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# The impact of cognitive coping on the strain-delinquency relationship: a test of general strain theory

Michaela Siobhan McGivern  
*University of Iowa*

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THE IMPACT OF COGNITIVE COPING ON THE STRAIN-DELINQUENCY  
RELATIONSHIP: A TEST OF GENERAL STRAIN THEORY

by

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A thesis submitted in partial fulfillment of the requirements for the Master of Arts degree in  
Sociology in the Graduate College of The University of Iowa

May 2010

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CERTIFICATE OF APPROVAL

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MASTER'S THESIS

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This is to certify that the Master's thesis of

Michaela Siobhan McGivern

has been approved by the Examining Committee for the thesis requirement for the Master of Arts degree in Sociology at the May 2010 graduation.

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## INTRODUCTION

“In 2006, among students ages 12 to 18, there were about 1.7 million victims of nonfatal crimes at school, including 909,500 thefts and 767,000 violent crimes” (NCES: Indicators of School Crime and Safety, 2008). There are several competing criminological theories that aim to explore the factors that influence these growing levels of criminality. A more recent theory of crime, General Strain Theory (GST), does not reject or compete with more classic theories, but rather accepts their claims and attempts to expand and clarify what aspects of an individual’s life influence their criminal behavior. Individual factors, life experiences, and personal relationships all have been shown to influence one’s criminality. These factors are related to life stressors or strain (Agnew 1989, 1992, 2006). Experiencing strain elicits negative emotions and these emotions present a need to react in a manner that eliminates the strain itself or reduces the stress produced by strain. According to GST, criminal coping allows individuals to deal with these negative emotions when conventional means for doing so are blocked. GST has received a lot of empirical attention; however, there is an evident gap in the existing literature. There is a critical need to explore the use of alternative coping mechanisms, specifically cognitive coping. This form of coping is one that may be taught (Agnew 1995). Thus, research in this area may aid in better arming our youth, from diverse social backgrounds, with a legitimate means to deal with strainful experiences and have an overall impact on delinquency levels.

Explanation of what factors, both personal and social, lead individuals to either commit or abstain from criminal behavior is complex. A better understanding of the underlying processes that influence criminality, especially among our nation’s youth, could have large effects on both policy and programming within state schools in a way that may positively impact juveniles and

lessen the likelihood that they will offend. The core objective of this research is to expand upon current tests of general strain theory and explore an unexamined caveat. This research analyzed whether the proposed alternative coping mechanism, cognitive coping, act as a moderator in the demonstrated strain-delinquency relationship within a school setting. Aligned with Agnew's (1992) propositions, a core hypothesis tested was that individuals who have a greater ability to cope with strain using cognitive reinterpretation will less often cope with strain in a delinquent way. The rationale behind the current research is that, of the theorized coping mechanisms, cognitive coping is the resource that may be applied most broadly. Existing work demonstrates that teaching coping skills that focus on enhancing adolescents' ability to manage and reduce stress has a positive impact on delinquent outcomes (Clarke, Hawkins, Murphy, Sheeber, Lewinsohn, and Seeley 1995; Kazdin & Weisz 1998; Gonzales, Tein, Sandler, Friedman 2001; Beaver, Wright and Maume 2008). By expanding on those pieces of GST that have been well supported will lead to a fuller understanding of the relationship between strain and delinquency.

## THEORETICAL BACKGROUND

### **Anomie and Classic Strain Theory**

The roots of the anomie perspective are in Durkheim's ([1897] 1951) *Suicide*. In that classic work, Durkheim reasoned that anomic suicide results when appetites are not restrained by society. One long-standing adaptation of anomie theory is Robert Merton's strain theory of crime. Introduced in 1938, his work theorized that deviance arose in the United States as the result of an individual's inability to achieve the "American dream" (Agnew 1992). More specifically, Merton argued that high crime rates in the United States are a result of a disconnect that exists between an individual's monetary goals and the available legitimate avenues to attain them, and crime became an illegitimate means to the positively-valued end: wealth. This discrepancy between valued goals and the means of attaining them disproportionately affected the lower tiers of society. Merton went further in his theoretical development and outlined five potential forms that adaptation takes in an anomie society: conformity, Innovators, Ritualists, Retreatism, and Rebellion.

Expansions by Albert Cohen (1955) and Richard Cloward and Lloyd Ohlin (1960) centered on the key concepts of Merton's classic strain theory. They expanded the conceptualization of desired goals to focus on economic success (Cloward and Ohlin 1960) and middle class status (Cohen 1955). These adaptations represent subsequent attempts to determine what drives individuals faced with strain to react deviantly.

Middle class standards of ambition, responsibility, and non-aggressiveness were the values that children of lower societal classes are expected to live up to (Cohen 1955:88-91). Cohen suggested different socialization schemes made it difficult for lower class children to live



up to these middle class values. The inability to meet these standards was thus a source of strain. Cohen hypothesized that this discrepancy and the resulting stress leads persons from the lower class to commit crime as a way to reject middle-class goals. While this expansion recognizes that the inability to attain monetary success is not the sole source of strain, it does not provide a theoretical distinction for what leads some individuals to cope criminally while others abstain from such reactions.

In their theory development, Cloward and Ohlin (1960) pay increased attention to the interplay between community social structure and strain (Spohn 2004). They proposed that individuals occupy a place in both legitimate and illegitimate opportunity structures. Further, they argued that the use of illegitimate means for attaining one's goals will be employed when legitimate means are lacking, leading to an emergence of criminal subcultures.

Since the 1960s, classic strain theory and its expansions have fallen out of favor and have been the focal point of several criticisms. A key reason these works are criticized is for their focus and claim that crime is concentrated among the lower social class, an assumption that was empirically called into question by survey-based research. An overall lack of empirical support for classic strain theory and its early expansions of strain theory (Kornhauser 1978; Agnew 1985; Bernard 1987; Agnew and Passas 1997; Colvin 2000; Aseltine, Gore, and Gordon 2000) led to a shift in criminological focus toward experimental investigations of several other existing and developing theoretical perspectives. Further, the limited support for these classic theories prompted the development of Agnew's (1985) General Strain Theory (GST). Focus then extended from concentrating on trying to achieve positively valued goals to also include efforts to avoid painful or aversive situations (Agnew 1985, 1992, 2001, 2006). Recognizing a gap in these theoretical explanations, Robert Agnew (1985) expanded upon these early works

discussing in depth what factors lead an individual to adapt to strain in a deviant or pro-social fashion.

### **General Strain Theory**

Agnew (1985) was able to revamp interest in strain theory by developing a broader adaptation that rests on the basic foundation of strain theory. He developed a strain theory of crime that was conducive to the use of individual level data for empirical testing. He expanded the scheme through which strain becomes problematic and further detailed the particular traits that most likely would increase the use of delinquent coping mechanisms. Like more classic strain theories, general strain theory argues that stress and strain are a major source of criminal motivation, but the crux of this theoretical perspective is that crime and delinquency are a product of a negative emotional state resulting from harmful relationships. The assumption is that strain is not a direct cause of delinquency, but rather operates through its impact on an individual's affective state, leading to delinquency when other forms of conventional coping are not employed (see Agnew 1992). The negative impact of stress on individuals' well-being is supported not only in the existing GST literature, but across academic realms (Pearlin 1989; Kort-Butler 2009).

A core development of GST is that strain no longer is defined as the inability to achieve monetary success. Strain more generally refers to events, conditions or relationships that are disliked by the individual (Agnew 1992; Simons, Chen, Stewart and Brody 2003). Agnew's theory proposes that monetary strain is not alone in its negative impact, but that the inability of individuals to achieve their desired status or their inability to be treated in a just manner also matter (Agnew 1999). The desire for status (attainment of value or respect in the eyes of one's peer) is closely related to the desire for money (Cohen 1955). These factors influence

individuals' affective state and the production of negative emotions may, in some cases, result in increased levels of delinquency.

Agnew (1992) classifies strain into three categories: the loss of something of value, the inability to achieve personal goals, or the presentation of negative stimuli. The latter type has been examined the least (Agnew and White 1992; Broidy 2001) and is of key interest for the current investigation. Research has consistently shown the presentation of some negative stimuli, such as the incidence of school and peer hassles in particular, leads to increased levels of delinquency (Agnew and White 1992; Paternoster and Mazerolle 1994; Hoffman and Su 1998). Delinquency becomes a coping mechanism for these feelings. Agnew's theory additionally differentiates between objective and subjective strains. Objective strain is strain that is generally disliked by all individuals in a population; subjective strain refers to those events that are viewed as negative by a particular person of interest (Agnew 2001; Froggio and Agnew 2007; Baron 2008). Both are hypothesized to influence emotions, and thus delinquency, in similar ways.

Agnew recognized that "if strain theory is to have any value, it must be able to explain the selection of delinquent versus nondelinquent adaptations" (Agnew 1992:70). Thus, general strain theory focuses attention on the circumstances under which strain is most influential. Specifically, Agnew conceptualized that strain leads to delinquency more typically when 1) it has a higher magnitude; 2) is seen as unjust; 3) pressure exists to respond in a delinquent manner; and 4) when the individual experiencing the strain has low self-control (see Agnew 1992; Agnew, Rebellon and Thaxton 2000; Baron 2008). Individual characteristics influence the likelihood one will react to strain in a delinquent manner. Personal factors, particularly negative emotionality and low constraint, have been shown to condition the effect of strain on delinquency. Further, traits have a reciprocal role in the strain relationship, in that they increase

the likelihood an individual will perceive an event as strainful and possessing these traits is associated with an increased contact with objective strain (Agnew, Brezina, Wright and Cullen 2002).

The claims of general strain theory introduced as novel to criminology draw heavily on the findings and works within stress research. Strain is the theoretical parallel to what stress literature has labeled “stressors.” The term stressor refers to environmental, social, internal demands that require individuals to readjust their patterns of behavior (Thoits 1995). Stressors produce a physiological and emotional reaction within the individual. Strain or stressors can lead to a number of negative emotional outcomes, most notably anger, which has a significant impact on delinquency (Agnew 1992, 1995, 2001; Baron 2006, 2008). The outcomes that result from this stress process are the materialization of stress — a person’s behavioral response to a stressor (Pearlin, Lieberman, Menaghan and Mullan 1981). The symptoms of these reactions of key importance are criminal and deviant behaviors.

Influenced by this knowledge, the suggestion that an affective intervening mechanism links strain to delinquent outcomes is a core expansion of GST. Clear evidence supports this concept (Brezina 1996, 1998; Broidy 2001; Mazerolle, Piquero, Capowich 2003; Hay and Evans 2006). Agnew argues anger is a vital emotional retort, because it is associated with feelings of powerlessness. This affective response most powerfully stimulates a need to react and correct the situation. It has been shown to play a role in the strain-delinquency relationship (Brezina 1996, 1998; Mazerolle and Piquero 1998; Broidy 2001; Brezina, Piquero, Mazerolle 2001; Mazerolle et al. 2003; Macdonald, Piquero, Valois, & Zullig 2005; Hay and Evans 2006). Anger acts as a catalyst for action (Matheson and Anisman 2009). The negative emotions pressure individuals to react in a way that eliminates the source of strain itself or reduces the stress (and thus the

negative emotions) resulting from the strain (Agnew and White 1992; Paternoster and Mazerolle 1994). Bao, Haas and Pi (2004) demonstrate that across cultures, findings still support the idea that emotion is a key mediator in the strain-delinquency relationship. The probability of acting in a deviant manner increases because, when lacking pro-social ways to deal with strain, adolescents may turn to “retaliatory, instrumental or escapist responses” (Mazerolle and Maahs 2000:755).

## COPING MECHANISMS

Coping is defined as “cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (Lazarus and Folkman 1984:142). Typically individuals have a habitual preference for the way they deal with such demands, known as a coping style (Agnew 2006; Kort-Butler 2009) or as the manifestation of stress in stress research (Pearlin et al. 1981). GST presents criminal coping as one mechanism for dealing with the presence of strain. Criminal coping, as a response to strain, is not the norm, but rather occurs when individuals lack the ability to cope in a legal manner (e.g. legally removing or separating themselves from the source of strain or using relaxation techniques to lessen the negative emotions elicited by strain).

The coping mechanisms outlined by GST are not equally available to all persons (Agnew 1992; Froggio, Zamaro, Lori 2009). Adolescents may turn to anti-social means of dealing with strain because they, more so than adults, lack the ability and resources to remove themselves from situations where they are subjected to strain (Agnew 1985:156). Juveniles are particularly limited by both internal and external resources for legitimately dealing with stress. Young persons who find themselves in these situations may behave delinquently as a way to get away from that aversive environment or remove the source of the aversion. For example, an individual who is experiencing high levels of strain within school has few options for removing themselves from this situation (other than skipping school or behaving in a manner that would get them removed from school). Brezina (2006) found delinquent behaviors, such as escape-avoidance, compensation, and retaliation, did allow individuals to reduce the negative emotional

consequences of strain by enabling them to avoid strain directly or by alleviating the negative affect resulting from strain.

A unique development of GST, and key to the current research, is the suggested avenues for non-criminal coping. These theorized coping strategies can be cognitive (being able to rationalize strain and stressful events and to problem solve in a way that reduces the stress or the presented strain itself), behavioral (participating in sports or extracurricular activities that provide opportunities to excel and shadow negative stimuli), and/or emotional (seeking out social support).

### **Cognitive Coping — An Acquired Mechanism**

Of particular interest is what Agnew (1992) has labeled cognitive coping. It is theorized that individuals with higher cognitive abilities will be able to reinterpret objective strains in a manner that minimizes their importance. This reinterpretation resolves the need to resort to delinquent coping mechanisms. The theoretical framework outlined by Agnew (1992, 2001, 2006) suggests cognitive coping abilities would play a moderating role in the strain-delinquency relationship; cognitive coping prevents the need for crime (Konty 2005; Froggio et al. 2009). The theoretical construct of cognitive coping, in particular the attention drawn to appropriate problem-solving, is similar to what Kort-Butler (2009) explains as approach coping; a response characterized by logical analysis and positive reappraisal. Similarly, Rocque (2008) explains cognitive coping as an ability to minimize the strain and maximize the subjective importance of “good” outcomes or accepting responsibility. This form of coping can be summarized as the employment of three phrases: “it’s not important,” “it’s not that bad,” and “I deserve it” (Agnew 1995:46). To cognitively cope refers to the ability to minimize the importance of the strain, maximizing emphasis on the positive outcomes of the strainful situation, and/or the ability to accept responsibility for the negative situations/outcomes (Agnew 1992). The ability to enact this

general coping mechanism requires that an individual stop and think about the situation; to analyze its causes, consequences and possible methods for handling the situation. To date, few works exist which explore the utilization of positive versus delinquent coping mechanisms in response to strain. Further, of the works that do explore pro-social coping mechanisms, the construct of cognitive coping, in relation to other normative coping strategies, is examined the least in empirical tests of the GST (Rocque 2008).

The benefits of cognitive coping, as it is theorized, are clear. Individuals who are able to think clearly about the strain they are experiencing, and the resulting emotions they feel, are less likely to react irrationally. They can consider possible solutions or ways to lessen the strain they are experiencing or to lessen the negative emotions those strains elicit. By reinterpreting strain, “the person is aided in ignoring that which is noxious by anchoring his attention to what he considers more worthwhile and rewarding aspects of experience” (Pearlin and Schooler 1978:6-7). It is likely that the ability to cognitively reinterpret strainful situations is related to one’s overall level of intelligence, however, only in part. It is also highly dependent on one’s ability to stop and accurately assess situations and postulate possible responses and their outcomes. In short, cognitive coping goes beyond a simple reliance on intelligence and is influenced greatly by the adolescents ability to positively problem solve the negative situation they are faced with, which can be taught.

Despite this proposition and perhaps due to the lack of research supporting it, to date, the majority of reform programs aimed at decreasing the impact of strain on delinquency in adolescence have centered around the family, school and peers (Agnew 1995). Attempts to reduce adversity in these realms include training parents and teachers to treat youths in a more just manner and training them in disciplinary techniques that enable them to better recognize pro-



social and deviant responses of juveniles. Additionally, school-based programs have focused on variables such as reducing school size, emphasizing cooperative learning strategies and increasing the opportunities for success and participation in school activities (Agnew 1995). Additionally, some researchers in this area suggest a need to provide young individuals with legal means to escape aversive situations (Toby 1983; Agnew 1995).

The use of education and skills development or material goods as a resource for alleviating strain and potentially reducing the strain-delinquency relationship has not been the direct focus of much research. Particularly, whether cognitive coping lessens the probability that juveniles experiencing strainful life events will resort to delinquent modes of coping, has not been explored. But, this idea fits well within the GST framework. As an aside, such a focus is also consistent with research showing the benefits of cognitive behavioral therapy (MacKenzie 2006). The value of this type of therapy is that it treats cognition as something that can be changed, even in adults. A focus on the malleability of cognition and cognitive coping should take the discipline of criminology beyond static models linking IQ to crime (Herrnstein and Murray 1994; Cullen, Gendreau, Jarjoura, and Wright 1997).

It is important to examine GST within a school setting because the majority of adolescents' time spent away from family is done so within this setting (Agnew 1989). Further, attempts to influence the strain-delinquency relationship have been concentrated in the schools. This is likely because there is a growing incidence and concern for violence and delinquent behaviors within schools. The propositions that strain and anger are important contributing factors to this trend deserves serious attention (Furlong and Smith 1994; Gottfredson 2001; Brezina, Piquero, Mazerolle 2001; Gottfredson and Gottfredson 2002; Dinkes, Citaldi, Kena and Baum 2006; Lowe, May and Elrod 2008).

Moreover, if cognitive coping is a strong moderating factor in the strain-delinquency relationship, it is within the school systems these coping skills could be incorporated and widely introduced. That is, if cognitive reinterpretation of strain does in fact lessen the incidence that such strains will be dealt with in a delinquent or criminal manner (particularly in a public or school setting), these findings may have a broad impact on school policy and programming. Reshaping the current curriculum utilizing this knowledge, while likely costly and time consuming, will have widespread benefits on the level of deviant behavior, both within the school setting and the community at large.

## SUMMARY

Agnew's proposed theory is admittedly grand in nature; this is its greatest strength, yet simultaneously its greatest weakness (Agnew 2001; Hay and Evans 2006). Its broad nature makes exploration of it in its entirety impossible. Thus far, research has focused on core propositions of the theory to help further our general understanding of what leads to delinquent behavior. Empirical evidence regarding general strain theory to this point is mixed. Research has found strain increases levels of certain forms of delinquency, such as fighting and skipping class, but not others, like alcohol use (Aseltine et al. 2000; Lee and Cohen 2008). However, in general there is solid supporting evidence that certain negative stimuli are associated with increased delinquency, a relation mediated by negative affective states. And, clear evidence that supports the concept of an intervening affective mechanism in the strain-delinquency relationship.

The current research aims to more generally test the impact of negative stimuli on delinquency, assuming results consistent with the above literature would be due to strain's impact on affective states. The more innovative piece of the current study is the investigation of the relationship between the use of cognitive versus delinquent coping strategies; a proposition that has not been specifically examined. Of core interest is, when faced with similar levels of strainful events, are students with greater cognitive reinterpretation abilities better able to absorb the impact of this strain and use cognitive reasoning as a coping mechanism over more delinquent coping styles.

Hypothesis No. 1: School-based experiences of strain are positively related to delinquent behaviors committed within that setting.

Hypothesis No. 2: Cognitive coping ability will be negatively related to delinquency.

Hypothesis No. 3: Cognitive/Problem-solving ability will act as a moderator in the strain-delinquency relationship. That is, when faced with similar levels of strain, those with higher cognitive/problem-solving abilities will show a lessened probability of behaving in a delinquent manner when compared to their peers who have lower cognitive/problem-solving skills.

## DATA AND METHODS

The objective of the current work is to uniquely test a secondary proposition of general strain theory; that delinquency is one possible response to negative emotions, allowing individuals to reduce the stress elicited by strain presentation. The strain-delinquency relationship is well supported. This research directly tests the role that cognitive coping plays in this relationship. The current research is a good starting point to explore the role cognitive coping plays in the strain-delinquency relationship. Finding influence using the variables available will provide a sound ground for developing a more focused study to test the claims of general strain theory.

### **Data**

The data used for the current research is drawn from the base year of the Educational Longitudinal Study (ELS: 2002). This data set is current and its use novel in delinquency research. Further, it offers a cognitive reinterpretation measure, namely the students' interpretation of their problem solving abilities, not found in other data sets. This is the baseline survey of a longitudinal study of high school sophomores administered during the spring term of the 2001-2002 school year by the Research Triangle Institute (RTI). The ELS: 2002 is the latest in a series of school-based longitudinal studies conducted for the National Center for Education Statistics (NCES) for the United States Department of Education. The objective of these longitudinal projects is to monitor high school sophomores as they move through the school system and transition into higher education or work settings (NCES 2009). Cohort members are monitored as they progress through high school and beyond.

### Sampling Method

The ELS series is a multilevel study. Information is collected from several sources to provide a more accurate depiction of students' lives, as well as to provide background information about parents and teachers in contact with these students daily. Data is collected from students, their parents, school employees and the schools involved. The data were collected using a two-stage sampling selection method. I will provide a brief explanation, but see NCES (2009) for more detail. First, a complete survey population consisting of 2002 spring semester sophomore students enrolled in the United States (public, Catholic, or private schools) was identified. A sampling frame of schools (intended to match the target population) was assembled. The questionnaires and data from school employees were collected from 750 schools, which were selected first. Then, a stratified systematic sampling technique was used to randomly select students within those schools. Surveys were administered to more than 15,000 students and their parents. The strata were based on race/ethnicity categories with minorities being oversampled such that all sub-populations included in the final data set had a sample size of more than 1,350 persons. Specifically, Asian students were sampled at a higher rate than other race/ethnic groups to allow for comparison between these groups (NCES 2009).

### **Measures**

#### Measures of Theoretical Constructs: Strain

The measures of strain included in this analysis are considered objective sources of strain, in that they would be typically considered as stressful and negative events by most individuals. Thus, it is assumed that respondents would consider them stressful, not a measured fact (see Lee and Cohen 2008 for a similar approach). Agnew (1989) and more recent works suggest the benefits of utilizing a composite measure of strain as is done in the current analysis. Because as the level of strain an individual is subjected to increases, so does the likelihood that those strains

will produce a negative emotional response (Froggio 2007; Froggio et al. 2009). Due to the theoretically outlined additive effect of strainful events, a composite measure was created (Agnew 1992). This method is consistent with past research on GST and allows analysis of the cumulative effects of experienced strain on delinquency (Mazerolle and Piquero 1997; Mazerolle and Maahs 2000; Kort-Butler 2009).

The first variable used to gauge students' experience of strain within the school setting was their overall opinion of safety within the school. Respondents were asked to portray their overall feeling of the safety of the school they attended. Students' evaluations of the statement "I do not feel safe in this school" provide an overall sense of the stress they feel from the presence of a negative stimuli in the school setting (Lee and Cohen 2008; Lowe, May & Elrod 2008; Peguero 2009). For the purpose of this analysis, the scale will be reversed (and recoded from the original data) so that every one-point increase corresponds with feeling more unsafe, or an increase level of strain.

An important form of strain included the presence of noxious peer relations (Peguero 2009). Students were asked to reflect and report their exposure to these negative stimuli during the first (fall) semester of the 2001-2002 school year. This form of strain was measured using responses to two questions. Question 1) "How many times has someone bullied or picked on you?" (Agnew et al. 2002; Lowe et al. 2008). Additionally, to measure peer relations, students were asked question 2) "How often do you feel 'put down' by your peers?" (Agnew et al. 2002; Lowe et al. 2008). In general, school bullying involves a situation in which an individual is repeatedly abused or victimized by their peers (Bacchini, Esposito and Affuso 2009). Both of these questions measure the presence of negative stimuli and will contribute to the strain composite.

There are two measures of victimization that will be included in this analysis. Students were asked to reflect and report their exposure to these forms of victimization (Agnew and White 1992; De Coster 2005; Peguero 2009) during the first semester of the school year. The first form of victimization is property victimization, which was measured using responses to the following items: 1) “Someone purposefully damaged or destroyed my belongings”; 2) “I had something stolen from me at school” (Lee and Cohen 2008). The second form of victimization included as a strain measure is violent victimization. Violent victimization was determined by responses to the following: 1) “Someone hit me” (Lee and Cohen 2008); and 2) “Someone used strong-arm or forceful methods to get money or things from me.”

A correlation analysis revealed that the variables intended to measure students’ level of experienced strain were not highly correlated and therefore are assumed to be measuring separate sources of strain/stress. Because of this, and Agnew’s (1992, 2006) contention that cumulative strain is more potent in producing crime than specific sources of strain, the item responses were standardized and combined using an additive approach to create one composite variable for strain (see Hay and Evans 2006 victimization scale or Botchkovar, Tittle, Antonaccio 2009 for a similar approach).

#### *Measures of Theoretical Constructs: Cognitive Coping Ability*

It is the core concept of the current work that the likelihood of strain or stressful events being dealt with through delinquent means is influenced by the students’ ability to cognitively cope with presented strain. A combined measure of overall cognitive coping ability was used in this analysis. Included in this measure are students’ cognitive test results, as well as respondents’ perceived ability to problem solve. It is likely that cognitive test results (a measure similar to IQ) has a reciprocal relationship with problem solving ability; that is, one’s general level of



intelligence is both influenced by and influences their problem solving skills. For this reason, both types of measures were included. The first measure of students' cognitive ability utilized was their composite achievement score on a standardized math and reading test.

It is postulated that "cognitive coping" refers to more than one's academic ability. It also refers to one's ability to stop, and in a purposeful manner, interpret the stressful situation and problem solve in a socially-acceptable manner (Agnew 1995). Given this, analysis also includes students' opinions of their problem-solving ability. Evaluations of the statements 1) "I can learn something difficult if I really try"; and 2) "I can learn something well if I want to" are used as proxies of the individuals' level of problem-solving capabilities. It is believed an individual who does well on academic cognitive tests and also believes they have a strong ability to problem solve or complete tasks they feel are difficult will have the strongest ability to reflect on the strain they are presented with and be able to reinterpret the strain so it is less significant/important. If the strain can be reinterpreted as something that is minimal in the overall scheme of things, this will lessen the emotion elicited by that strain; it will reduce the drive (Agnew 2006) to react through delinquent means to reduce that negative emotions. Responses to each of these variables were standardized and combined in an additive form to create a composite measure of cognitive coping ability.

To test the core hypothesis, I assessed the significance of the interaction between strain and overall cognitive coping ability. The inclusion of this interaction term allows for the analysis of whether cognitive coping has a moderating affect on the strain-delinquency relationship. That is, the interaction term demonstrates whether, when faced with similar levels of strain, those individuals with a higher level cognitive coping ability less often commit delinquent acts than peers with lower level cognitive coping abilities.

### Delinquent Behavior

The key outcome of interest is the respondents' level of delinquency. Several items that gauge both the respondents' delinquency and the amount of punishment the student has faced at school for delinquent behaviors are found within the available data. Responses to these items are combined to create a delinquency composite using a method similar to that used for the strain composite (see Agnew 1989; Mazerolle 1998; Mazerolle and Maahs 2000; Bao et al. 2004 for similar approach).

Within the ELS: 2002, students were asked to reflect and report the number of times they had been involved in a physical fight during the first semester of the school year (Agnew 1989; Lee and Cohen 2008). Response to this question is included in the overall "delinquency" composite. The second delinquency variable included is respondents' admittance of how many times they had cut/skipped class during the previous semester, a measure used in previous tests of GST (Agnew 1989; Agnew et al. 2002; Lee and Cohen 2008). Further, self-report data on how many times the student has 1) gotten into trouble at school; 2) been put on in-school suspension; and how many times the respondent has 3) been suspended or received out of school probation, and 4) been transferred for disciplinary reasons (Agnew et al. 2002), also are included in the overall delinquency composite.

The delinquency measures in this data set do not provide an exact count of the number of incidents, but rather represent a range of the occurrence of such incidences (Agnew 1989; Hay and Evans 2006). Given this, data for each variable were standardized added together to create a delinquency composite (see Agnew, Mathews, Bucher, Welcher and Keyes 2008 for a similar approach). An increase in a respondent's delinquency composite is associated with an increase in their participation of delinquent behaviors in their school setting.

### Control Variables

Previous works in criminology often find individual factors play a role in one's level of delinquency or criminality. The influential factors controlled for in the current work include sex, race, socioeconomic status, and family composition. Prior research indicates gender differences in the types of strain experienced and the coping strategies utilized (Broidy and Agnew 1997; De Coster 2005; Kort-Butler 2009; Sigfusdottir and Silver 2009). It is expected that, in line with these works, the current analysis will show a significant difference in delinquency by gender, such that females are much less likely to behave delinquently.

For this analysis, race was combined into five categories White: non-Hispanic, Asian, Black, Hispanic, and Other. From these five categories, four dummy variables were created for analysis. This allowed for a comparison of the level of delinquency for individuals in each race category compared to that of the largest category, white students. Additionally, prior research indicates youths in two-parent households (family composition) will have differing delinquency levels (Loeber and Farrington 1998; Macdonald, Piquero, Valois and Zullig 2005) from those youths who do not. A dummy variable representing family composition is created to enable easy comparisons to be made between those students' who are living in a household with two authority figures versus those who are not.

Based on extensive research that focuses on social learning and social control theories of crime, measures approximating these influences included as control measures and as a point of comparison for the outcomes of key GST variables. Several parental and school attachment measures (Agnew, Rebellon, Thaxton 2000; Brezina et al. 2001) were combined to create a composite indicator of social control. Measures of how much the student 1) likes school and 2) how often the student's parent provides advice about things troubling him/her were among those

included<sup>1</sup>; possible responses ranged from low to high. Based on existing research, it is assumed an increase in social control is related to a significant decrease in the delinquency (see Akers and Sellers 2009).

Additionally, two measures indicating the amount of negative influence one's close peers have on the individual are included (Lowe et al. 2008). These survey questions measure 1) whether the respondents friends think it is important that he/she attend class (reverse coded) and 2) an approximate number of close friends who have dropped out of school. These were standardized and combined to create a composite measure which acts an indicator of the level of negative peer influence an individual encounters; only two measures are included because there were not any other survey items with sufficient face validity for the composite measure. An increase in respondents' association with negative peers is assumed to have a significantly positive impact on delinquency; that is, association with negative or delinquent peers is related to increases in personal delinquency (see Akers and Sellers 2009). It is likely several theories reveal components of the complex relationship between circumstances and delinquent behavior (Macdonald et al. 2005).

### **Modeling Strategy**

The current analysis employed the statistical package Stata version 11. The total number of observations was 15,362. Prior to analysis, a comparison was made between those individuals with missing data and those without and it was found they significantly differed on the outcome variable of interest, delinquency. This variation and the fact the ELS: 2002 has complete data on key variables, prompted the use of a multiple-imputation procedure. Using complete data on

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<sup>1</sup> Additionally, data regarding 1) how well students get along well with teachers and how often they're parents 2) worked on homework/school projects with him/her, 3) attended concerts/plays/movies with him/her, 4) worked on hobby/played sports with 10th him/her, 5) spent time talking with him/her, 6) eat at least one meal with him/her, and 7) whether the family had rules for him/her about maintaining grade average were standardized and included in the overall composite measure of social control.

respondents' sex, race, socioeconomic status, family composition and standardized cognitive test scores, independent variables with missing data went through a series of five imputations.

Compensation for design effects and the fact that racial and ethnic groups were oversampled in ELS: 2002 was calculated by NCES. To correct for this, the weighting scheme was applied during the multiple imputation procedure. To preserve the integrity of the outcome variables of interest, respondents with missing delinquency data were omitted from the analysis. The total number of respondents included in the final analysis was 14,239.

Following the imputation procedure, a series of correlations were conducted to ensure that the variables included in the additive composite measures for strain, delinquency, social learning and social control, are measures of differing events or behaviors. Table A1 shows the correlation results for the most central of these composite variables, strain. The various measures were standardized using the mean and standard deviation for the actual data collected; using means and standard deviations of the un-imputed data points for each variable. The independent variables included in this analysis were coded in ordinal form; the higher the category in which an individual falls, the higher the level of strain they experience, the higher level of delinquent behavior they report doing, etc. However, once standardized, the variables were added to one another to create a composite version of the variables of interest (strain, delinquency, social control and social learning). Given that the dependent variable, a composite measure of delinquency, is continuous, the technique of linear regression modeling was used. This modeling strategy demonstrates, on average for this data set, the impact of the included independent variables had on respondents' level of delinquency, net of all other variables included in the model.

## RESULTS

Table A2 presents the descriptive statistics for the variables of interest. The sample utilized in this analysis consisted of 14,239 respondents; with females representing 50.47 percent of the sample. Because of the sampling method employed, the five race categories were large enough to make comparisons across race/ethnic groups. Further, within this sample of students, it was much more common to have two authority figures (two adults, not necessarily parents) in the home (76.65 percent) versus one or less authority figures in the home (23.35 percent).

Table A3 presents results of the least squares regressions. Unstandardized coefficients are presented. The findings in Model 1 strongly support previous findings regarding the influence of personal and familial characteristics on delinquency. Females on average (across all models) are significantly less delinquent than their male counterparts ( $b = -.81$ ,  $p < .001$ ). Also, blacks, Hispanics, and respondents of other races are more likely to be delinquent than their white counterparts. Additionally, Asian students are significantly less likely than white students to report delinquent behaviors ( $b = -.42$ ,  $P < .001$ ). Model 1 shows that, compared to individuals who have only one or fewer authority figures in the home, those with two authority figures in the home on average report significantly lower levels of delinquency within the school setting than those individuals who have less than two authority figure in the home ( $b = -.29$ ,  $p < .001$ ). This model, which included students' demographics and home-life background, also showed that as student's family socioeconomic status increases, delinquency decreases significantly ( $b = -.41$ ,  $p < .001$ ).

Of key importance is this model is the large impact that individuals' level of experienced strain has on their reported level of delinquency. That is, the results in Model 1 support the main premise of Agnew's general strain theory; that an increase in the level of experienced strain is

significantly related to increases in juvenile delinquency. ( $b=.29$ ,  $p<.001$ ). On average, every one-unit increase in the level of composite strain experienced by a student is associated with a .29-unit increase in delinquency ( $p<.001$ ). Findings here are consistent with the first hypothesis that, on average, experiencing strain in a school setting is positively related to the composite measure of self-reported delinquency.

Table A3, Model 2 expands on the findings of Model 1. Model 2 includes control variables representing two strong theories in criminology, social control and social learning. Results here align with theoretical predictions. Social control is associated with a decrease in delinquent behaviors ( $b=-.03$ ,  $p<.001$ ). Compared to those students who experience less social control, in the form of spending time with parents, being subjected to strict rules, etc. those with greater levels of social control are significantly less likely to behave in a deviant manner. Additionally, the measures included for social learning suggest that increased association with deviant peers is significantly related to an increase in behaving delinquently ( $b=.41$ ,  $p<.001$ ).

Table A3, Model 3 includes a key theoretically construct of the current research, namely, respondents' cognitive coping ability. These results are consistent with the second hypothesis: being able to cognitively cope with stressful situations will lessen the likelihood that individuals will handle strain in a delinquent manner ( $b=-.16$ ,  $p<.001$ ). Furthermore, when controlling for students' ability to cognitively cope, the effect of socioeconomic status on delinquency is no longer significant.

Using the average standard deviations from the five imputed data sets, standardized coefficients were calculated for the theoretically central variables in Table A3, Model 3. This procedure allows for the comparison of relative impacts across independent variables. Results demonstrated that a one standard deviation increase in experienced strain is related to a .299

standard deviation increase in self reported delinquency. Standardized effects for the control and learning measures are -.063 and .191, respectively. The standardized effect for cognitive coping is -.113. This demonstrates that of all predictor variables included in Model 3, experienced strain has the greatest impact on students' level of delinquency, followed by the social learning and cognitive coping measures.

Table A3, Model 4 incorporates the interaction variable for strain and cognitive coping. Results show the interaction term is statistically significant and demonstrates that cognitive coping weakens the aggravating effects of strain ( $b = -.06$ ,  $p < .001$ ).

To interpret the interaction effect presented in Model 4, the following formula was used  $B_{\text{strain}} + (B_{\text{interaction}} * \text{Level of cognitive ability})$ . The three levels of cognitive coping were the mean, the mean minus one standard deviation, and the mean plus one standard deviation. The mean and standard deviation of cognitive coping were obtained by averaging the means and standard deviations from each of the five imputed data sets. Results show that the effect of strain on delinquency, for individuals with below average cognitive coping abilities, is .30. The impact of strain on delinquency for individuals who have an average level of cognitive coping ability is .25. For individuals with a high level of cognitive coping ability, the impact of strain on delinquency is .20. This demonstrates that while the impact of strain on delinquency is present at all levels of cognitive coping, its strength varies; when faced with similar levels of strain, those individuals who have a stronger ability to cognitively cope will less frequently display deviant behaviors.



## DISCUSSION

The literature reviewed for the current research demonstrates general support for the major claims represented in Agnew's general strain theory. Namely, that an increased level of strain is associated with changes in emotion that can, if not coped with appropriately, be dealt with using delinquent coping mechanisms. Research to date, however, has done little to explore those coping mechanisms that may moderate the effect of strain on delinquency. Specifically, minimal research has explored the moderating effects of cognitive coping on the strain-delinquency relationship. Findings of the current research are promising and provide implications for future tests of Agnew's general strain theory.

This analysis provides three major findings. First, consistent with previous findings, strain, in the form of the presentation of negative stimuli within a school setting does, on average, have a positive influence on students' level of delinquency. Second, there is a direct affect of cognitive coping on delinquency, such that increased levels of cognitive coping ability are associated with a decrease in delinquent behavior. Lastly, this research provides support for Agnew's (1992) proposition that one's ability to cognitively reinterpret strain may act as a positive coping mechanism for strain; it has a moderating effect on the strain-delinquency relationship.

This study, developed as a means to test Agnew's (1992) general strain theory, presents evidence supporting the proposition that coping mechanisms can have a moderating affect on the strain-delinquency relationship. These findings have implications regarding possible ways to deal with the increasing levels of delinquency seen during adolescence. Agnew (1995) suggests there is a need to arm juveniles with an ability to positively cope on their own. As theorized, an individual's ability to cognitively cope reflects his/her ability to think about a strainful situation and problem solve or reinterpret the importance of that situation; a process that lessens the

impact of or the negative emotions directly elicited by the situation, which thus lessens the need to cope in a negative manner.

Teaching adolescents positive social and problem-solving skills would help shape their overall ability to cognitively cope with strainful situations. Additionally, important in Agnew's theoretical explanation of cognitive coping is the idea of problem-solving. Dodge (1986) which proposes model of problem solving which includes five necessary steps to effective problem solving: (1) search for environmental cues; (2) interpret these cues; (3) think of possible responses to the situation; (4) think ahead of possible consequences of those responses; and (5) perform the chosen response. Current research suggests that youths have difficulty at each of the five outlined steps necessary for effective problem-solving (Hollin 1990b; Agnew 1995). While little research has been conducted on the efficacy of problem-solving programs, problem-solving training does exist. MacKenzie (2006) shows that cognitive-behavioral therapy has been an effective tool for rehabilitating former offenders. The goal of such problem-solving programs is to break down the essential steps involved in generating effective and pro-social responses to problem-solving and teach youths how to efficiently work through them.

Additionally, some individually-based programs have focused on intervening at the point when youths become angry and frustrated by the strain they experience. They recognize that the inability to deal with these emotions leads to the adoption of maladaptive behavioral techniques. However, to date, little research exists on the use and effectiveness of social skills training, problem-solving and anger control techniques (Agnew 1995). The current research demonstrates that the skills taught through these types of programs could very well arm adolescents with the appropriate tools to handle strainful situations and the emotions they illicit; a notion supported by

the limited amount of research on these types of programs (Hollin 1990a, 1990b; Blackburn 1993).

Another finding worth highlighting is the variation in the significance of SES between Model 2 and Model 3. These findings suggest that while economic differences play a role in delinquent outcomes, this process is likely influenced by one's ability to cognitively cope. In other words, cognitive coping, is a coping tool that is suggested can be taught. And, it may act as an instrument equally across social classes. This finding suggest that employing programs to teach cognitive coping could have benefits that transcend class difference and may aid all youths equally.

In combination, what is known about the effectiveness of teaching cognitive coping skills and findings of the current research provide a strong basis for future research regarding the implementation of programs aimed at teaching adolescents cognitive coping skills as a means to better deal with stressful situations. This knowledge may help us to better arm our youth with the tools necessary to overcome life strains; it may influence individuals' life paths and make a difference in whether an individual commits or abstains from delinquent or criminal behavior. It is plausible that if further research supports the findings here — that cognitive coping acts as a moderator in the strain-delinquency relationship — and if works indicate such skills can be taught and have an effect on overall delinquency levels, exploration of means to teach this coping mechanisms on a large scale could be fruitful.

It is important to note some limitations of the current work. First, there are several drawbacks to the use of cross-sectional data in this (and all like) analysis. Primarily, while results may show a connection between the presence of strain and delinquency levels, and a moderating effect of cognitive ability, it will not demonstrate strong support for causation. A longitudinal

analysis would be most beneficial for establishing causal order and will be critical if the present work shows a significant relationship (De Coster 2005; Hay and Evans 2006). Further, because of the grand nature of GST, this work has aimed to test one caveat, while ignoring other key assumptions of the theory. Specifically, it does not specifically test the core concept that strain elicits an emotion, which then leads to a behavior. Rather, it is assumed this is the case based on several existing works that support this link.

Ideally, future study would include emotion data along with cognitive coping data to enable researchers to more accurately detail the processes that are occurring. That is, to more completely test the propositions of general strain theory, the current test should be expanded first by including the strain/emotion piece of the puzzle. Additionally, future tests should employ longitudinal data, which would allow for the inclusion of a control measure of criminality prior to the introduction of negative stimuli; a stronger argument of the causal direction in the strain-delinquency relationship would result. Furthermore, findings regarding strainful events that influence delinquency should be expanded to investigate the influence of strain outside the school setting. Due to its grand nature, examining general strain theory will require several tests of each of its individual propositions, as well as expansions that allow for a more complete picture of the process. In particular, by further investigating the alternatives to delinquent coping, our understanding of the progression of delinquent behaviors will become clearer, which, in turn, may aid in the development and implementation of programs that could ultimately have significant impacts on the overall level of delinquency seen in America's schools.

## APPENDIX

**Table A1. Correlation Matrix for Strain Variables: Educational Longitudinal Survey, 2002**

Variable	Feels unsafe	Bullied	Put down by peers	Had things stolen	Been hit	Things forced from student
Feels unsafe	1.0000					
Bullied	0.1514	1.0000				
Put down by peers	-0.2879	-0.3363	1.0000			
Had things stolen	0.1637	0.1722	-0.1373	1.0000		
Been hit	0.1532	0.3000	-0.1934	0.2466	1.0000	
Things forced from student	0.1586	0.2293	-0.1051	0.1489	0.2282	1.0000

Note: Correlations are done using un-imputed data. Thus, the N for each correlation varies.

**Table A2. Descriptive Statistics for Independent Variables in Analysis (N=14,239):  
Educational Longitudinal Survey, 2002**

Variable	Percent	Mean	Standard Deviation	Range <i>Low-High</i>
Delinquency		0.98	3.52	-1.14 – 33.31
Cognitive Coping		0.03	2.48	-7.68 – 5.92
Sex				
Female	50.47			
Male	49.53			
Race				
Other	5.77			
Asian	9.57			
Black	13.06			
Hispanic	14.30			
White (non-Hispanic)	57.30			
Family Composition				
Two adults in home	76.65			
Other	23.35			
SES		0.04	9.74	-2.11 – 1.82
Strain		-2.21	4.05	-9.02 – 28.65
Social Control		0.10	4.49	-21.92 – 13.35
Social Learning		0.08	1.82	-1.57 – 9.69

Note: The descriptive statistics provided are for the standardized composite measures created using imputed data. Those cases that had one or more missing responses to the outcome variables included in the composite measure of delinquency were omitted.

**Table A3. OLS Regression of Delinquency (N=14,239): Educational Longitudinal Survey, 2002**

Variable	Model 1	Model 2	Model 3	Model 4
Constant	2.11	1.90	1.88	1.83
Sex (male excluded)				
Female	-.81** (.05)	-.70** (.05)	-.71** (.05)	-.72** (.05)
Race (white excluded)				
Other	.43** (.12)	.36* (.12)	.32* (.12)	.33* (.12)
Asian	-.42** (.09)	-.38** (.10)	-.33** (.10)	-.31** (.09)
Black	.71** (.09)	.73** (.08)	.68** (.09)	.69** (.08)
Hispanic	.61** (.08)	.55** (.08)	.50** (.08)	.52** (.08)
Family Composition (less than two excluded)				
Two Authorities in the Home	-.29** (.07)	-.20* (.07)	-.17* (.06)	-.17* (.06)
SES Index	-.41** (.04)	-.20** (.04)	-.05 (.04)	-.06 (.04)
Strain	.29** (.01)	.27** (.01)	.26** (.01)	.25** (.01)
Social Control		-.05* (.01)	-.05* (.01)	-.05** (.01)
Social Learning		.41** (.02)	.37** (.02)	.37** (.02)
Cognitive Coping			-.16** (.01)	-.20** (.01)
Strain*Cognitive Coping				-.02** (.00)
R-Squared	.17	.21	.22	.23

Note: The descriptive statistics provided are for the standardized composite measures created using imputed data. Those cases that had one or more missing responses to the outcome variables included in the composite measure of delinquency were omitted.

\*p < .05      \*\* p < .001.

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