

ABSTRACT

Title of Thesis: THE MODERATING ROLE OF NEGATIVE EMOTIONALITY, POSITIVE EMOTIONALITY, AND LOW CONSTRAINT ON THE RELATIONSHIP BETWEEN STRAIN AND CRIMINAL BEHAVIOR

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General strain theory (GST) posits that strain causes crime (Agnew et al., 1992). Individuals who fail to achieve positively valued goals, lose positively valued stimuli, or are presented with negative stimuli are more likely to engage in criminal behavior. GST, however, acknowledges that individuals vary in their responses to strain and not all strained individuals turn to crime. Agnew et al. (2002) proposed a number of factors that may increase the likelihood of a criminogenic response to strain. Of these, he considers personality traits to be among the most important (Agnew, 2006). This study examines the moderating role of negative emotionality, low constraint, and positive emotionality on the relationship between strain and criminal behavior. Findings reveal a direct, positive association between strain and crime, but there was no support for the conditioning hypotheses proposed in this study.

THE MODERATING ROLE OF NEGATIVE EMOTIONALITY, POSITIVE EMOTIONALITY, AND LOW
CONSTRAINT ON THE RELATIONSHIP BETWEEN STRAIN AND CRIMINAL BEHAVIOR

By

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TABLE OF CONTENTS

Background.....	1
Overview of General Strain Theory.....	2
Conditioning Factors	3
Conditioning Effects of Personality Traits	9
Hypotheses	14
Methods	16
Measures	19
Results	25
Discussion and Conclusion.....	28
Works Cited	32
Appendix	39

BACKGROUND

Although there is a great deal of evidence linking strain to criminal behavior (Agnew, 1985, 1989, 2001; 2002; Agnew et al., 2002; Agnew and White, 1992; Aseltine et al., 2000; Baron 2004; Baron and Hartnagel, 2002; Brezina, 1998; Eitle and Turner, 2002; Hoffman and Cerbone, 1999; Hoffman and Miller, 1998; Hoffman and Su, 1997; Jang and Johnson, 2003; Jennings, et al., 2009; Mazerolle, 1998; Mazerolle and Maahs, 2000; Mazerolle and Piquero, 1997; Paternoster and Mazerolle, 1994; Piquero and Sealock, 2000), general strain theory (GST) acknowledges that individuals vary in their responses to stressful life events (Agnew, 1992; Agnew, et al., 2002). GST predicts that, among others, the following factors may increase the likelihood of a criminal response to strain: poor coping skills, low self-esteem, low self-efficacy, weak social control, and association with delinquent peers. There is little evidence, however, of the moderating effects of these variables (Agnew et al., 2002; Agnew, 2006). This may be due to methodological problems that have made it difficult to detect interaction effects. The use of cross-sectional analyses to test causal hypotheses, inconsistent or inadequate measures of strain, dated or non-representative samples of adolescents, and/or incorrect estimation techniques (e.g., using OLS when the outcome variable is highly skewed) are common in tests of these interaction hypotheses.

Though they are often neglected in the literature, Agnew et al., (2002) describes personality traits as the “most important” set of conditioning variables. This is a reasonable assertion given the pervasive role of personality in shaping one’s reaction to

strain, ability to cope, and disposition towards antisocial behavior. Roberts and Mroczek (2008) define personality traits as “the relatively enduring patterns of thoughts, feelings, and behaviors that distinguish individuals from one another”. Prior research examining the moderating effects of personality on the relationship between strain and crime has produced promising results (Agnew et al., 2002). This study builds upon these findings by testing the conditioning hypotheses proposed by Agnew with a longitudinal sample. The present research also extends the scope of GST by being the first to consider the moderating role of positive emotionality.

OVERVIEW OF GENERAL STRAIN THEORY

Classical strain theories posited that delinquency is the product of ‘frustrated wants or needs’ (Merton, 1938; Elliot, Huizinga, and Ageton, 1985). It was widely accepted that crime was a function of opportunity and frustration (Merton, 1938; Cohen, 1955; Cloward, 1959). Prior to the introduction of general strain theory in 1992, researchers focused primarily on the failure to achieve conventional success (Agnew, 2006). General strain theory (GST) revitalized the strain perspective by extending the scope of strains to include the failure to achieve any positively valued goal, the removal of positive stimuli and the presentation of noxious stimuli (Agnew et al., 1992). According to this new definition, failure to achieve positively valued goals, such as financial independence may cause the type of strain described by Agnew. ‘The removal of positive stimuli’ refers to instances in which individuals suffer the death of a loved one or lose positively valued employment. The presentation of negative stimuli subcategory can include many types of strains such as: erratic discipline, parental rejection/abuse,

negative school experiences, and chronic unemployment (Agnew 1992; 2001; 2006; 2012). Agnew argued that strains are most likely to result in crime when they: (1) are seen as high in magnitude; (2) are seen as unjust; (3) are associated with low control, and (4) are easily resolved through crime (Agnew, 2006; Agnew, 2012). According to GST, the experience of strain produces negative emotions (i.e., anger or frustration). These emotions prompt corrective action and limit inhibition, increasing an individual's disposition for crime (Agnew, 2006; Tibbetts and Hemmens, 2010). Since most strained individuals do not turn to crime it is crucial to identify the factors that shape the reaction to strain. GST has recently been extended to account for the role of these moderating variables (Agnew et al., 2002; Agnew, 2006).

CONDITIONING FACTORS

One of the largest questions raised by tests of GST is, "why do only some strained individuals turn to crime?" Crime is only one of several possible adaptations to strain. In fact, most people who experience strain do not engage in illegal coping strategies (Agnew, 2006). Thus, it is necessary to consider the conditions under which and for whom strain is most noxious. Agnew (2006) proposes a number of factors that may increase the likelihood of responding to strain to crime. These moderators can be summarized into five categories: situational opportunity; association with deviant others/beliefs favorable to crime; low social control; low levels of conventional support; and poor coping skills/resources. He suggests that individuals who possess most or all of the factors within these categories are most prone to criminal coping. Many of these conditioning factors have been examined in the literature but the results are mixed.

Agnew (2006) suggests that strained individuals are more likely to turn to crime in situations that are conducive to crime. Crime is hypothesized to be more likely when illegitimate goal attainment is easier or, in some cases, more socially desirable. These moderating effects have received little attention in the literature. A recent study by Moon et al. (2009), however, found no support for conditioning effects of parental supervision on the impact of total strain on property, status, or violent delinquency.

The second category of conditioning factors –association with deviant others/beliefs favorable to crime – has been examined extensively. GST posits that strained individuals who are exposed to deviant others are more likely to engage in criminal coping because these relationships foster beliefs favorable to crime. Further, membership in deviant subcultures can result in increased opportunities for crime. Findings in this area are mixed at best. Agnew and White (1992) found that strain has a greater effect on delinquency and drug use for adolescents exposed to many delinquent friends. These results must be taken with caution as this finding is based on cross-sectional analyses. Since time 1 strain is used to predict time 1 delinquency, there may be problems with simultaneity. The delinquency measure reflected behavior over a 3-year period and drug use in the previous year while most of the strain items were contemporaneous measures. This suggests that strains could have been experienced after the onset of delinquency. These findings did not hold up in an exploratory longitudinal analysis. A later test by Mazerolle and Piquero (1997) found no support for this hypothesis concluding that, “the basic form of the GST model is invariant across groups”. These findings, however, may be biased due to several methodological limitations. There was restricted variability in measures of the potential conditioning factors. The results of

this study were derived from an all-male sample of undergraduate students, limiting the generalizability of these findings. This study also used vignettes in lieu of self-reported responses to actual experiences of strain.

Another study that utilized more appropriate modeling techniques reported a significantly stronger impact of life events on delinquency for those with delinquent peers (Hoffman and Miller, 1998). Longitudinal analyses, however, revealed that among those adolescents who report delinquent peers, strain is associated with a decrease in delinquency regardless of the cutoff point of the stratification variable. When measuring the change in delinquency from one year to the next, the lack of delinquent peers was also associated with a positive change in delinquency. These results are inconsistent with predictions offered by GST.

Other studies have also found conflicting evidence of a strain by criminal others interaction. Aseltine, et al. (2000) hypothesized that the conditional effects of association with deviant peers is outcome specific. For instance, peer marijuana use should condition the effects of strain on one's own marijuana use but not on other delinquent outcomes. Results of this study indicated that peer delinquency does not predict one's own delinquency. Further, strains are more likely to lead to delinquency among those with more conventional peers.¹ Additional studies have reported a similar pattern (Paternoster and Mazerole, 1994; Hoffman and Miller, 1998; Moon et al., 2009) with some finding no support for the moderating effects of criminal others (Eitle and Turner, 2002),

Other tests of the conditioning effects of peers on the relationship between strains and delinquency reported promising results but suffered from several limitations.

¹ The number of significant interactions identified in this analysis (10 out of 96), however is only slightly higher than would be expected by chance.

Mazerolle and Maahs (2000), for instance found that at high levels of strain, delinquency increases as the level of delinquent peer exposure increases. The use of contingency tables, however, precluded the incorporation of control variables into analyses. The observed moderating effects of association with delinquent peers may have been driven by other factors not held constant in the model. While Baron and Hartnagel (2002) found support for the moderating effects of delinquent peers on property crime, the sample in this study was extremely limited (N=200) and results were based on cross-sectional data. Further, these findings only offer support in terms of a specific sub-area of crime, property offenses. Ideally, the relationships proposed by strain theory would apply across all types of crime. Baron (2004) later found support for the interactive effects of deviant peers and deviant attitudes, respectively. Analyses, however, were also cross-sectional.

Agnew (2006) also suggests that low levels of social control can exacerbate the effect of strain on delinquency. Individuals who experience a lack of direct control, emotional bonds with conventional others, investment in conventional activities and anti-crime beliefs are more likely to cope with strains through crimes because the costs of crime are lowered. People with low levels of social control are also less likely to cope with strains legally due to the lack of stakes in conformity and the absence of moral beliefs. These individuals can be described as having 'nothing to lose'. Studies that examine the moderating relationship of social control on one's responses to strain have also produced mixed findings. Moon et al. (2009) reported that while there were no interaction effects for the legitimacy of violence, for violent and status delinquency only, the interaction between strain and positive relationship with parents was significant and in the expected direction. Mazerolle et al. (2000) concluded that the criminogenic effects

of strain on drug use are conditional on weak social bonds. However, there were no significant interaction effects observed in models predicting school or violence related deviance. Other studies found no support for the moderating effects of social control across all types of delinquency (Aseltine et al., 2000; Baron and Hartangel, 2002; Hay and Evans, 2006).

When coping with strains, individuals may or may not have access to conventional social support from others. This support may come in the form of information or advice, financial assistance, or emotional support (Agnew, 2006). Those with low levels social support may be more likely to engage in criminal coping because they may lack the proper resources to cope with strains in a legal manner. Capowich et al. (2001) reported that the role of social support varied as a conditioning influence on criminal activities. Strained individuals with higher levels of social control were more likely to report intentions to shoplift. In other words, social support enhanced the likelihood of shoplifting as opposed to buffering the effects of strains. No interaction effects were observed for intentions to fight or drive under the influence. Others have also reported mixed findings (Robbers, 2004) or failed to find support for the social support conditioning hypothesis altogether (Johnson and Morris, 2008).

The final and most encompassing set of conditioning factors are those associated with poor coping skills and resources. Unlike those described earlier, these factors are individual-based and span across several sub-areas. The factors originally proposed by Agnew (2006) that are most commonly examined in studies of conditioning effects are: (a) poor problem-solving and social skills and (b) low self-efficacy/self-esteem. Essentially, strains cause problems. Someone who is ill equipped to handle adversity will

have a hard time coping with strains in a legal manner. Moon et al. (2009) found limited support for this proposition. For property delinquency, the interaction between strain and problem-solving ability was significant and in the expected direction. Strained youth with lower levels of problem-solving ability were more likely to engage in property delinquency. Self-efficacy, a related conditioning factor, has been extensively examined in GST literature. Self-efficacy is defined "the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations" (Bandura, 2004). In other words, self-efficacy refers to how much an individual believes he or she will fare in various endeavors. This is similar to the concept of self-esteem. People who think highly of themselves and are confident in their capabilities to overcome hardships should be less likely to cope with strains in an illegal manner. Most studies that have tested this hypothesis failed to generate support for it (Agnew and White, 1992; Baron, 2004; Baron and Hartnagel, 2002; Eitle and Turner, 2003; Hoffman and Cerbone, 1999; Hoffman and Miller, 1998; Jang and Johnson, 2003; Paternoster and Mazerolle, 2004).

Despite many attempts to garner support for Agnew's conditioning hypotheses, there is still little to be said regarding why only some strained individuals turn to crime. Situational opportunity to engage in criminal behavior, measured by levels of parental supervision, was not shown to condition the impact of various strains on any crime type (Moon et al., 2009). There was also little evidence of the conditioning effect of association with criminal others (Agnew and White, 1992; Aseltine et al., 2000; Eitle and Turner, 2002; Hoffman and Miller, 1998; Mazerolle and Piquero, 1997). Other studies finding support for the moderating role of delinquent peers suffered from methodological limitations (i.e. the use of cross-sectional data to model causal relationships), making it

difficult to draw any substantive conclusions (Baron and Hartnagel, 2002; Baron, 2004; Mazerolle and Maahs, 2000). The moderating role of social control is also unclear. Some studies reported marginal conditioning effects (Mazerolle et al., 2000; Moon et al., 2009). Others found no support for the relationship proposed by Agnew (Aseltine et al., 2000; Baron and Hartnagel, 2002; Hay and Evans, 2006). The same is true for the moderating effects of social support (Capowich et al., 2001; Johnson and Morris, 2008; Robbers, 2004) and coping skills/resources (Agnew and White, 1992; Baron, 2004; Baron and Hartnagel, 2002; Eitle and Turner, 2003; Hoffman and Cerbone, 1999; Hoffman and Miller, 1998; Jang and Johnson, 2003; Moon et al., 2009; Paternoster and Mazerolle, 2004). I now turn to a review of evidence regarding conditioning effects of personality traits.

CONDITINING EFFECTS OF PERSONALITY TRAITS

Personality traits may also condition the effects of strain on crime (Agnew, 2006). As stated earlier, Roberts and Mroczek (2008) define personality traits as “the relatively enduring patterns of thoughts, feelings, and behaviors that distinguish individuals from one another”. These traits represent consistent characteristics of individuals that are relevant to a wide variety of behavioral domains, including criminality (Eysenck, 1991). It is no surprise, then, that personality traits are generally regarded as stable predictors of behavior. While there are many different personality indexes used in psychological and criminological research, in recent years the Multidimensional Personality Questionnaire (MPQ; Tellegen, 2008) has gained support among scholars due to its ability to

objectively and comprehensively analyze personality at both the trait and structural level (Patrick et al., 2002).

The MPQ identifies four broad trait categories: Positive Emotional Temperament (PEM), Negative Emotional Temperament (NEM), Constraint, and Absorption. People high in Positive Emotional Temperament host characteristics conducive to joy and are actively and rewardingly engaged in their social and work environments. These individuals tend to have a cheerful happy disposition, feel good about themselves, envision a bright future ahead, be optimistic, live interesting, exciting lives and enjoy the things they are doing. People with higher levels of PEM also thrive in social situations. They value personal relationships, like to be around others, are more likely to take on leadership roles, and like being the center of attention. These individuals also have a good work ethic. They set high performance standards and persist in difficult situations where others may simply give up. On the other hand, those high in Negative Emotional Temperament (NET) describe themselves as tense and nervous, sensitive and vulnerable, prone to anxiety, easily irritable and are often troubled by feelings of guilt and unworthiness. These individuals are also more aggressive and may enjoy upsetting or frightening others for their own advantage. They are typically paranoid, believing that others are 'out to get them' and feel used or taken advantage of by friends. Those low in Constraint tend to lack control over their impulses, take risks, and ignore conventionalism. Generally speaking, these individuals are irrational, enjoy participating in dangerous activities and deliberately participate in activities known to cause bodily harm. People low in Constraint also have lower moral standards and are not likely to be concerned with a good reputation. High scorers on the Absorption scale report

responding favorably to sights and sounds, are easily captured by entrancing stimuli, tend to think in images, and may have vivid recollections of the past. These individuals are also deeply immersed in their own thoughts and may experience episodes of altered or expanded awareness (Tellegen and Waller, 2008).

In an early test of the personality-crime relationship using the MPQ, Krueger et al., (1994) found that negative emotionality and behavioral constraint were significant predictors of delinquency across three different measurement sources: self-reported criminal behavior, informant reports, and official records. A later study, also using scales derived from the MPQ, reported that high stress-reactive individuals high in negative emotionality are more likely to engage in intense acts of aggression (Verona, Patrick, and Lang, 2002).

The core personality traits that have been examined in GST literature are negative emotionality and low constraint. Although it has never been examined, positive emotionality is also regarded as one of the personality dimensions hypothesized to moderate the impact of strain on crime (Agnew, 2006). Negative emotionality falls under the Negative Emotional Temperament (NET) domain of the MPQ and is defined as “the tendency to experience unpleasant emotional states such as fear, anger, and nervous tension” (Hicks and Patrick, 2006). Individuals who are high in negative emotionality may be predisposed to respond to strains in an irrational manner, resulting in a higher likelihood of criminal coping. Those low in constraint are usually impulsive, like to take risks, and tend to reject conventional norms and rules (Agnew, 2006). This type of person may find thrill in criminal behavior and enjoyment in making others “pay” for their misfortunes. Agnew describes these types of people as “out of control” and “mean”.

People who enjoy taking risks or tend not to take responsibility for their actions are more likely to give less thought to the consequences of criminal behavior when presented with stress. Individuals who are easily upset or have little regard for others are more likely to see strains as personal attacks. Thus, we would expect strained individuals who are high in negative emotionality and low constraint to be more likely to report criminal behavior.

Positive emotionality is most closely related to the Positive Emotional Temperament (PEM) domain of the MPQ and is also one of the original four domains proposed in Tellegen's model of the structure of personality (Tellegen, 1985). Until now, this trait has been neglected in GST literature. Positive emotionality includes four domains: well-being, social potency, achievement and social closeness (Waller et al., 1991). People who score high in these areas are expected to report lower levels of criminal behavior, even when presented with strain. Individuals who have higher levels of well-being, get along well with others, and enjoy being leaders should be able to manage stress more effectively than those who are emotionally unstable or impulsive. These individuals are also more likely to achieve positively valued goals and should also be less likely than others to respond to strains with crime.

While only one study explicitly tested the moderating effects of negative emotionality and low constraint (Agnew et al., 2002), others have incorporated these traits into composite measures of total risk or behavioral propensity. After many of his specific conditioning hypotheses failed to receive support, Agnew (2006) suggested that researchers combine all or most of the conditioning factors he proposed into one measure. Individuals who possess several of the characteristics expected to enhance the negative should be most likely to respond to strains criminally. Given the inconclusiveness of prior

research in this area, that approach appears to be problematic. Combining multiple measures of proposed moderators that failed to receive empirical support individually may confound findings. Empiricists commonly refer to this approach as the “junk in-junk out” method. Nevertheless, following in this tradition, Ousey and Wilcox (2007) examined the conditioning effects of antisocial propensity on the relationship between strain and delinquency. Using a peer-bullying index as a measure of strain, the authors found limited support for the conditioning effects of antisocial propensity. Those who had a history of experiencing difficulty controlling their tempers, losing control of their actions when angry, and have trouble keeping their minds on tasks were more likely to engage in delinquency as a result of being bullied when the interaction effect was modeled using General Least Squares Estimation (GLE) and GLE with a log-transformed dependent variable. This finding, however, was sensitive to model specification and the results did not hold up in an arguably more appropriate Tobit regression. The authors used Tobit regression to correct for left-censoring in the dependent variable. This study highlights the importance of using a statistical model that takes into account the distribution of the dependent variable. Another limitation of the study was its reliance on a narrow measure of strain (bullying).

Agnew et al. (2002) used a more comprehensive measure of strain to assess the moderating effects of negative emotionality/low constraint. Their findings supported a conditioning effect. Strained juveniles who were described as impulsive and having very strong tempers were more likely to report engaging in delinquency in response to strain. While these results are also promising, their study had several methodological shortcomings. First, Agnew et al. (2002) used a cross-sectional design to test the

conditioning effects of negative emotionality/low constraint on delinquency. This is problematic as the recall periods of some key variables had some overlap. Others were ambiguous. There is no way to ensure the temporal ordering of strain and delinquency. This increases the likelihood of observing simultaneity effects. Agnew et al. (2002) also suggested that additional research should verify their findings with other measures of negative emotionality/low constraint – especially those measures that more fully measure the domain of constraint. This is because the personality measures used in their analyses suffered from several limitations. Most importantly, their measures comprised entirely of teacher and parent reports of the youth's personality, raising questions of measurement validity because the key personality measures are filtered through another's perceptions. . Further, these critical personality items were only weakly correlated, suggesting poor reliability. The measures of negative emotionality/low constraint also seem to be more indicative of behavior as opposed to personality. For instance, a teacher reports that a juvenile is restless or overly active is more likely than not based solely on observations during class time. Children only spend a small portion of their day in school and spend even little time with specific instructors. Finally, the authors also combined negative emotionality/low constraint into one single factor instead of considering the traits individually. Future research should incorporate more accurate personality measures.

HYPOTHESES

This study examines the relationship between strain, positive/negative emotionality, low constraint and criminal coping by testing the following hypotheses:

- The effect of strain on criminal behavior is increased for those high in negative emotionality.

- The effect of strain on criminal behavior is increased for those high in low constraint.
- The effect of strain on criminal behavior is decreased for those high in positive emotionality.

Prior studies may have failed to find support for the conditioning mechanisms proposed by Agnew due to the limitations described above. Cross-sectional research designs, inadequate measurement of key variables, and inappropriate analytical techniques may have biased findings. The present study improves upon prior research attempting to test the same hypotheses by using longitudinal data to observe how time 1 strain interacts with time 1 personality to predict time 2 criminal behavior. This is to ensure that we are measuring the effects of strain on delinquency and not the converse. This study also improves upon measurement issues by using a more direct measure of strain (stressful life events), and by isolating the conditioning effects of negative emotionality, positive emotionality, and low constraint. In addition to parsing out negative emotionality and low constraint into two separate measures, this study improves upon prior ones by incorporating a third domain, positive emotionality, into the literature on conditioning influences.

Aside from these concerns related to measurement and timing of measures, the inconclusiveness of previous studies on conditioning effects could also be due to the improper application of linear statistical models to delinquency data. In the study described above, Ousey and Wilcox (2007) employed three distinct modeling techniques to test the robustness of their findings. Their study is one of few tests of GST hypotheses that addressed and accounted for the assumptions of their model. Building on Ousey and Wilcox, I will also use the most appropriate model based on the distribution of the data. The following section details the research methods to be used

METHODS

Study Sample

The Social Development Model (SDM) is an integrated framework that borrows from social learning, differential association, and social control theories to explain both positive and antisocial behaviors. Based on this model, the Seattle Social Development Project (SSDP) is a longitudinal study of behavioral development. Guided by the SDM, the purpose of SSDP was twofold: (1) to examine the etiology of antisocial/prosocial behaviors, and (2) evaluate a multicomponent preventive intervention aimed to reduce health risk behaviors and social competence. The SSDP target population included all fifth grade students attending 18 elementary schools serving high-crime neighborhoods in Seattle (N=1,053). Of these, 808 students and their families agreed to participate in study. This initial subject recruitment rate is comparable to other studies involving children or adolescents (Ellickson, 1990; Elliot, et al. 1981).

While this study is not concerned with the intervention component of SSDP, it is important to note that half of the students in the initial sample did receive a school-based intervention prior to the time period analyzed in the study. Based on the Social Development Model, the intervention package included teacher training in proactive classroom management, interactive teaching, and cooperative learning techniques. Students received in-class social skills training while parents were offered training in academic support and effective parenting skills. The intervention, which began in 1981, also continued in the treatment schools after the longitudinal sample was identified. SSDP researchers hypothesized that parent, teacher, and children training based on the SDM would increase bonding to family and school which, in turn would reduce the

likelihood of antisocial behavior. Early follow-ups found positive effects for those who participated in the SSDP intervention. After receiving the intervention for 2 years, boys who participated had lower levels of aggression and were less likely to externalize antisocial behavior than controls. Treatment girls reported lower levels of self-destruction than girls in the control group. These results, however, did not generalize to African-American students (Hawkins et al., 1991). At fifth-grade entry, boys who received the intervention reported higher levels of family and school bonding and were less likely to initiate alcohol use or delinquency (Hawkins et al., 1992).

Abbott et al. (1991) found that there is little evidence of differences between experimental and control groups among variables related to problem behavior. The original research team has examined covariance matrices within the data and found that these structures do not differ. Other studies that have accounted for intervention effects have indicated a high goodness of fit with the data when parameters of the intervention and control groups were constrained to be equal (Hawkins et al., 2003). Therefore, the intervention should not threaten the validity of the hypotheses tests in this study. Due to our confidentiality agreement we are unable to control for intervention conditions. However, if necessary, the original researchers will confirm that intervention effects do not confound our results.

This study uses data from waves 9 and 10 of the SSDP study. From 1985-1991, researchers gathered data once a year from parents, teachers, school, court and police records. In 1993, the research team began collecting data every 3 years. The latest data collection was in 2008, when respondents were 33 years old on average (Hawkins, et al., 2003). Retention rates for this study have remained above 91 percent since 1989 (wave 5)

when respondents were 14 years old, on average. At wave 9, there were 765 participants (94.7 percent of original sample). Data from this wave was collected in 1996 when participants were approximately 21 years old. Wave 10 interviews were conducted in 1999 when respondents were aged 24, on average. The retention rate for this wave is 93 percent (Hawkins et al., 2003).

Table 1 provides a socio-demographic profile of the respondents who participated in waves 9 and 10 of the study. The gender breakdown of the sample was 51 percent female and 49 percent male. Forty-three percent of the sample members were white, 21.2 percent were African American, and 19.1 percent were Asian American. Almost 90 percent of respondents were high school graduates and the parents of 38.2% of the sample made less than 10,000 during the 12 month period prior to Wave 9. About 68.4 percent of respondents were employed and 74.8 percent reported being single. The average age of respondents at Wave 9 was 21.2 and 24.2 at Wave 10.

I recognize that the SSDP sample used in this study is not nationally representative. Conclusions drawn from this analysis cannot be generalized to the universal population of adolescents. The use of these data however, has considerable implications for theoretical development. SSDP includes measures of the strain and personality traits that are compatible with the theoretical constructs they are intended to measure. This study is a direct test of a key conditioning relationship originally proposed by Agnew et al. (2002). This research also sheds light on a population that is often understudied. Most strain studies use information from juvenile populations and very few provide insight into how the experience of strain affects young adults.

Measures

The present research will examine the relationship between strain, crime, and three key personality traits: negative emotionality, low constraint, and positive emotionality. More specifically, this study will test whether the effect of strain on crime is conditional upon negative emotionality, low constraint, and positive emotionality respectively. Strain and personality will be assessed at Wave 9. Self-reported criminal behavior is based on responses from Wave 10. The full item content for each scale used in analyses can be found in the Appendix and the summary statistics are detailed in Table 2.

Strain

Twenty items representing stressful life events that are most likely to cause strain among young adults were measured at age 21. This index includes items that reflect aversive experiences, some more common than others. Respondents reported whether or not they had experienced various types of family conflict, financial stress, and criminal victimization over the last 12 months. The full listing of twenty items can be found in the Appendix. The strain index, a count of the number of different types of strain experienced, measured the amount of stressful events experienced over the past year. On average, respondents reported experiencing about 3 stressful life events over the past year. Items were summed so that the index represents the total number of stressful life events experienced by each individual.

Personality Measures

Respondents were asked a number of questions designed to measure their personality traits. Many of these items reflected the traits of interest:

Negative Emotionality

Negative emotionality is defined as, “the tendency to experience unpleasant emotional states such as fear, anger, and nervous tension” (Hicks and Patrick, 2006). Negative emotionality was measured using an 8-item scale. Respondents were asked to rate each of the following statements on a scale of 1-4 (*1=very characteristic or typical, 4 = not characteristic or typical*): “I frequently get distressed”; “I often feel frustrated”; “Everyday events make me feel troubled and fretful”; “I get emotionally upset easily”; “When displeased, I let people know it right away”; “I am known as hot-blooded and quick-tempered”; “There are many things that annoy me”; and “It takes a lot to make me mad”. These items reflect an individual’s tendency to experience negative emotions. Items were reverse coded if necessary so that a higher score represents a greater tendency towards negative emotionality. After ensuring that all items are coded in the same direction, a scale was created by averaging levels of agreement with the above statements (Cronbach’s Alpha = .720).

Low Constraint

Low constraint, or an inclination towards risk-taking and sensation seeking, was measured by an 8-item index. A scale was created by averaging the reported frequency (*1 = never; 2 = done it but not in past year; 3 = less than once a month; 4 = about once*

a month; 5 = 2-3 times a month; 6 = once a week or more) of experiencing the following: “Done what feels good no matter what?”; “Done something dangerous because someone dared you to do it?”; or “Done crazy things even if they are a little dangerous?” Since the conceptualizations of low-constraint may be slightly different based on the age of an individual, five additional items using the same response format were also measured at age 18. These items include: include “often gone to a wild or out of control party” and “shocked [upset or annoyed adults] people just for the fun of it” were also included to provide a better measure of the construct. The addition of these items captures a wider range of behaviors indicative of low constraint. A scale was created by averaging values so a higher score represents higher levels of low constraint (Cronbach’s Alpha = .787).

Positive Emotionality

Positive emotionality reflects an individual’s level of well-being, social potency, achievement and social closeness (Waller et al., 1991). A 6-item scale designed to represent this construct included measures that reflect how well an individual gets along with others. Respondents were asked, on a scale of 1-3 (*1 = not true; 2 = sometimes true; 3 = often true*) how true the following statements were: “Being part of a team is fun”; “I will always have friends”; “I get along well with other people”; “I like being around people”; “I like to see other people happy”; and “Helping others makes me feel good”. The responses to these items were averaged to create a positive emotionality scale (Cronbach’s Alpha = .747).

Criminal Behavior

Self-reported criminal behavior was measured with a 15-item scale. At age 24 respondents were asked how many times they had: “cheated someone”; “purposely damaged or destroyed property or things belonging to someone else; “broken into a house or store without the owner’s permission”; “taken anything worth less than \$50”; taken anything worth more than \$50”; “bought, held, or sold stolen goods when you knew that they were stolen”; “taken a motor vehicle, such as a car or motorcycle, for a ride without the owner's permission”; “picked a fight with someone”; “hit someone with the idea of seriously hurting them”; “beat up someone so badly they probably needed a doctor”; “threatened someone with a weapon”; “used a weapon or force to get money or things from people”; “sold illegal drugs”; “used illegal checks”; and “used a credit card without permission”. This scale captures the presence or absence of a broad range of criminal behavior over the past year. First, a variety scale was calculated to reflect the number of different items each respondent endorsed, but this variety scale was subsequently collapsed to a binary variable indicating the presence or absence of criminal behavior. In this sample, there was little variability in the crime outcome beyond its presence or absence. The unrecoded variety scale had Cronbach’s Alpha = .748.

Prior Delinquency

The respondents’ self-reported delinquency was summed and averaged across waves 6-8 and is controlled in all analyses. This is important as prior delinquency may cause subsequent delinquency and may also exert an independent effect on strain and personality. Respondents were asked how many times, in the past 12 months, they had

engaged in 14 behaviors indicative of delinquency. In addition to the items measured at age 24, other types of delinquency more appropriate for adolescents were also controlled for in all analyses. This index was constructed by taking the natural log of each item after adding 1 to each item, standardizing the recoded items, and creating the mean of the standardized items. See Appendix for full listing of items and response format (Cronbach's Alpha = .905).

Sociodemographic Measures

The following variables, measured at age 21, are controlled in all analyses: age; gender; ethnicity; and marital status. See Table 1 for full information on sample demographics.

Analysis Strategy

Table 3 presents the bivariate correlations among the key variables. All of the variables were significantly related to crime in the expected directions. These correlations were all statistically significant. As expected, higher levels of strain, negative emotionality, and low constraint were all significantly and positively associated with crime. Positive emotionality was significantly and negatively associated with crime.

Logistic regression was used to test hypotheses against the dichotomous crime outcome. First, I created interaction terms for negative emotionality, positive emotionality, and low constraint by multiplying each measure by the strain index. Then, I included each term, the strain measure, personality variables, and the control variables into the model producing main and interaction effects. I conducted a hypothesis test

against the null hypothesis that the coefficient for each interaction term is equal to zero. If the test statistics for any of the interaction terms were significant at the $p < .05$ level, using a one-tailed test as is appropriate for a directional hypothesis, we can reject the null hypothesis that the effect of strain is not conditional upon negative emotionality, low constraint, or positive emotionality.

Results

Logistic Regression

Logistic regression was performed to assess the impact of personality traits on the relationship between strain and criminal behavior (Table 4). The model contained a total of 13 predictors including the stressful life events, negative emotionality, positive emotionality, and low constraint scales; three interaction terms to assess the moderating role of personality traits; and relevant control variables.² The full model containing all predictors was statistically significant, Chi-Square (13, $N = 725$) = 115.24, $p < .001$ indicating that the model was able to predict criminal behavior.

Given the variation of the response format in the measurement of key variables, prior to performing a logistic relationship to test the relationships proposed in this study, the strain and personality measures were transformed into z-scores before computing the multiplicative interaction terms to aid the interpretation of findings. As shown in Table 4, only five of the thirteen independent variables entered into this model made a unique

² Alternate models were run controlling for parents' socioeconomic status and education levels but the addition of these controls reduced the valid number of cases available for the regression analysis. The results from these alternative models, however, were substantively the same as the results from the models described in the text.

statistically significant contribution to the model. Stressful life events, positive emotionality, low constraint, prior delinquency and gender were all significant at the .05 level . While the *p*-value for the low-constraint X strain interaction term appears to be statistically significant, because the hypotheses regarding the interaction terms were directional, it is not. Since the region of rejection for this test statistic is in the right tail of the distribution, the negative coefficient produced by this interaction does not allow us to reject the null hypothesis.

The strongest predictor of criminal behavior was gender, recording an odds ratio of 2.29. On average, the odds of an individual engaging in at least one criminal behavior at Wave 10 are approximately 2 times higher for males than females. All else equal, for every additional strain experienced, individuals are 1.38 times more to engage in criminal behavior. For each one unit increase in positive emotionality, the odds of engaging in criminal behavior decreases by a factor of .743, all else being equal. Contrarily, for every one unit increase in low constraint, the odds of committing at least one self-reported crime are increased by 1.45, controlling for all other factors in the model. All other predictors in the model, including negative emotionality and each of the three interaction terms were statistically non-significant. For these variables, we cannot rule out the possibility that there was equal probability of engaging in crime across all groups. Thus, we fail to reject the null of each of the three hypotheses examined in this study.

Discussion and Conclusion

This research attempted to examine whether the effect of strain on crime was conditional upon three personality traits: negative emotionality, low constraint, and

positive emotionality. While the data supports a direct, positive association between stressful life events and criminal behavior, none of the moderating hypotheses tested in these analyses were supported. Low constraint and positive emotionality, however were found to be significant predictors of crime in the expected direction. Negative emotionality was unrelated to criminal behavior in this sample.

Despite this study's methodological improvements upon prior research through the use of (a) a longitudinal sample design, (b) the appropriate modeling technique based on the distribution of the data and (c) theoretically sound measures of key variables, I must acknowledge several limitations. The data used in these analyses were not nationally representative and only represent a small segment of our population of interest—young adults. Further, while this study attempted to improve upon prior ones by using a longitudinal design, there was a 3-year lag between the time points. This relatively long period of time between waves, combined with concerns regarding whether this sample provided sufficient power to detect significant interactions, could have contributed to the lack of empirical support for the hypotheses described above, resulting in Type II errors.

Future research should use more representative samples with a shorter reference period in order to provide a more accurate assessment of the hypotheses proposed in this paper. Others interested in exploring the strain-crime relationship should also use empirically reliable, theoretically consistent measures of strain. Nonetheless, despite these shortcomings, the results of this study have considerable implications for the future of general strain theory. Taken in consideration with the inconclusiveness and non-significance of other studies of the moderating relationships proposed in GST, this

research suggests that conditioning factors—even those deemed most important by the theory’s developer—may not be the key to understanding why only some strained individuals turn to crime. The lack of support for the moderating hypotheses examined in this study warrants further inquiry into the validity of GST and its arguments.

APPENDIX

SURVEY ITEMS

DEPENDENT VARIABLE

Crime (Age 24)

How many times in the past year have you:

1. purposely damaged or destroyed property or things that did not belong to you?
2. broken into a house, store, school or other building without the owner's permission?
3. taken anything worth less than \$50?
4. used or tried to use checks illegally or phony money to pay for something?
5. taken things worth more than \$50?
6. bought, held, or sold stolen goods when you knew that they were stolen?
7. taken a motor vehicle, such as a car or motorcycle, for a ride without the owner's permission?
8. picked a fight with someone?
9. hit someone with the idea of seriously hurting them?
10. beat up someone so badly they probably needed a doctor?
11. threatened someone with a weapon?
12. sold illegal drugs such as marijuana, cocaine, LSD, or heroin?
13. used or tried to use credit cards without the owner's permission?
14. cheated or tried to cheat someone by selling them something that was worthless or not what you said it was?
15. used a weapon or force to get money or things from people?

CONTROL VARIABLES

Prior Delinquency (Grades 9, 10, and 12)

How many times in the past year have you:

1. hit [or kicked] a teacher?
2. used a weapon or force to get something from someone?
3. hit your parents other than in jest or play?
4. hit someone with the idea of seriously hurting them?
5. picked a fight with someone?
6. thrown objects such as rocks or bottles at cars or people?
7. taken anything worth more than \$5 but less than \$50?
8. taken things worth more than \$50?
9. broken into a house, store, school or other building without the owner's permission?
10. broken or destroyed somebody's property just for fun?
11. drawn graffiti, on buildings or other property (without the owner's permission)?
12. sold illegal drugs?

13. picked up or stopped by the police but not arrested?
14. been arrested by the police?

Demographic Characteristics (Age 21)

- 1) Sex of respondent (1 = Male; 2 = Female)
- 2) What is your ethnicity? (1 = Black; 2 = White; 3 = Asian; 4 = Hispanic; 5 = American Indian; 6 = Mixed)
- 3) Which of the following ranges best describes your total shared annual household (self or self and partner, not including housemates) income before taxes from all sources? (1 = Under \$10,000; 2 = \$10,000-\$19,999; 3 = \$20,000-\$39,999; 4 = \$40,000-\$59,999; 5 = \$60,00+)
- 4) What is your marital status? (1 = Single; 2 = Married; 3 = Living with partner but not married; 4 = Separated; 5 = Divorced; 6 = Widowed}

Stressful Life Events (Age 21)

Over the past year, how many times (0 =no; 1 =yes):

- 1) has a parent or guardian gotten divorced, separated, or broken up a relationship?
- 2) has a family or household member had a serious accident or illness?
- 3) has a family or household member abused alcohol or any illegal drugs?
- 4) has a family or household member died?
- 5) did a close friend die?
- 6) has the household had serious money problems?
- 7) has a parent or guardian been unemployed (not had a job) for more than 2 months?
- 8) did you break up with a (girlfriend/boyfriend)?
- 9) did you get divorced?
- 10) did you have serious problems getting along with any household or family members?
- 11) did your parents have serious arguments or fights?
- 12) did you move to a worse residence or neighborhood?
- 13) did you have your driver's license suspended or revoked?
- 14) did you get fired from a job?
- 15) has anyone tried to rob you by using force or threatening to hurt you?
- 16) has anyone taken something directly from you by using force, such as by mugging, or threat?
- 17) have you been knifed, shot at, or attacked with some other weapon by anyone at all, other than incidents already mentioned?
- 18) has anyone beaten you up, attacked you, or hit you with something?
- 19) has anyone tried to physically force you to have sex with them against your will?
- 20) other than what we have talked about already, have you experienced any other major stressful event?

Negative Emotionality (Age 21)

Please rate each of the following statements on a scale of 1 (*very characteristic or typical of yourself*) to 4 (*not characteristic or typical of yourself*):

- 1) I frequently get distressed.
- 2) I often feel frustrated.
- 3) Everyday events make me feel troubled and fretful.
- 4) I get emotionally upset easily.
- 5) When displeased, I let people know it right away.
- 6) I am known as hot-blooded and quick-tempered.
- 7) There are many things that annoy me.
- 8) It takes a lot to make me mad.

Positive Emotionality (Age 21)

Tell me the answer which best indicates how often the following statements are true for you: (1 = *not true*; 2 = *sometimes true*; 3 = *often true*):

- 1) Being part of a team is fun.
- 2) I will always have friends.
- 3) I get along well with other people.
- 4) I like being around people.
- 5) I like to see other people happy.
- 6) Helping others makes me feel good.

Low Constraint (Age 18)

How many times have you done the following things?

- 1) gone to a wild, uninhibited party. (1 = *never*; 2 = *done it but not in past year*; 3 = *less than once a month*; 4 = *about once a month*; 5 = *2-3 times a month*; 6 = *once a week or more*)
- 2) shocked [upset or annoyed adults] people just for the fun of it. (1 = *never*; 2 = *done it but not in past year*; 3 = *less than once a month*; 4 = *about once a month*; 5 = *2-3 times a month*; 6 = *once a week or more*)
- 3) done what feels good, regardless of the consequences. (1 = *never*; 2 = *done it but not in past year*; 3 = *less than once a month*; 4 = *about once a month*; 5 = *2-3 times a month*; 6 = *once a week or more*)
- 4) done something dangerous because someone dared you to do it. (1 = *never*; 2 = *done it but not in past year*; 3 = *less than once a month*; 4 = *about once a month*; 5 = *2-3 times a month*; 6 = *once a week or more*)
- 5) done risky [crazy] things even if they are a little frightening [dangerous]. (1 = *never*; 2 = *done it but not in past year*; 3 = *less than once a month*; 4 = *about once a month*; 5 = *2-3 times a month*; 6 = *once a week or more*)

Low Constraint (Age 21)

In the past year, how many times have you done the following things?

- 1) Done what feels good no matter what? (1 = never; 2 = more than a year ago; 3 = less than once a month; 4 = about once a month; 5 = 2-3 times a month; 6 = once a week or more)
- 2) Done something dangerous because someone dared you to do it? (1 = never; 2 = more than a year ago; 3 = less than once a month; 4 = about once a month; 5 = 2-3 times a month; 6 = once a week or more)
- 3) Done crazy things even if they are a little dangerous? (1 = never; 2 = more than a year ago; 3 = less than once a month; 4 = about once a month; 5 = 2-3 times a month; 6 = once a week or more)

Table 1. Demographic Characteristics

Demographic Characteristics	(Mean or %)	Valid Cases
Male	50.1	765
Income <\$10,000	40.4	726
Single	74.8	765
High School graduate or higher	86.8	765
Employed	72.3	676
White	43	761
Black	21.4	761
Asian	19	761
Hispanic	3.4	761
Mixed	7.9	761
Other	5.3	761
Age (Wave 9)	21.2	765

Note: Values represent percentages except in the case of age.

Table 2. Descriptive statistics: Crime, Stressful Life Events, and Personality

Variable	Mean (S.D.)	Minimum Value	Maximum Value	Valid Cases
Prior Delinquency	-.00 (.471)	-.29	4.68	760
Crime Prevalence	.20 (.397)	0	1	731
Stressful Life Events	3.19 (2.432)	0	14	765
Negative Emotionality	2.27 (.468)	1.13	4	765
Positive Emotionality	2.72 (.309)	1.17	3	764
Low Constraint	2.31 (.860)	1	5.63	765

Table 3. Correlation Matrix

	Stressful Life Events	Negative Emotionality	Positive Emotionality	Low Constraint
Crime Prevalence	.210**	.110**	-.153**	.280**
Stressful Life Events		.290**	-.106**	.298**
Negative Emotionality			-.305**	.169**
Positive Emotionality				-.030

Listwise N=730; **. Correlation is significant at the .01 level (2-tailed)

Table 4. Logistic Regression Predicting Criminal Behavior

	B	S.E.	Wald	df	Sig. (one-tailed)	Odds Ratios	95% Confidence Intervals for O.R.	
							Lower	Upper
Stressful Life Events	.322	.118	7.421	1	.003	1.380	1.095	1.740
Negative Emotionality	.016	.121	.018	1	.448	1.016	.802	1.287
Positive Emotionality	-.297	.109	7.398	1	.004	.743	.600	.920
Low Constraint	.374	.119	9.921	1	.001	1.453	1.152	1.834
Negative Emotionality X Stressful Life Events	.133	.106	1.594	1	.104	1.143	.929	1.405
Positive Emotionality X Stressful Life Events	-.114	.101	1.263	1	.131	.892	.731	1.089
Low Constraint X Stressful Life Events	-.188	.095	3.943	1	.024 ³	.829	.689	.998
Prior Delinquency	.634	.229	7.684	1	.003	1.885	1.204	2.952
Single	.190	.259	.539	1	.232	1.209	.728	2.009
Annual Income < \$10,000	-.338	.223	2.306	1	.065	.713	.461	1.103
Male	.828	.242	11.674	1	.000	2.288	1.423	3.678
White	.131	.219	.360	1	.275	1.140	.742	1.753
Age	.025	.209	.014	1	.453	1.025	.680	1.544
Constant	-2.434	2.354	1.069	1	.151	.088		

N = 725

³ The direction of this coefficient is opposite that hypothesized. It is not significant by a one-tailed significance test.

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