressure. The measures of recent abusive punishment and a history of victimization also indicate that strain reduces delinquency when the influence of delinquent friends is at its maximum. For each measure, the effect of strain becomes positive and increases in magnitude as the influence of delinquent friends/peer pressure decreases. For adolescents with an average amount of peer influence or less, the effect of strain is generally quite substantial. The findings in Tables 2 and 3, therefore, are inconsistent with Agnew’s argument that exposure to delinquent

friends/peer pressure will cause adolescents to be more vulnerable to strain. Instead, they indicate that exposure to criminogenic influences in one’s environment, such as delinquent peers, results in adolescents who are *less vulnerable* to the effects of strain, providing support for the irrelevance hypothesis. In other words, youth with delinquent peers and exposure to peer pressure are less likely to choose deviant adaptations as a result of exposure to strain.

**Table 3.** Interpretation of Significant Interaction Effect Terms: Effects of Strain on Serious Delinquency at Selected Levels of Delinquent Friends\*

Effect of a history of abusive punishment at various levels of delinquent friends:	
Delinquent friends maximum	-0.742
Delinquent friends mean + 1 <i>SD</i>	0.309
Delinquent friends mean	0.816
Delinquent friends mean – 1 <i>SD</i>	1.323
Delinquent friends minimum	1.388
Effect of recent abusive punishment at various levels of delinquent friends:	
Delinquent friends maximum	-1.833
Delinquent friends mean + 1 <i>SD</i>	0.177
Delinquent friends mean	1.148
Delinquent friends mean – 1 <i>SD</i>	2.119
Delinquent friends minimum	2.243
Effect of a history of victimization at various levels of delinquent friends:	
Delinquent friends maximum	-0.285
Delinquent friends mean + 1 <i>SD</i>	0.652
Delinquent friends mean	1.104
Delinquent friends mean – 1 <i>SD</i>	1.556
Delinquent friends minimum	1.614

\* These effects are computed by adding the coefficient for the main effect of the strain measure to the product of the coefficient for the multiplicative term and various levels of delinquent friends.

In addition to the theoretical variables, two demographic variables maintain consistent, direct effects on serious delinquency: male and Hispanic. Not surprisingly, being involved in deviance at an early age consistently predicts later serious delinquency. Also, witnessing violence displays a consistent direct effect on violent delinquency, however a report of living in a “violent community”, which would appear to be a similar measure, does not directly impact involvement in serious delinquency. This provides some evidence that vicarious strain might function similarly to experienced strain in their direct effects on delinquency. Finally, the proxy measures for direct controls (female-headed household and the number of children in the household) have no impact on serious delinquency in the multivariate models and the measure of social support is significant in only one of the five models.

### Indirect Effects

Determining if the measure of delinquent friends/peer pressure conditions the *indirect* effect of strain requires two steps. First, I examine whether peer influence conditions the effect of strain on negative emotionality through the inclusion of product terms predicting the experience of negative emotionality. Second, I create a product term by multiplying peer influence by negative emotions to determine if the measure of delinquent friends/peer pressure conditions the effect of negative emotionality on serious delinquency. The results of the first step are presented in Table 4. All of the product terms representing the interactions between the five measures of strain and delinquent friends/peer pressure have a significant effect on negative emotionality. Moreover, all

five of these interaction terms are negative, which is consistent with the results for the direct effects of strain on delinquency. In other words, as exposure to delinquent

friends/peer pressure increases, strain is less likely to increase the experience of negative emotionality among adolescents, again supporting the irrelevance hypothesis.

**Table 4.** Negative Binomial Regression Coefficients Representing the Conditioning Effect of Delinquent Friends on the Relationship between Strain and Negative Emotionality, With Relevant Controls

	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)
History of abuse	0.30 (.12)*	0.20 (.11)	0.21 (.11)	0.23 (.11)*	0.22 (.11)*
Recent abuse	0.49 (.15)*	0.76 (.15)*	0.47 (.15)*	0.51 (.15)*	0.51 (.14)*
His. of victimization	0.60 (.10)*	0.59 (.10)*	0.73 (.12)*	0.57 (.11)*	0.58 (.10)*
Recent victimization	0.42 (.09)*	0.41 (.09)*	0.40 (.09)*	0.67 (.11)*	0.49 (.09)*
Negative life events	0.20 (.02)*	0.20 (.02)*	0.20 (.02)*	0.21 (.02)*	0.25 (.02)*
Household income	0.00 (.02)	-0.00 (.02)	-0.00 (.02)	0.01 (.02)	0.01 (.02)
Parental education	0.08 (.03)*	0.08 (.03)*	0.08 (.03)*	0.07 (.03)*	0.08 (.03)*
Violent community	0.08 (.04)*	0.09 (.04)*	0.09 (.04)*	0.09 (.04)*	0.08 (.04)*
Witnessed violence	0.14 (.03)*	0.15 (.03)*	0.14 (.03)*	0.15 (.03)*	0.15 (.03)*
Delinquent friends	0.50 (.05)*	0.49 (.05)*	0.51 (.05)*	0.54 (.05)*	0.54 (.05)*
Black	-0.12 (.09)	-0.13 (.09)	-0.12 (.09)	-0.12 (.09)	-0.16 (.09)
Hispanic	-0.02 (.10)	-0.02 (.10)*	-0.02 (.10)	-0.03 (.10)	0.01 (.10)*
Other race	-0.03 (.13)	-0.03 (.13)	-0.02 (.13)	-0.05 (.14)	-0.04 (.13)
Age	0.07 (.02)*	0.07 (.02)*	0.07 (.02)	0.07 (.02)*	0.06 (.02)*
Male	-0.63 (.07)*	-0.63 (.07)*	-0.64 (.07)*	-0.63 (.07)*	-0.62 (.07)*
Female-headed household	-0.01 (.07)	-0.01 (.07)	-0.01 (.07)	-0.01 (.07)	0.00 (.07)
Social support	-0.19 (.11)	-0.19 (.11)	-0.19 (.11)	-0.20 (.11)	-0.20 (.11)
Children in household	-0.08 (.06)	-0.08 (.06)	-0.08 (.06)	-0.08 (.06)	-0.09 (.06)
Early deviance	0.06 (.09)	0.05 (.09)	0.08 (.09)	0.07 (.09)	0.08 (.09)
His. Abu. X Friends	-0.20 (.09)*				
Rec. Abu. X Friends		-0.50 (.14)*			
His. Vic. X Friends			-0.32 (.11)*		
Rec. Vic. X Friends				-0.46 (.09)*	
Neg. events X Friends					-0.15 (.02)*
Constant	-1.57 (.39)*	-1.59 (.39)*	-1.54 (.39)*	-1.66 (.39)*	-1.09 (.38)*
Log-likelihood	-5442.43	-5441.56	-5440.00	-5432.12	-5407.02

\*  $p < .05$  (two-tailed test)

Similar to the analysis of the direct effects, the effects of strain on negative emotionality are calculated at the minimum, the maximum, the mean, one standard deviation below the mean, and one standard deviation above the mean of the delinquent friends/peer pressure variable. These results are found in Table 5. Each measure of strain has a positive, significant main effect on negative emotionality. Each interaction term is negative, however, so the effect of strain decreases at higher levels of delinquent friends/peer pressure. As Table 5 shows, the strong, positive impact of strain on negative emotionality at low levels of delinquent friends/peer pressure actually becomes negative at the highest values of peer influence. Thus, consistent with the direct effects reported above, strain actually reduces negative outcomes for adolescents with the highest levels of exposure to delinquent friends/peer pressure. Again, this provides support for the irrelevance hypothesis, in that the presence of delinquent friends/peer pressure makes youth in the sample less

susceptible to negative emotionality, which is one component of the indirect effect of strain on delinquency according to GST.

In addition to the variables of theoretical interest, a number of control variables are related to negative emotionality in the models presented in Table 4. Males are less likely to report negative emotionality, but interestingly, age and parental education are positively related to negative emotionality. Also, whereas reports of living in a violent community were not directly related to serious delinquency, the models in Table 4 indicate that both this measure and reports of witnessing violence are positively related to negative emotionality. This provides further evidence that, within the framework of General Strain Theory, vicarious strains operate in a similar theoretical fashion to experienced strains. Neither the social control variables, nor the measure of social support, have a significant effect on negative emotionality.

**Table 5.** Interpretation of Interaction Effect Terms: Effects of Strain on Negative Emotionality at Selected Levels of Delinquent Friends

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Effect of a history of abusive punishment at various levels of delinquent friends:	
Delinquent friends maximum	-0.215
Delinquent friends mean + 1 <i>SD</i>	0.133
Delinquent friends mean	0.302
Delinquent friends mean – 1 <i>SD</i>	0.471
Delinquent friends minimum	0.492
Effect of recent abusive punishment at various levels of delinquent friends:	
Delinquent friends maximum	-0.568
Delinquent friends mean + 1 <i>SD</i>	0.325
Delinquent friends mean	0.757
Delinquent friends mean – 1 <i>SD</i>	1.189
Delinquent friends minimum	1.244
Effect of a history of victimization at various levels of delinquent friends:	
Delinquent friends maximum	-0.115
Delinquent friends mean + 1 <i>SD</i>	0.455
Delinquent friends mean	0.730
Delinquent friends mean – 1 <i>SD</i>	1.005
Delinquent friends minimum	1.040
Effect of recent victimization at various levels of delinquent friends:	
Delinquent friends maximum	-0.552
Delinquent friends mean + 1 <i>SD</i>	0.271
Delinquent friends mean	0.668
Delinquent friends mean – 1 <i>SD</i>	1.065
Delinquent friends minimum	1.116
Effect of negative life events at various levels of delinquent friends:	
Delinquent friends maximum	-0.141
Delinquent friends mean + 1 <i>SD</i>	0.121
Delinquent friends mean	0.247
Delinquent friends mean – 1 <i>SD</i>	0.373
Delinquent friends minimum	0.390

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The final step of determining the conditioning effect of delinquent friends/peer pressure on the indirect effect of strain on serious delinquency is to examine whether the effect of negative emotionality on delinquency varies across levels of exposure to peer influence. The negative binomial regression model testing this research question is presented in Table 6. In this model, we see that both negative emotionality and delinquent friends/peer pressure have positive main effects on delinquency ( $\beta = 0.110$  and  $\beta = 1.655$ , respectively), while the interaction term is again negative ( $\beta = -0.051$ ). Thus, the effect of negative emotionality on delinquency decreases as exposure to delinquent friends/peer pressure increases. Table 7

presents the effects of negative emotionality on delinquency calculated at five levels of exposure to delinquent friends/peer pressure. Again providing support for the irrelevance hypothesis, this second component of the indirect effect of strain on delinquency, the impact of negative emotionality on delinquency, appears similar to the other interaction effects examined thus far. At the highest level of exposure to delinquent friends/peer pressure, the effect of negative emotionality is slightly negative. As the influence of delinquent friends/peer pressure decreases, however, the effect of negative emotionality on serious delinquency becomes positive.

**Table 6.** Negative Binomial Regression Coefficients Representing the Conditioning Effect of Delinquent Friends on the Relationship between Negative Emotionality and Serious Delinquency, With Relevant Controls

	Coefficient	S.E.
History of abuse	0.311	0.313
Recent abuse	0.254	0.489
His. of victimization	0.564*	0.225
Recent victimization	1.078*	0.216
Negative life events	0.150*	0.042
Negative emotionality	0.110*	0.031
Household income	0.048	0.058
Parental education	-0.094	0.055
Violent community	0.124	0.111
Witnessed violence	0.248*	0.079
Delinquent friends	1.655*	0.136
Black	0.670*	0.305
Hispanic	0.682*	0.222
Other race	0.765*	0.390
Age	-0.080	0.051
Male	1.155*	0.166
Female-headed household	0.183	0.171
Social support	-0.412	0.244
Children in household	0.147	0.174
Early deviance	0.654*	0.188
Negative Emot. X Del. friends	-0.051*	0.025
Constant	-3.390*	0.897
Log-likelihood		-1428.85, $p < 0.000$

\*  $p < .05$  (two-tailed test)**Table 7.** Interpretation of Interaction Effect Terms: Effects of Negative Emotionality on Serious Delinquency at Selected Levels of Delinquent Friends

Effect of negative emotionality at various levels of delinquent friends:

Delinquent friends maximum	-0.025
Delinquent friends mean + 1 <i>SD</i>	0.066
Delinquent friends mean	0.110
Delinquent friends mean – 1 <i>SD</i>	0.154
Delinquent friends minimum	0.159

Another interesting finding from the model in Table 6 is that the inclusion of negative emotionality and the interaction term between negative emotionality and delinquent friends/peer pressure mediates the impact of the physically abusive punishment, but not the impact of the victimization variables, on serious delinquency. The primary difference between these variables is that the former are related to the context of familial punishment, whereas the latter refer to more general types of victimization. Consequently, the relationship between physically abusive punishment and serious delinquency appears to be primarily a result of the impact of physically abusive punishment on heightened feelings of negative

emotionality. Additionally, none of the race variables has a consistent significant direct impact on serious delinquency in the models in Table 4, however, when negative emotionality is added to the model in Table 6, all three racial categories have positive, significant regression coefficients, suggesting a suppression effect was present. In this case, negative emotionality serves as an “unsuppressor” (Thompson and Levine 1997), suggesting that potentially interesting theoretical connections exist between strain, negative emotionality, race, and serious delinquency.

## DISCUSSION AND CONCLUSION

### Implications for Anomie/Strain Theory

A primary goal of this research is to address the ability of anomie/strain theories to predict how adolescents will react to strain. Specifically, I am addressing the question of why some strained adolescents choose deviant adaptations, while other strained youth avoid criminal involvement. I argue that differential exposure to criminogenic influences in the social environments of adolescents will alter the way that they react to negative stimuli. I focus on exposure to delinquent friends as a factor that might condition the direct and indirect effects of strain on serious delinquency.

Testing interaction effects through the inclusion of product terms in negative binomial regression models on a nationally representative sample of adolescents, I find a consistent, negative interaction between strain and exposure to delinquent friends. Interpreting these coefficients in relation to general strain theory, these findings indicate that strain has a strong, positive impact on involvement in serious delinquency for adolescents with few delinquent friends. As exposure to delinquent friends increases, the presence of strain such as harsh physical punishment or victimization becomes less salient. While previous research in this area has produced mixed results, these findings are consistent with those of Hoffmann and Miller (1998), Aseltine et al. (2000), and Harrell (2007) in support of the *irrelevance hypothesis*, stating that the impact of strain becomes irrelevant for adolescents exposed to delinquent friends involved in high levels of delinquency and exposed to high levels of peer pressure to commit delinquency. Moreover, the current findings extend our knowledge of this theoretical process by confirming that the irrelevance hypothesis is applicable to not only the direct relationship between strain and delinquency but also the indirect relationship via negative emotions.

These findings are not supportive of Agnew's (1992) prediction that adolescents facing exposure to delinquent peers and peer pressure will be more likely to respond to strain with delinquency than youth that are insulated from these peer influences. In what I refer to as the *vulnerability hypothesis*, Agnew suggests that adolescents with delinquent friends are more likely to adopt delinquent forms of coping with strain because these associates can serve as delinquent role models that instill delinquent values (Agnew 1999; Agnew and White 1992; Aseltine et al. 2000) or provide additional opportunities for delinquency (Agnew and White 1992; Warr 2002). The current research, as well as the research of Hoffmann and Miller (1998), Aseltine et al. (2000), and Harrell (2007), suggests that the vulnerability hypothesis is not invariant. Rather, future research on general strain theory should attempt to specify contextual conditions that facilitate

vulnerability to strain versus contextual conditions that tend to make exposure to strain irrelevant as a cause of delinquency. The research of Spohn and Kurtz (2011) regarding the influence of family structure on perceptions of "just" or "unjust" strain is one step in this direction.

In addition to the implications for the vulnerability versus irrelevance hypotheses, this research provides broader insights for the anomie/strain theories developed by Merton (1938), Cohen (1955), Cloward and Ohlin (1960), and Agnew (1985; 1992; 2001; 2006). In developing his anomie theory, Merton (1938) did not have access to the information that modern criminologists have garnered from self-report data. Consequently, Merton's insights were based on available evidence from official crime statistics that have historically produced a strong, negative relationship between social class and delinquency. Thus, Merton argued that anomie, viewed as the gap between cultural expectations and the social structural means of achieving these culturally prescribed expectations, was predominantly a curse of the lower social classes, and his theory does not contain predictions for the impact of strain for middle-class or upper-class youth. Neither did Merton acknowledge the strong relationship between the delinquency of adolescents and the delinquent involvement of their peers and friends, even though Shaw and McKay (1931) and other criminologists were making these claims as early as the 1920s.<sup>9</sup> Merton's neglect of the group nature of delinquency was an impetus for the work of subsequent strain theorists such as Cohen (1955) and Cloward and Ohlin (1960).

Cohen's theory advanced beyond Merton in two significant ways. First, it was an attempt to make strain/anomie theories more applicable to adolescents by focusing on strain that lower/working-class youth face in the educational setting. Thus, rather than focusing on unachieved or unachievable economic goals, Cohen (1955) argues that working-class youth will face strain as they fail to live up to the middle-class expectations they face in school. Second, Cohen acknowledges that peers play an integral role in the etiology and maintenance of delinquent activities. His theory is a bit simplistic, though, because he sees the influence of strain and peers as separate stages in the development of a criminal career. First, working-class adolescents are strained in the educational setting when they fail to meet middle-class achievement standards. This strain leads to a "reaction formation" in which youth reject middle-class values and, instead, adopt "their very antithesis" (Cohen 1955: 129). These strained youth join a delinquent subculture composed of youth who can achieve status through the rejection of middle-class goals and the commission of delinquent (often violent and non-instrumental) acts. In summary, strain pushes youth into the delinquent subculture, and the delinquent subculture perpetuates delinquency. Cohen neglects the possibility that strained youth might not have delinquent friends or that adolescents with delinquent friends might be

immersed in a “delinquent subculture” for reasons other than exposure to strain.

Although my findings cannot speak to the time ordering between strain and involvement with delinquent peers, they clarify the role of strain in the presence and absence of delinquent friends. Interpersonal strain is very salient for youth whose exposure to delinquent friends and peer pressure to commit delinquency is low, but strain is relatively unimportant for youth whose exposure to delinquent friends and peer pressure is high, the functional equivalent of Cohen’s “delinquent subculture.” In addition to this clarification, my results address one of Kornhauser’s (1978) major critiques of Cohen. Because Cohen admits that delinquency would not be available as an adaptation to strain if it were not “socially legitimized and given a kind of respectability” by the tenets of the delinquent subculture, Kornhauser concludes that strain theory cannot explain delinquency without relying on an additional theoretical model (i.e. cultural deviance theory) (1978:152). My results show that Kornhauser’s insights might indeed be applicable to youth with many delinquent friends. Strain does not seem to increase the delinquent involvement of youth in this subgroup. My finding that strain has a strong, positive impact on adolescents who are not influenced by delinquent friends, however, shows that both Cohen and Kornhauser underestimated the role of strain in producing delinquency.

## Conclusion

The current research project is an examination of how the presence or absence of delinquent friends and peer pressure conditions the relationship between strain and serious delinquency. This specific empirical relationship addresses the larger theoretical question of whether the adolescents’ social context influences their choice of deviant or conventional adaptations when confronted with negative stimuli such as harsh punishment or victimization. A goal of this research is to reach a better understanding of whether a criminogenic social environment causes adolescents to become more or less vulnerable to the effects of strain. The null hypothesis is that social influences, such as delinquent friends, have no impact on the way that youth react to stressful events.

The empirical models provide consistent support for the irrelevance hypothesis, stating that adolescents with friends who commit high levels of delinquency and friends who exert peer pressure to commit delinquency are less vulnerable to the effects of strain than youth with less exposure to delinquent friends and delinquency-related peer pressure. Put simply, in the presence of high levels of delinquent peers and peer pressure, strain is less likely to cause deviant adaptations to strain. In this situation, strain is less likely to produce negative emotionality which, in turn, is less likely to result in delinquency. Although these

findings contradict some of the existing empirical literature, at least three research projects have produced similar findings regarding direct effects of strain on delinquency (Aseltine et al. 200; Harrell 2007; Hoffmann and Miller 1998). Moreover, the findings are compatible with previous criminological research addressing the relative importance of parental attachments (an important variable from social control theory) and delinquent peers (a central concern of social learning/differential association theories). Regarding this topic, Warr (1993) found that parental attachment played an important role in preventing delinquency for youth with few delinquent friends. If the individual was enmeshed in a network of delinquent peers, however, attachment to parents played little role in reducing criminal activities. Because delinquent friends play a significant role in the etiology of delinquency, criminologists must take the role of peer influences into account in order to correctly specify the role of strain in producing deviant adaptations.

Limitations of the research should be noted. Due to data considerations, the empirical analysis is limited to the prediction of serious index offenses and the findings may not necessarily be generalized to less serious forms of delinquency. Also, my focus is on strain in the form of negative stimuli, but it does not include other forms of strain deemed important by Agnew or other strain theorists. Finally, the data, although nationally representative, do not allow for longitudinal analysis.

The research suggests several avenues for future research. A logical next step in this research agenda is to test these hypotheses using longitudinal data. Also, as suggested by an acute reviewer of this manuscript, analysis of data-sets that include social network data has the potential to further specify the conditional effect of peer influence on the theoretical linkages of strain theories. Another reviewer-suggested avenue for future research is an examination of the conditioning impact of peer-influence on the relationship between experiences of vicarious strain and involvement in delinquency. The current findings suggest that at least some measures of “vicarious strain” operate in a similar fashion to “experienced strain” in the multivariate models. Further specification of the impact of a variety of types of strain will only strengthen our understanding of the role of strain theories in delinquency causation. Just as important is the further specification of aspects of youths’ environmental context that produce vulnerability or resilience to strain exposure.

## Endnotes

<sup>1</sup> This lively debate arose between control theorists such as Travis Hirschi in his *Causes of Delinquency* (1969) and differential association and social learning theorists such as Edwin Sutherland and Ronald Akers. A review of

the central theoretical and empirical issues may be found in Matsueda (1982).

<sup>2</sup> A full description of all variables used in the multivariate analyses is available from the author upon request

<sup>3</sup> Symptom counts, rather than a diagnostic criteria (present/absence of disorder), are adopted for this study for both methodological and theoretical reasons. Methodologically, adopting a count of symptoms as a measure of negative emotionality, as opposed to a yes/no diagnosis of PTSD, prevents the loss of a considerable amount of information that is available in the data. Theoretically, general strain theory predicts that higher levels of negative emotionality should increase participation in delinquent acts, but does not specify that a diagnosable disorder is the “tipping point” that will push adolescents into deviant adaptations. For both of these reasons, symptom counts are adopted as the measure of negative emotionality for this study.

<sup>4</sup> A few individuals reported excessively high numbers of instances of being involved in gang fighting, in some cases almost once per day. Due to these few outliers, the dependent variable was truncated at 100 instances of serious delinquency per year. This truncation did not influence the substantive findings.

<sup>5</sup> Although Agnew does identify experiences such as witnessing violence or being exposed to a violent community as forms of “vicarious strain” in later incarnations of his General Strain Theory, I believe that there are theoretical reasons for maintaining a focus on “experienced strains” and treating vicarious strains as control variables in this analysis. In making his distinction, Agnew refers to vicarious strains as “strains experienced by others around individuals, especially close others like family members and friends” and experienced strains as disliked events or conditions that were personally experienced (2006:10). Agnew (2006) argues that personally experienced strain should bear the strongest relationship to crime and delinquency, so I suggest that the strongest theoretical argument can be made by focusing on experienced strains. Youths’ reactions to negative events experienced by others involves matters of affect, sympathy, and empathy that are unmeasured in the current data-set and are beyond the theoretical scope of the current research. Consequently, I suggest that the processes examined in this paper would not necessarily lend themselves to explaining reactions to vicarious strain.

<sup>6</sup> Parents of the adolescents were also asked this question on violence in the community. The response of the parent was substituted for the 28 adolescents whose response was “don’t know.”

<sup>7</sup> The Stata statistical package provides a straightforward test for overdispersion. A likelihood ratio test is produced to test the null hypothesis that the dispersion parameter, alpha, is equal to zero. If the null hypothesis is not rejected, equidispersion is assumed and basic Poisson models are appropriate. If the null hypothesis is rejected, overdispersion is present in the data and negative binomial models should be used (Statacorp, 2001). In a full model examining the effect of strain, negative emotionality, and control variables on serious delinquency, Stata produces a value for alpha = 3.869. The

corresponding  $\chi^2$  value of 2,826.10 is highly significant ( $p < 0.000$ ), indicating that the data are not Poisson, and that negative binomial models are more appropriate. Because “negative emotionality” is a dependent variable when indirect effects are examined, I ran a similar model with the count of negative emotions as the dependent variable.

For this model, alpha = 1.396, with a corresponding  $\chi^2$  value of 2938.40 ( $p < 0.000$ ). Again, the null hypothesis that alpha equals zero should be rejected and negative binomial models should be used.

<sup>8</sup> These effects are computed by adding the coefficient for the main effect of the strain measure to the product of the coefficient for the multiplicative term and various levels of delinquent friends. For example, Table 3 presents the value of the interaction term between a history of abusive punishment and the maximum value of delinquent friends as  $\beta = -0.742$ . The variable representing delinquent friends/peer pressure was logged to reduce skewness. The relevant descriptive statistics for the logged variable are: mean = 0.97, standard deviation = 0.86, minimum value = -0 and maximum value = 3.61. The variable was then centered to facilitate the interpretation of the interaction effect and to reduce multicollinearity. The relevant descriptive statistics for the logged, centered variable are: mean = 0, standard deviation = 0.86, minimum value = -0.97 and maximum value = 2.64. To calculate the value of the interaction term between a history of abusive punishment and the maximum value of delinquent friends, we add the mean effect of a history of abusive punishment to the product of the interaction coefficient (-0.59) and the maximum value of the logged, centered delinquent friends variable (2.64), resulting in:  $\beta = 0.816 + (-0.59)(2.64) = -0.742$ .

<sup>9</sup> For an excellent review of the history of research on delinquency as group behavior see Warr (2002).

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**APPENDIX: DESCRIPTION OF SCALE COMPONENTS**

**Life Events Stress Scale** (alpha = 0.550)

Which of these events happened to you during the last year? Coding: Yes = 1, No = 0

- Serious illness or injury of a family member
- Mother/father lost a job
- Death of a family member
- Death of a close friend
- Serious illness or injury of a close friend
- Losing a close friend
- Having to repeat a school grade
- Major personal illness or injury
- Being suspended from school
- Getting at least one failing grade on a report card

**Negative Emotionality**

Within the last 6 months, have you:

- Had trouble concentrating or keeping your mind on what you were doing, even when you tried to concentrate?
- Lost interest in activities which usually meant a lot to you?
- Felt you had to stay on guard much of the time?
- Deliberately tried very hard not to think about something that had happened to you?
- Had difficulty falling asleep or staying asleep?
- Stopped caring about activities in your life that used to be important to you?
- Unexpected noises startled you more than usual?
- Kept having unpleasant memories, or seeing them in your mind?
- Had repeated bad dreams or nightmares
- Went out of your way to avoid certain places or activities which might remind you of something that happened to you in the past
- Deliberately tried to avoid having any feelings about something that happened to you in the past?
- Felt cut off from other people or found it difficult to feel close to people?
- Could not feel things anymore or that you had much less emotion than you used to?
- Found yourself suddenly feeling very anxious, fearful, or panicky?
- Little things bothered you a lot or could make you very angry?
- Had disturbing memories that kept coming into your mind whether you wanted to think of them or not?
- Felt a lot worse when you were in a situation that reminded you of something that had happened in the past?
- Found yourself reacting physically to things that reminded you of something that had happened in the past?
- The way you think about or plan for the future was changed by something that happened to you in the past?
- Had a “flashback” – that is, have you had an experience in which you imagined that something that happened in the past was happening all over again?

**Delinquent Friends. Variable used in the analysis is the product of components A and B.**

**Component A:**

Have your friends ever: 0 = *no*; 1 = *yes*

- Purposely damaged or destroyed property that did not belong to them?
- Used marijuana or hashish?
- Stolen something worth less than \$5?
- Hit or threatened to hit someone without any reason?
- Broken into a vehicle or a building to steal something?
- Sold hard drugs such as heroin, cocaine, and LSD?
- Stolen something worth more than \$50?
- Gotten drunk once in awhile?
- Sold or given alcohol to kids under 18?

**Component B:**

Have your friends ever suggested you do something that was against the law?

- None of them or very few of them = 1
- Some of them = 2
- Most of them = 3
- All of them = 4

**Parent's Education**

What is the highest grade or year of school that (you/head of household) completed?

- No formal schooling = 1
- First through 7<sup>th</sup> grade = 2
- 8<sup>th</sup> grade = 3
- Some high school = 4
- High school graduate = 5
- Some college = 6
- Four year college grad. = 7
- Some graduate school = 8
- Graduate degree = 9

**Income** (from parent questionnaire)

Before taxes and other payroll deductions, would you say that the total 1994 income of all members of your household was:

- Less than \$5,000 = 1
- \$5,000 to \$10,000 = 2
- \$10,000 to \$20,000 = 3
- \$20,000 to \$30,000 = 4
- \$30,000 to \$40,000 = 5
- \$40,000 to \$50,000 = 6
- \$50,000 to \$75,000 = 7
- \$75,000 to \$100,000 = 8
- More than \$100,000 = 9

**About the authors:**

**Ryan E. Spohn** received his PhD in sociology from the University of Iowa and served as an assistant professor of sociology and criminology at Kansas State University, as well as a research assistant professor for the Center on Children, Families, and the Law at the University of Nebraska-Lincoln. He is currently director of the Consortium for Crime and Justice Research at the University of Nebraska-Omaha. His research interests include the areas of crime, juvenile delinquency, child maltreatment, social control, and quantitative research methods. Recent publications have appeared in *Victims and Offenders*, *The Southwest Journal of Criminal Justice*, and *Criminal Justice Review*.

**Contact Information:** Ryan Spohn, Consortium for Crime and Justice Research, School of Criminology and Criminal Justice, University of Nebraska, Omaha, NE 68182-0310; Phone: (402) 554-4452; Fax: (402) 554-2326; Email: [rspohn@unomaha.edu](mailto:rspohn@unomaha.edu)