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Strain, Personality Traits, and Deviance among Adolescents: Moderating Factors

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by

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Dedication

This dissertation is dedicated to my daughter, Jadziah, who was born the semester I was preparing for my Comprehensive Exams, and Kristen, my best friend, soul mate, and advocate during times of need. I have been blessed to find the support and love in you during my adulthood that was always lacking in my youth.

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ABSTRACT

General strain theory has received a fair amount of empirical support and theoretical elaboration over the past several years. Since the introduction of general strain theory, Agnew and others have attempted to increase the comprehensiveness of the processes involved in strain theory. Until recently, the general strain theory literature has ignored what Agnew and associates (Agnew, Brezina, Wright, & Cullen, 2002) argue may be one of the most important conditioning effects of the strain-crime relationship, namely the dispositions or personality traits of the individual experiencing strain. Recently, Agnew and associates (2002) published results from a study examining the conditioning effects of personality traits (i.e., negative emotionality and low constraint) on the strain-delinquency relationship. Their findings indicated that certain personality traits significantly condition the effect of strain on delinquency. Research has suggested that more severe personality and behavioral traits, such as psychopathy, also influence criminality.

The present study examined moderating effects of both personality dispositions and psychopathic behavioral features among a sample of 137 youths referred to juvenile diversion by the court system. The results suggest that personality dispositions and

psychopathic behavioral features do not significantly moderate the strain-delinquency relationship. In addition, this study conducted ad hoc analyses examining whether or not delinquency significantly increases the likelihood that subsequent strain and delinquency will result (i.e., a state dependence explanation (see Nagin & Farrington, 1992; Nagin & Paternoster, 1991)). Moderating effects of personality and psychopathy were also included in this model. Further, the role of strain as a mediator for the personality and psychopathy link to delinquency was tested. The findings suggest that delinquency exacerbated subsequent strain and delinquency levels among these youths. Personality and psychopathic features did not moderate the strain-delinquency relationship. Strain did not significantly moderate the personality-delinquency relationship. Limitations and implications for future research and policy are discussed.

Chapter 1

Introduction

> Why do some people collapse under life stresses while others seem unscathed by traumatic circumstances such as severe illness, the death of loved ones, and extreme poverty, or even by major catastrophes such as natural disasters and war? Surprisingly large numbers of people mature into normal, successful adults despite stressful, disadvantaged, or even abusive childhoods. Yet, other people are so emotionally vulnerable that seemingly minor losses and rebuffs can be devastating. (Basic Behavioral Science Task Force of the National Advisory Mental Health Council, 1996, p. 22)

Life is a complex web of pros and cons, positive and negative experiences, protective and risk factors, and gains and losses. Criminological theory addresses why people with similar or identical life experiences vary in their willingness to adhere to the proscribed laws of society. In particular, some criminologists (Agnew, 1992, 2001; Bernard, 1987; Cloward, 1959; Cloward & Ohlin, 1960; Cohen, 1955, 1965; Durkheim, 1897/1951; Merton, 1938, 1968; Messner, 1985, 1988; Messner & Rosenfeld, 1994), have postulated theoretical explanations hypothesizing how life stresses interfere with goal attainment, and why certain individuals or groups cope with this interference through legitimate strategies, while others use illegitimate coping strategies to circumvent or relieve stress. The most dominant of these theories are anomie theory, classic strain

theory, institutional anomie theory, and general strain theory. While the specific assumptions and propositions of these theories differ, each suggests that stress or strain plays an important role in the etiology of crime/deviance.

Anomie theory is a macro-level or structural theory of crime. Anomie is a term first used by Durkheim (1893/1964, 1897/1951) to describe the inability of society to maintain order or regulation over the desires and aspirations of its members. Durkheim suggested that under conditions of increased societal change (e.g., industrial growth, financial crisis) a state of "normlessness" occurred within a society that left it temporarily unable to enforce laws and rules among its people. With the social order weakened, the people may resort to unconventional means of achieving their desires, and crime rates increase.

Merton relied heavily upon Durkheim's work to articulate a more culturally driven and formal version of anomie theory (Merton, 1938). Merton claimed that society must maintain a balance between culture (socially approved goals) and social structure (socially approved means). If every person in the culture is expected to strive for the same goals, but not provided equal structural means (i.e., status), then anomie is more likely to result. When an imbalance exists between culture and social structure and the overall goals of society, there is an increased likelihood that anomie will result at the societal level and strain will result at the group and individual level (Kornhauser, 1978, p. 143). Strain is defined in Mertonian terms as pressure or frustration (i.e., stress) on cultural groups to achieve socially defined economic success. Strain is considered a "mode of adaptation" to anomie. It is measured as the imbalance between economic

aspirations and expectations. Merton's anomie theory became the basis of classic strain theory and other versions of strain theory.

Classic strain theory relied heavily on the contributions made by Cohen (1955, 1965), Cloward (1959), and Cloward and Ohlin (1960). Like Merton, Cohen, Cloward, and Ohlin acknowledged the existence of macro-level anomie, however, they focused on lower-class juvenile subcultures in particular. Cohen suggested that subcultural delinquency among lower-class boys was caused by strain induced by blocked goals of status and social acceptance, rather than goals of economic success. He believed working-class boys strive for middle-class status and respect, and that "status frustration" or strain is experienced when this goal is blocked. Juvenile subcultures experiencing high levels of status strain are more likely to engage in higher rates of delinquency. Cloward and Ohlin (Cloward, 1959, Cloward & Ohlin, 1960) believed that Cohen was not correct in his assumption that the working-class strives for status achievement rather than economic achievement. Similar to Merton (1938), they hypothesized that working-class boys, specifically delinquent gangs, were driven by economic goals. Juvenile subcultures that experienced blocked opportunities for economic success were more likely to engage in higher crime rates. However, Cloward and Ohlin (1960) also suggest that crime rates depended upon access to illegitimate opportunities, denied access to legitimate opportunities was not sufficient to produce delinquency. Due to the focus of these theories on juvenile gang behavior, criminologists have misinterpreted this to mean that classic strain theory is applicable to the explanation of individual difference in crime (for detail see Burton & Cullen, 1992).

Classic strain theories have been criticized for a variety of reasons. However, three major criticisms have emerged. First, classic strain theory has received little empirical support (e.g., Akers & Cochran, 1985; Burton, 1991; Burton, Cullen, Evans, & Dunaway, 1994; Elliott, Huizinga, & Ageton, 1985; Hirschi, 1969; Johnson, 1979; Liska, 1971; Quicker, 1974; Voss, 1966; but see Farnworth & Lieber, 1989). According to strain theory, crime should be highest when aspirations for success were high and expectations were low. However, most studies of strain theory have indicated that crime is highest when both aspirations and expectations are low, and lowest when both aspirations and expectations are high (see Hirschi, 1969; Kornhauser, 1978). Second, strain theory assumes that crime will be concentrated in the lower-class because in the lower-class goals are overemphasized at the expense of means. Yet, studies have shown that the middle-class experiences high crime, and that class is weakly related to crime (e.g., Hindelang, Hirschi, & Weiss, 1981; Krohn, Akers, Radosevich, & Lanza-Kaduce, 1980; Thornberry & Farnworth, 1982; but see Elliott & Huizinga, 1983). Third, classic strain theory has been criticized because it does not provide an explanation for desistence and periods of criminal inactivity among youths (Hirschi, 1969). Based on these criticisms, social scientists have proposed theoretical revisions to classic strain theory (see Agnew, 1992; Burton & Cullen, 1992; Farnworth & Leiber, 1989; Jensen, 1995; Messner & Rosenfeld, 1994).

In general, revisions of classic strain theory can be characterized as belonging to one of two types: structural or individual. Structural revisions of classic strain theory remain true to the macro-level hypothesis of classic strain theory that *anomie* or structural strain (i.e., blocked opportunities to achieve monetary success and/or middle-class status)

is a cause of the rate of crime (e.g., Bernard, 1987; Messner, 1985, 1988). Messner and Rosenfeld's (1994) institutional anomie theory is among the most notable macro- classic strain theory revisions. Institutional anomie theory suggests that the American economy dominates all other social institutions, such as the educational system, the family, and the political system (Messner & Rosenfeld, 1994). In a balanced society, non-economic social institutions serve to insulate society's members from crime. Under the ideology of the American Dream, however, disproportionately high crime rates result from the overemphasis placed on the economic institution. This structural revision of strain theory has received a respectable amount of empirical support (Chamlin & Cochran, 1995; Messner & Rosenfeld, 1997; Piquero & Piquero, 1998; Pratt & Godsey, 2003; Savolainen, 2000).

Individual level revisions of classic strain theory have shifted the focus of the theory from a structural or macro-level perspective to a micro-level, social-psychological perspective (Agnew, 1992; Burton & Cullen, 1992) in an effort to better conceptualize the theory. Robert Agnew's General Strain Theory is the most notable of the micro-level revisions of classic strain theory. General strain theory has received much consideration in recent years and acquired a respectable amount of empirical support (e.g., Agnew, 2002; Agnew & Brezina, 1997; Agnew & White, 1992; Baron & Hartnagel, 1997, 2002; Benda & Corwyn, 2002; Brezina, 1999; Broidy, 2001; Eitle, 2002; Eitle & Turner, 2002, 2003; Hoffmann, 2002; Hoffmann & Cerbone, 1999; Hoffmann & Miller, 1998; Hoffmann & Su, 1997; Maxwell, 2001; Mazerolle, 1998; Mazerolle & Maahs, 2000; Mazerolle & Piquero, 1997, 1998; Paternoster & Mazerolle, 1994; Piquero & Sealock, 2000, 2004; Robbers, 2004).

General strain theory offers a modified conceptualization of strain, such that strain is now defined as "*negative relationships with others*: relationships in which the individual is not treated as he or she wants to be treated." (Agnew, 1999, p. 48). This new conceptualization broadens the definition of strain by incorporating more complex dynamics related to positive and negative stimuli of stress, thus allowing for a more diverse measurement of how strain can occur. Specifically, according to GST, strain can be conceptualized as being comprised of three forms of strain: (1) failure to achieve positively valued goals, (2) removal of positively valued stimuli, and (3) presentation of negative stimuli (Agnew, 1992). GST hypothesizes that when individuals fail to achieve positively valued goals (i.e., educational, income, and status derived immediate and long-term goals) they experience frustration or pressure, which may be more likely to lead to crime. In addition, individuals may experience strain when positive stimuli (e.g., relationships with loved ones) are removed from their lives. Removal of positive stimuli can increase frustration, which, in turn, may increase the changes that crime will result. Individuals may also experience strain when negative or noxious stimuli (e.g., negative relationships with parents and teachers such as abuse or neglect) are introduced in their lives. This negative stimulus creates a pressure or frustration to alleviate or remove the negative stimuli, which may increase the likelihood that crime will result.

General strain theory (Agnew, 1992, 2001) posits that an individual will experience at least one negative emotion, referred to as *negative affect*, per experience of strain. Negative affect refers to negative emotional states (e.g., depression, anxiety, and anger) that emerge due to the frustration caused by strain. However, not everyone experiencing strain or negative affect will commit crimes. Whether or not negative affect

leads to an illegitimate response depends on the development and presence of individual coping strategies (i.e., cognitive, emotional, and behavioral adaptations) and other conditioning factors (e.g., intelligence, interpersonal skills, social support systems) that are present and available for access by the individual.

Since the introduction of general strain theory, Agnew and others have attempted elaborate on the comprehensiveness of the theory, making it more and more general in its application to the etiology of crime. Often these theoretical expansions of GST have been guided by the findings of previous studies. These expansions have provided more specification of criminal motivations (Agnew, 1992), criminogenic types of strain (Agnew, 2001), gender differences (Broidy & Agnew, 1997), structural effects that may condition the strain-crime relationship (Agnew, 1999), developmental or life-course differences in strain (Agnew, 1997), and biological explanations of the strain-crime relationship (Walsh, 2000).

Until recently, the GST literature has ignored what Agnew and associates (Agnew, Brezina, Wright, & Cullen, 2002) argue may be one of the most important conditioning effects of the strain-crime relationship, namely the personality traits of the individual experiencing strain. In his foundation for GST, Agnew (1992, p. 65) alluded to the role that personality may play in GST in his discussion of conditioning factors influencing the strain-crime relationship, though no specific mention of personality traits or psychopathic features was made. Agnew suggested "temperament," a less stable precursor to personality traits (Goldsmith, 1996; Pedlow, Sanson, Prior, & Oberklaid, 1993; Rothbart & Bates, 1998), may serve as moderating factors for the strain-delinquency relationship. Several years later, Agnew stated that "[t]he subjective

evaluation of an objective strain is a function of a range of factors, including individual traits (e.g., irritability)…" (Agnew, 2001, p. 321).

Personality traits are relatively stable characteristics that describe one's perception and behavior toward the environment (Caspi, Moffitt, Silva, Stouthamer-Loeber, Krueger, & Schmutte, 1994). There is impressive evidence that suggests personality traits may be stable and enduring characteristics, affected by biological and early socialization processes (Bock & Goode, 1996; Carey & Goldman, 1997; Eley, 1998; Gottesman & Goldsmith, 1994; Lykken, 1995; Moffitt, 1987; Plomin & Nesselrode, 1990; Rutter, 1996; see also, Walsh, 2000). The literature has consistently revealed a significant association between personality traits that are non-conforming or maladaptive and aggression and antisocial behavior among adult and juvenile samples (e.g., Binder, 1988; Blackburn & Coid, 1998; Caspi et al., 1997; Caspi et al., 1994; Cloninger, 1987; Eysenck & Eysenck, 1985; Eysenck & Gudjonsson, 1989; Farrington, 1986, 1992; Hare & Jutai, 1983; Harris, Rice & Cormier, 1991; Hart, Kropp & Hare, 1988; Hemphill, Hare & Wong, 1998; Kosson, Smith & Newman, 1990; Luengo, Otero, Carrillo-de-la-Peña, & Mirón, 1994; Mak, Heaven, & Rummery, 2003; Miller & Lynam, 2001; Miller, Lynam, Widiger & Leukefeld, 2001; Raine, 1993; Robins, 1966; Rutherford, Alterman, Cacciola & McKay, 1997; Rutter & Giller, 1983; Salekin, Rogers & Sewell, 1996; Smith & Newman, 1990; Tennenbaum, 1977; Tremblay, Pihl, Vitaro, & Dobkin, 1994; Wilson, Rojas, Haapanen, Duxbury, & Steiner, 2001; Zuckerman, 1989). According to Miller and Lynam (2001), the following overview can be made about personality and crime:

> Individuals who commit crimes tend to be hostile, self-centered, spiteful, jealous, and indifferent to others.…They tend to lack ambition, motivation, and perseverance, have difficulty controlling their impulses, and hold nontraditional and unconventional values and beliefs. (p. 780)

Given the relationship between certain personality traits and aggression and crime, Agnew et al. (2002) have suggested that personality traits may be important moderators of the effect of strain on crime. Personality traits may affect how individuals emotionally respond to strain and develop coping strategies to strain. Individuals possessing maladaptive personality traits are hypothesized to interpret strain as aversive and are more likely to experience negative affect in the form of anger (Agnew et al., 2002, pp. 45-47). Such individuals are also more likely to perceive aggressive solutions to strain as better coping mechanisms for their situations (pp. 45-47). Based on these assumptions, Agnew et al. (2002) examined how strain is moderated by individual personality traits characteristics. The authors determined that certain features of personality (negative emotionality and low constraint) moderate the effect of strain on delinquency. By highlighting the role that personality traits may play in GST, Agnew and associates have provided an opportunity for a more complete explanation of how strain motivates deviance. Through an empirical examination of conditional factors, Agnew is attempting to provide a more generalizable theory of crime.

Agnew's recent article is noteworthy not simply because of its more generalized application, but because this study has allowed for the incorporation of a whole new perspective in strain theory. Accordingly, this new framework emphasizes the psychological aspects of the theory. At present, there is an abundance of mainstream and

academic interest in the psychology of crime, especially maladaptive personality traits like psychopathy (Campbell, Porter, & Santor, 2004; Catchpole & Gretton, 2003; Corrado, Vincent, Hart, & Cohen, 2004; Falkenbach, Poythress, & Heide, 2003; Gretton, McBride, Hare, O'Shaughnessy, & Kumka, 2001; Kosson, Cyterski, Steuerwald, Neumann, & Walker-Matthews, 2002; Lee, Vincent, Hart, & Corrado, 2003; Lynam, 1997; Lynam et al., in press; Murrie & Cornell, 2002; Murrie, Cornell, Kaplan, McConville, & Levy-Elkon, 2004; O'Neill, Lidz, & Heilbrun, 2003; Pardini, Lochman, & Frick, 2003; Spain, Douglas, Poythress, & Epstein, 2004; Stafford & Cornell, 2003; Vitacco, Rogers, & Neumann, 2003; Ridenour, 2001; Salekin, Leistico, Neumann, DiCicco, & Duros, 2004; Vitacco et al., 2003). Therefore, Agnew and colleagues' (2002) work presents a timely, relevant, and substantive contribution to the field. In an attempt to build upon their work and make n additional contribution to the discipline of criminology, the present study provides a replication and extension of the Agnew et al. (2002) test of general strain and personality traits.

Toward this end, Chapter 2 presents the theoretical foundation for general strain theory (Agnew, 1992, 2001). Key theoretical concepts are defined, and an overview of the empirical support for the framework is presented. Many of the key concepts for GST overlap with concepts described in social control (Hirschi, 1969; Gottfredson & Hirschi, 1990) and social learning theories (Akers, 1973, 1977, 1985; see also, Burgess & Akers, 1966; Sutherland, 1947). Therefore, Agnew argues that tests of GST should control for measures of social control and differential association. The importance of examining rival theoretical measures, social control and social learning theory, when conducting a

full test of GST is also discussed. In relation to this issue, the chapter concludes with a discussion of tautology and falsifiability in GST.

The purpose of the present study is to examine the role that personality plays in GST. Therefore, before existing empirical literature testing the effects of personality on strain (i.e., the 2002 Agnew et al. article) and the hypotheses of this study can be presented, if is critical to examine what the literature says about personality and its relationship to antisocial behavior. Chapter 3 presents an overview of personality traits and psychopathy personality traits or psychopathy. The chapter includes a discussion of the temporal consistency and stability of personality. Empirical evidence of an association between personality traits and psychopathic features and delinquency, substance use, and strain is presented. The present study examined GST and personality among a justice-referred sample of adolescents; therefore, recent studies that have extended the concept of psychopathy downward from adults to children and adolescents are also presented. Moreover, tautological issues in the measurement of personality and psychopathy compared to antisocial behavior are considered.

Chapter 4 presents a brief discussion of Agnew et al.'s (2002) test of GST and the moderating effects of personality traits, specifically negative emotionality and low constraint. The proposed study, a replication and extension of the Agnew et al. article, is presented. Models presenting the structural equation models analyses that were conducted in this study are illustrated and explained.

Chapter 5 describes the sample used in this study. Details regarding the operationalization of the strain, social control, differential association, personality, delinquency, and drug problems variables are provided. Chapter 6 explains the analytical

strategy employed in this study. Finally, Chapter 7 contains a discussion of the findings, limitations, and implications for policy and future research.

Chapter 2

General Strain Theory

Strain theory (see Merton, 1938, 1968; Cohen, 1955; Cloward & Ohlin, 1959, 1961) is among one of the more venerable sociological and criminological theories (Cole, 1975). Classic strain theory was originally derived from Emile Durkheim's anomie theory (1897/1951), although Robert Merton (1938) is most often credited with the modern-day conceptualization of anomie theory. Anomie theory attempts to explain societal variations in crime rates, and as such describes a state of "macrosocial disorganization" (Kornhauser, 1978) or "normlessness" (Durkheim, 1897/1951) that leads to higher levels of crime. Since the early 1900s, anomie theory has become narrower in scale, explaining why certain groups of individuals within societies, rather than entire societies, have higher criminal tendencies than others (Cloward & Ohlin, 1960; Cohen, 1955; Merton, 1968). These offshoots of anomie theory form the conceptual basis of classic strain theory.

Anomie and Classic Strain Theory

Anomie is a concept first used by the 19th century French sociologist, Emile Durkheim, to describe the inability of society to maintain order or regulation over the desires and aspirations of its members (Durkheim, 1893/1964, 1897/1951). Durkheim suggested that a state of "normlessness" occurred within a society when dramatic changes or disruptions left the society temporarily unable to enforce common laws and rules

among its people. Examples of these disruptive changes could include such events as financial crisis and rapid industrial growth (Passas, 1995). Under these conditions consequences of anomie may be observed, such as increases in competitiveness, greed, status aspirations, and pleasure-seeking (Passas, 1995). With the social order weakened, the people may resort to unconventional means of achieving their anomic desires. Therefore, deregulated societies may experience temporarily higher levels of crime until a sense of order can be re-established.

Merton relied heavily upon the theoretical framework established by Durkheim to propose a more culturally driven explanation of anomie (Merton, 1938). In particular, Merton's Social Structure and Anomie theory (1938) provided an explanation of deviance in American society. Merton claimed that society must maintain a balance between culture and social structure. Culture refers to the values that characterize appropriate goals (i.e., aspirations) and means. An integrated culture equally stresses both goals and means. However, "malintegrated" cultures overemphasize goals and/or means. Cultures that overemphasize goals at the expense of means will be more likely to experience anomie. Cultures that overemphasize means at the expense of goals will be more likely to be ritualistic and rigid in nature. Social structure refers to the presence or absence of social class stratification. Societies that possess stratified social structures (i.e., divisions in social status or class) have structural inequalities in the distribution of means. Among egalitarian societies, especially, every member is expected to aspire to the same goals, regardless of social class. If every person in the culture is expected to strive for the same goals, but not provided equal structural means (i.e., status), then anomie is more likely to result. When a combined imbalance or "malintegration" exists

between culture and social structure, there is an overall increased likelihood that anomie will result at the societal level and strain will result at the group and individual level (Kornhauser, 1978, p. 143). Strain is defined in Mertonian terms as pressure or frustration on cultural groups to achieve socially defined economic success. It is measured as the disjunction between economic aspirations and expectations.

Within American society, the pursuit of the "American Dream" causes "malintegration" of culture and social structure, which leads to unusually high crime rates (Merton, 1938, 1957). The vision of the American Dream substantially overstresses goals of economic and status success at the expense of means. Americans are taught by family, friends, school, the media, and others to attain financial success and notoriety at almost any cost. Little is said of the appropriate means to achieve these goals. Moreover, disadvantaged minority groups are expected to internalize the same goals as more affluent groups, despite little if any legitimate opportunities for achieving these goals. The pursuit of the American Dream leads to such an imbalance within culture and social structure that anomie is produced. This anomic condition creates strain among groups and individuals to achieve the American Dream regardless of social prohibitions. As a result, many strained Americans pursue success through illegitimate means, which may be one possible explanation of why America exhibits much higher crime rates than other countries (Akers, 1997).

Laying the groundwork for classic strain theory, Merton (1938) described five cultural adaptations to strain, four of which are deviant. These "modes of adaptation" differ depending upon the emphasis that is placed on the balance of goals to means. First, most cultural group members may respond to strain through *conformity*. Conformists

continue to strive for economic success through legitimate channels regardless of anomic and strainful situations they experience. Second, group members may respond to strain through *innovation*. Groups reacting to strain through innovation have a high commitment to societal goals, but a low commitment to conventional or legitimate means. They will utilize illegitimate means to attain their goals when necessary. Third, some members may respond to strain through *ritualism*. These members demonstrate lower commitment to goals, but a zealous commitment to legitimate means. Fourth, another type of reaction to strain is *rebellion*. Rebellious members are not committed to either the goals or legitimate means of society, but rather, versions of their own goals and means. Such groups will be highly committed to their own versions of goals and means (e.g., revolution, political uprising) in place of those of conventional society. Finally, *retreatism* is another form of strain adaptation. Like rebellious members, retreatists will reject the goals and means of society. However, they will not substitute their own goals and means for those of society; instead, they surrender and dropout of society altogether. Although Merton presented the five "modes of adaptation" as structural responses to strain, Menard (1995) has suggested that these cultural adaptations to strain can be attributed to the individual level.

The aforementioned suggests that blocked cultural goals and easy access to illegitimate means of success may lead to social processes conducive to anomie and deviant behavior, thus establishing the foundation for classic strain theory (Passas, 1995). The transition from Merton's anomie theory to classic strain theory relied heavily on the contributions made by Cohen (1955, 1965), Cloward (1959), and Cloward and Ohlin (1960). Like Merton, Cohen, Cloward, and Ohlin acknowledged the existence of societal

anomie; however, their focus on juvenile subcultures expanded the focus of anomie-inducing factors beyond economic strain (Passas, 1995, p. 101).

Albert Cohen (1955, 1965) applied of strain theory to the study of juvenile crime variations. In his struggle to understand juvenile crime, Cohen applied Merton's concepts of structural (i.e., cultural) sources of strain to the lower-class, urban adolescent male subculture. Cohen suggested that subcultural delinquency among lower-class boys was caused by strain induced by blocked goals of status and social acceptance, rather than goals of economic success. That is, working-class boys strive for middle-class status and respect. When this goal is blocked, they experience "status frustration" or strain, which may lead to assimilation of a delinquent subculture. Acceptance into the delinquent subculture is achieved through status mobility within delinquent gangs. Cohen's strain theory of delinquent gangs has been criticized as relying so heavily on delinquent subculture that it "hovers on the brink of adopting a cultural deviance explanation of working-class delinquency," rather than a strain explanation (Kornhauser, 1978, p. 154).

Cloward and Ohlin (Cloward, 1959, Cloward & Ohlin, 1960) presented a strain theory of delinquent subcultures that is more in line with Merton's original theory and supportive of Cohen's strain theory. Cloward and Ohlin believed that Cohen was incorrect in his assumption that the working-class strives for status achievement rather than economic achievement. They believed that Merton was correct in his assumption that Americans desire money and economic success; however, he was wrong in assuming that it was the imperfect socialization of the working-class that led to higher rates of crime among this culture (Kornhauser, 1978, p. 156). Cloward and Ohlin suggested that

working-class boys, specifically delinquent gangs, were driven by economic goals and just as capable of conformity as middle-class or higher-class Americans. The difference was that working-class boys were simply conforming to the norms and beliefs of a different subculture.

Moreover, denied access to legitimate opportunities was not sufficient to produce delinquency; delinquent gangs also had to have access to illegitimate opportunities. Borrowing from Shaw and McKay's (1942) social disorganization theory and Sutherland's (1947) differential association theory, Cloward and Ohlin suggested that cultural transmission of delinquent values and differential opportunities to illegitimate means resulted in deviant adaptation when economic goals were blocked (Akers, 1997). Delinquent gangs varied in their level of delinquent involvement or specialization. Differential opportunities to illegitimate means explained why *criminal*, *conflict*, and *retreatist* gangs specialized in theft, fighting, and alcohol/drug use, respectively (Cloward & Ohlin, 1960).

Criticism of Classic Strain Theory

As mentioned above, Merton proposed a macro-level theory of anomie, which included assumptions about how societal conditions create macro-level strain toward anomie (Merton, 1968). However, scholars (Agnew, 1992; Hirschi, 1969; Kornhauser, 1978) began to reinterpret Merton's notion of strain as a micro-level explanation of strain. In part, this misinterpretation of strain is a consequence of Merton's own writings, in which he makes reference to the effects of strain upon individuals (Burton & Cullen, 1992). Burton and Cullen said it best when they stated the following:

> [I]f Merton wanders into the realm of the individual, ultimately he retreats from this level of analysis and reminds us that anomie is a societal condition and that his theoretical purpose is fundamentally sociological: to explain rates of deviance/crime across the social structure, not to explain which individuals feel the pressure to engage in such wayward activities. (p. 5)

The works of Cohen (1955, 1965) and Cloward and Ohlin (Cloward, 1959, Cloward & Ohlin, 1960) may have also contributed to the attribution of strain to the individual level. They focused so heavily upon understanding delinquency among working-class boys (i.e., gangs) that scholars may have misinterpreted this to mean that individual differences in delinquency within gangs should be examined (Burton & Cullen, 1992, p. 6). In actuality, Cohen and Cloward and Ohlin were suggesting that gang *group* differences in delinquency within urban areas should be examined (p. 6). Further, the conceptualization of strain theory in criticisms made by Hirschi (1969) and Kornhauser (1978) may have contributed in large part to the social psychological and micro-interpretations of anomie theory (Burton & Cullen, 1992, p. 6-7).

Where the responsibility for the micro-level interpretation of anomie theory, which has become known as classic strain theory, lies is irrelevant in this particular study. What does matter is that tests of this classic strain theory received marginal empirical support. Classic strain theory has traditionally been tested by examining (a) the disjunction between success (e.g., occupation, educational, economic measures) aspirations and expectations and (b) blocked opportunity (Burton & Cullen, 1992). The empirical literature examining the disjunction between aspirations and expectations have suggested that classic strain theory is empirically weak (e.g., Akers & Cochran, 1985;

Burton, 1991; Burton, Cullen, Evans, & Dunaway, 1994; Elliott, Huizinga, & Ageton, 1985; Hirschi, 1969; Johnson, 1979; Liska, 1971; Quicker, 1974; Voss, 1966; but see Farnworth & Lieber, 1989). The empirical literature testing classic strain theory by measuring perceptions of blocked opportunities has provided mixed support for the theory (e.g., Agnew, 1984; Burton, 1991; Cernkovich & Giodano, 1979; Segrave & Halsted, 1983). The weak empirical support for classic strain theory has resulted in significant criticism from within the sociological discipline (Akers, 1996; Hirschi, 1969; Kornhauser, 1978).

While classic strain theories have been criticized for a variety of reasons, three major criticisms have emerged. First, as mentioned, classic strain theory has received little empirical support. According to strain theory, crime should be highest when aspirations for success were high and expectations were low. However, most studies of strain theory have indicated that crime is highest when both aspirations and expectations are low, and lowest when both aspirations and expectations are high (see Hirschi, 1969; Kornhauser, 1978). This has been interpreted as supporting a social control perspective rather than a strain theory perspective (see Hirschi, 1969; Kornhauser, 1978). Second, strain theory assumes that crime will be concentrated in the lower-class because here goals are overemphasized at the expense of means. Yet, studies have shown that the middle-class experienced high crime, and that class is weakly related to crime (e.g., Hindelang, Hirschi, & Weiss, 1981; Krohn, Akers, Radosevich, & Lanza-Kaduce, 1980; Thornberry & Farnworth, 1982; but see Elliott & Huizinga, 1983). Finally, classic strain theory has been criticized because it does not provide an explanation for desistence and periods of criminal inactivity among youths (Hirschi, 1969). Based on these criticisms,

social scientists have proposed theoretical revisions to strain theory (see Agnew, 1992; Burton & Cullen, 1992; Farnworth & Leiber, 1989; Jensen, 1995; Messner & Rosenfeld, 1994).

Revisions of classic strain theory contend that the key to improving the empirical adequacy of the theory lies in the clarification of its conceptualization and operationalization—and the specification of it. Advocates for these revisions argue that previous tests of strain theory have inadequately measured the concept of strain (e.g., Agnew, 1992; Berton, 1987; Burton & Cullen, 19992; Cullen, 1984; Farnworth & Leiber, 1989; Messner, 1988). In general, revisions of classic strain theory can be characterized as belonging to one of two types: structural or individual.

Structural revisions of classic strain theory are actually attempts to return to the original theoretical premise proposed by Merton in his anomie theory. These revisions remain true to the macro-level hypothesis of classic strain theory that *anomie* or structural strain (i.e., blocked opportunities to achieve monetary success and/or middle-class status) is a cause of the rate of crime (e.g., Bernard, 1987; Messner, 1985, 1988). In particular, Messner and Rosenfeld (1994) have revised anomie/strain theory into a macro-level theory of anomie called institutional anomie theory. Institutional anomie theory purports that the American social "institution", namely the economy, dominates all other social institutions, such as the educational system, the family, and the political system (Messner & Rosenfeld, 1994). In a balanced society, non-economic social institutions serve to insulate society's members from crime. Under the ideology of the American Dream, however, disproportionately high crime rates result from the overemphasis placed on the economic institution. This structural revision of strain theory has received a respectable

amount of empirical support (Chamlin & Cochran, 1995; Messner & Rosenfeld, 1997; Piquero & Piquero, 1998; Pratt & Godsey, 2003; Savolainen, 2000).

Recent revisions of the strain tradition have shifted the focus of the theory from a structural or macro-level perspective to a micro-level, social-psychological perspective (Agnew, 1992; Burton & Cullen, 1992) in an effort to better conceptualize the theory. One such revision of strain theory in particular has received much consideration in recent years: Robert Agnew's General Strain Theory (1992).

General Strain Theory

Within a traditional micro-social context of strain theory, strain is defined as the frustration of desires, needs, or wants. Based on this definition, strain is operationalized as the difference between what is desired (i.e., aspirations) and the anticipated outcome (i.e., expectations) and/or as the difference between the anticipated outcome or expectations and the actual outcome obtained. Delinquency is motivated by the anticipated gratification of frustrated desires. General strain theory elaborates on the conceptualization and operationalization of classic strain theory.

According to general strain theory, strain is defined as "*negative relationships with others*: relationships in which the individual is not treated as he or she wants to be treated" (Agnew, 1992, p. 48). General strain theory posits that an individual will experience at least one negative emotion, referred to as *negative affect*, per experience of strain. Negative affect may span a broad spectrum of negative emotional states, including such expressions as depression, anxiety, and anger. More specifically, Agnew argues that anger is perhaps the most important form of negative affect and serves as a key motivator to strain-induced deviance. According to Agnew, anger is one of the most

potent reactive emotions due to its tendency to produce a desire for retribution. He argues that individuals are "*…pressured into delinquency by the negative affective states—most notably anger and related emotions—that often result from negative relationships*…" (p. 49). However, Agnew recognizes that not everyone experiencing strain or negative affect will commit crimes. Whether or not negative affect leads to an illegitimate response depends on the development and presence of individual coping strategies and other conditioning factors that are conducive to such action.

Types of Strain

General strain theory delineates three major types of strain that may lead to delinquent or criminal behavior[1] (Agnew, 1992): (1) failure to achieve positively valued goals, (2) removal of positively valued stimuli, and (3) presentation of negative stimuli. Strain as the inability to achieve positively valued goals is subdivided into three categories. The first sub-category refers to strain as a disjunction between aspirations (i.e., ideal goals) and expectations (i.e., anticipated or actual goals) (Agnew, 1992, p. 52). That is, strain is caused by incongruence between one's ideal goals and one's anticipation of actual goals. Within this sub-category these ideal goals are typically culturally derived. For example, a youth who comes from a family with very limited financial means (i.e., lower class socioeconomic status) may experience strain when he aspires to receive an expensive car from his parents for his sixteenth birthday, and then does not receive the car. Individuals may engage in illicit acts to overcome an experienced gap between aspirations and expectations.

[1] Although general strain theory is postulated to be "general" in its application and explanation of deviant behavior, much of the research on general strain theory pertains to adolescents. For the purposes of this paper, both criminal and delinquent behavior will henceforth be referred to as *delinquency* in this context.

This sub-category encompasses strain as described and measured by the earlier micro-social version of classic strain theory (see Merton, 1968; Cohen, 1955; Cloward & Ohlin, 1959, 1961). Criticism and a lack of strong empirical support for such a delineation of strain (see Agnew, 1991; Bernard, 1984; Burton et al., 1994; Elliott, Huizinga, & Ageton, 1985; Farnworth & Leiber, 1989; Kornhauser, 1978; Liska, 1987; also, for an explanation as to why this sub-category of strain is less likely to affect crime/delinquency see Agnew, 2001), however, has led to a revision of this sub-category that emphasizes more immediate aspirations and expectations. Agnew suggests that certain youth subcultures emphasize more immediate goals (e.g., getting good grades, popularity) versus long-term goals (e.g., careers, college). He argues that consideration of more immediate goals is particularly important when examining juvenile behavior and delinquency (Agnew, 1992, p. 51). It should be noted that even with such consideration of more immediate goals, strain as the disjunction between aspirations and expectations has received weak empirical support (see Agnew, 2001).

The second sub-category of strain developing from an inability to achieve positively valued goals results from the disjunction between expectations (rather than ideal goals) and actual achievements (Agnew, 1992, p. 52). In other words, strain is caused by a gap between one's expected goals and one's actual achievements. The previous sub-category of strain, aspirations versus expectations, is based on ideal circumstances, representing rather utopian ideals. Agnew suggests, however, that more realistically grounded goals should be more strain-inducing than idealistic aspirations. Expectations are formulated from a person's past experiences and comparisons with similar others (i.e., referential others). They provide a more realistic evaluation of an

individual's capabilities. In this situation, for example, an athletically built high school junior, who has previously participated in other sports, may reasonably expect to be selected for the varsity football team, but then experiences strain when he is not selected. In an effort to overcome the frustration that results from an experienced gap between expectations and achievements, individuals may engage in illicit acts.

The third sub-category of strain originating from an inability to achieve positively valued goals defines strain as the disjunction between just or fair outcomes and actual outcomes (Agnew, 1992, pp. 53-55). According to this measure of strain, individuals expect a certain degree of equality or distributive justice in the allocation of resources. This form of strain is perhaps best conceived of as a scale weighing the amount of efforts extended compared to the rewards reaped. When the amount of effort expended is equivalent in magnitude to that of the outcome, the relationship is considered "just" or "fair". On the other hand, if the size of the effort is greater than that of the outcome, the relationship is considered "unjust" or "unfair".[2] For instance, two students study together for the same exam in the exact same manner. One student receives an "A", while the other receives a "D". The student receiving the lower grade may feel that the outcome was unjust if she also believes that in all other respects she and the other student were similar (i.e., no mitigating circumstances, such as intelligence, that affected the outcome). Individuals in inequitable relationships may engage in delinquency to shift the balance of equity in their favor.

It is important to note that this last sub-category of strain is considered particularly significant for GST, and is hypothesized to be one of the more criminogenic

[2] It is rare that an individual will experience strain as a result of a relationship in which the amount of effort put forth is less than the outcome received.

forms of strain (see Agnew, 2001, p. 327). Indeed, the concept of injustice is not limited to merely this one sub-category of strain, but is applicable to all types of strain. Studies have shown a strong association between perceived injustice and anger (Agnew, 1992; Averill, 1982, 1993; Berkowitz, 1993; Tedeschi & Felson, 1994; Tedeschi & Nesler, 1993; Tyler, Boeckmann, Smith, & Huo, 1997), which has been demonstrated to be an antecedent of delinquent behavior (Aseltine, Gore, & Gordon, 2000; Berkowitz, 1993; Brezina, 1998; Mazerolle, Burton, Cullen, Evans, & Payne, 2000; Mazerolle & Piquero, 1998; Piquero & Sealock, 2000; Tedeschi & Felson, 1994).

The second major type of strain is caused by the removal of positively valued stimuli (Agnew, 1992, pp. 57-58). Again, Agnew formulates this concept based on the stress literature, which indicates that when previously administered positive stimuli are reduce or withheld, aggression follows (Bandura, 1973). Examples of this type of strain include inventories of stressful life events containing items such as the death of a loved one, the loss of a close friend or significant other, and divorce of one's parents. Delinquency may result when an individual attempts to regain all or portions of a lost or blocked positive stimulus, seek revenge on those causing the loss of a positive stimulus, and/or cope with a lost positive stimulus by using illicit substances (Agnew, 1992, pp. 57-58).

The third major type of strain is caused by a confrontation with negative stimuli (Agnew, 1992, pp. 58-59). Noxious or negative stimuli are powerful situations that the individual, particularly adolescents, cannot easily avoid. Examples of such negative stimuli include abuse (physical, sexual, and/or emotional) from a parent, negative relations with teachers or other adults, and physical or other threats from peers (i.e.,

bullying, teasing). Agnew relies on the stress literature that indicates aggression and other negative consequences may follow the presentation of negative stimuli. As a result, Agnew hypothesizes negative stimuli may lead to delinquency as an adolescent attempts to avoid (i.e., escape or terminate) the negative situation, retaliate against those who caused the situation, and/or cope with the negative stimulus through the use of illicit substances (Agnew, 1992, p. 58).

Although the three types of strain are theoretically distinct, Agnew asserts that there may be overlap in the measurement of these types of strain (Agnew, 1992, p. 59). For example, insults from a parent could be operationalized as a measure of failure to achieve positively valued stimuli, removal of positive stimuli, and/or a presentation of negative stimuli. Regardless of how a negative relation or condition is classified, *each* experience of strain increases the likelihood that one or more negative emotions will be felt. Moreover, Agnew asserts that strain may have a cumulative effect on individuals (Agnew, 1992, pp. 62-64) such that a person experiencing one item of strain will be less affected than a person experiencing numerous items of strain. This assertion has been interpreted by many researchers to advocate the use of a "cumulative" index of strain when operationalizing measures of various strainful events and conditions (Agnew, 2001, p. 324). However, Agnew suggests that different types of strain (failure to achieve positive goals, removal of positively valued stimuli, and presentation of negative stimuli) will impact delinquency differently (p. 324). In studies of GST that have examined separate measures of strain (e.g., Agnew & Brezina, 1999; Agnew & White, 1992; Aseltine et al., 2000; Paternoster & Mazerolle, 1994) some measures have been significantly related to delinquency, while other have not. Furthermore, the amount of

variance explained by the various measures of strain in one particular model will vary, with certain measures explaining two, three, or more times the variance in delinquency. Agnew suggests that future tests of GST should attempt to include separate measures of strain, rather than composite indices. (Since tests of GST do not utilize a standard set of measures to assess strain, comparisons of strain measures between studies are difficult, if not impossible.)

Recently, Agnew has offered further specification of the types of strain most likely to lead to delinquency (Agnew, 2001). In this theoretical elaboration of GST, Agnew (p. 320) specifies that strain may be conceptualized in either objective or subjective terms. *Objective* strain refers to conditions or events that are disapproved by a social consensus, such as abuse, death, homelessness, and starvation. *Subjective* strain refers to conditions or events that are disapproved on a more relative or individual basis, but not necessarily by the majority of society. Subjective strain may be more influential to delinquent outcomes (p. 322). The majority of GST research examines objective strain (p. 321), employing measures of strain that the overall society would identify. If research relies on objective strain measures alone, strain may be underestimated within samples. Agnew (2001, pp.320-322) emphasizes the need to examine both *objective* and *subjective* strain when testing GST, particularly when considering group differences in perceptions of strain.[3]

In addition, research from the stress literature indicates that individuals may be subjective even in their appraisal of objective forms of strain (Agnew, 2001, p. 321). That is, individuals may agree that a list of objectively defined strains is indeed what they

[3] The majority of GST literature to date has been limited to measures of objective strain. However, there are some exceptions (see Agnew & White, 1992; Baron & Hartnagel, 2002; Hay, 2003).

would characterize as strain measures. However, they may disagree about the strength or degree of each objective strain measure contained on the list. Hence, individuals may be subjective in their evaluation of objective strain. These subjective appraisals of objective strain may be affected by various factors both internal (e.g., personality traits, self-efficacy, self-esteem, values/goals) and external (e.g., social support, life circumstances) to the individual (see Dohrenwend, 1998, 2000; Kaplan, 1996; Lazarus, 1999). Furthermore, the subjectivity or degree of magnitude for objective strain measures may change in over time, such that what one views as highly strainful at one cross-section in time may become less strainful or not strainful at all at another period in time. Agnew (2001, p. 322) suggests that examination of changes in the subjectivity of objective strain measures may lead to better understanding of the dynamics of the strain-delinquency relationship, especially the role that negative affect plays in this relationship.

In addition to examining the influence of subjective measures of strain, Agnew (1992, pp. 64-66) asserts that strainful conditions and events may be more criminogenic when they are greater in *magnitude* (i.e., more problematic for the individual), *recent*, greater in *duration* (i.e., chronic strain – see Wheaton, 1994; Turner, Wheaton, & Lloyd, 1995), and/or closely *clustered temporally*. All else being equal, individuals who experience strainful conditions or events that are more problematic (i.e., magnitude—conceptually similar to subjectivity), will be more likely to experience negative affect and cope through delinquency than those perceiving such strain as less problematic (Agnew, 1992, pp. 64-65). All else being equal, recent strainful events will be more consequential to negative affect and delinquent behavior, than those that occurred some time ago (p. 65). GST research has not yet identified what the appropriate lag between strain and the

expression of negative affect and delinquency is; nor has it identified how much time must lapse after strain for there to be no effects on negative affect or delinquency. All else equal, individuals who experience a strainful event over a long period of time (chronic) will be more likely to experience negative affect and delinquency, than those not experiencing long durations of strain (p. 65). Finally, all else equal, individuals experiencing several strainful events clustered closely in time will be more likely to feel negative affect and respond with delinquency, than those not experiencing clustered strain (pp. 65-66). In his 1992 explication of the theoretical foundation of GST, Agnew (1992) suggested that complete tests of GST should examine the impact of these four influential factors on the strain-negative affect-delinquency relationship.

Since his original publication of GST, Agnew (2001) has specified four alternative factors that influence delinquency. Strainful conditions and events are more likely to lead to crime when they are characterized as (1) unjust, (2) high in magnitude, (3) associated with low social control, and (4) associated with exposure to delinquent peers, their beliefs, and their approval (derived from social learning and routine activities theories) (pp. 326-342). According to Agnew, the literature indicates a link between "unjust treatment and anger" (p. 327). Assuming this is true and all else equal, individuals that experience high frequencies of "unjust" strain will be more likely than their counterparts to express negative affect in the form of anger, which increases the likelihood that delinquency will result (pp. 327-328). As mentioned above, strain that is high in magnitude is expected to increase the likelihood of negative outcomes. The measurement of the magnitude of strain requires measuring the subjectivity of strain (pp. 332-333). Strain that is associated with low social control is also hypothesized to

increase the likelihood of strain leading to delinquency (pp. 335-336). According to Agnew, low social control may reduce the costs associated with delinquency and the availability of legitimate coping mechanisms for strained individuals (p. 335). Finally, strain that is associated with exposure to delinquent peer association and beliefs is hypothesized to be more criminogenic for individuals experiencing strain, compared to those not experiencing strain (pp. 336-337). According to Agnew, exposure to delinquent peers and their subcultural beliefs increases the attraction to illegitimate coping mechanism (pp. 336-337), thereby affecting delinquent responses to strain. Agnew states that "…all four of these characteristics are roughly equal in importance and that the absence of any one characteristic substantially reduces the likelihood that strain will result in crime…" (p. 338).

In an attempt to further clarify which strainful conditions are most criminogenic, Agnew (2001, pp. 343-347) provides the following list of strainful conditions most likely to lead to delinquency/crime: (1) failure to achieve unconventional goals that are most accessible through crime (e.g., money, excitement, status), (2) lack of parental attachment/bonding, (3) unpredictable and severe parental discipline, (4) abuse and neglect, (5) negative school experiences, (6) low status employment (i.e., the secondary labor market), (7) homelessness, (8) peer abuse, (9) criminal victimization, and (10) prejudice and discrimination. At first glance some of these factors, such as low status employment and homelessness, may not seem in accordance with the definition set forth by Agnew for strain (i.e., negative relations with others). Yet, it is important to remember that strain results from the frustration or pressure produced by the inability to achieve or maintain positive goals/stimuli and block negative stimuli. In most cases,

strain is perceived as or attributed to a consequence of human interaction. In other words, people prevent other people from achieving or maintaining positive stimuli and blocking negative stimuli. These consequences may be caused by individuals (such as an employer, a potential employer, or an abusive parent) or by society in general (such as society's apprehension toward providing certain individuals with gainful employment [i.e., labor market problems; see Baron & Hartnagel, 2002]).

Negative Affect

As briefly mentioned earlier, Agnew posits that an individual will experience at least one negative emotion, called *negative affect*, per experience of strain. He states that negative affect may cover a broad range of emotions, including depression, anxiety, despair, and grief, but the most influential of these emotions is anger (Agnew, 1992, 2001). Anger is important for general strain theory because it is one of the most potent reactive emotions. For instance, anger has been shown to affect the development of legitimate coping mechanisms by hindering abilities to effectively express grievances, preventing recognition of suitable styles of conflict resolution (see Colvin, 2000), interfering with perceptions of the costs of illegitimate responses, and fostering desires for revenge or retribution (Averill, 1982, 1993; Bernard, 1990; Tedeschi & Felson, 1994; Tedeschi & Nesler, 1993; Tyler et al., 1997; Zillman, 1979). Research has also indicated that anger is associated with unjust/inequitable treatment (Agnew, 1992; Averill, 1982, 1993; Berkowitz, 1993; Tedeschi & Felson, 1994; Tedeschi & Nesler, 1993; Tyler et al., 1997). Moreover, some studies have indicated that anger may significantly affect crime, especially acts of violence (Aseltine et al., 2000; Berkowitz, 1993; Brezina, 1998;

Mazerolle et al., 2000; Mazerolle & Piquero, 1998; Piquero & Sealock, 2000; Tedeschi & Felson, 1994).

Coping Mechanisms

Whether or not negative affect leads to an illegitimate response depends on the availability of individual coping strategies. The adaptation of certain coping strategies may lead to deviant responses to strain, while others may prevent deviance. Agnew (1992, pp. 66-70) presents three classifications of coping strategies: cognitive, emotional, and behavioral. Cognitive coping strategies refer to the internalization of strain such that is relates to the individuals' goals, beliefs, values, and/or identity (p. 67). Agnew states that cognitive coping strategies include the employment of neutralization (e.g., "It doesn't matter.") and minimalization techniques (e.g., "It could be worse.") in an effort to make strain seem nonexistent, less important, or somewhat deserved (pp. 66-69). Emotional coping strategies also refer to the internalization of strain, but they pertain to the emotional, rather than "rational," state of the individual only (pp. 69). According to GST, emotional coping strategies include both legitimate and illegitimate acts, such as physical exercise, meditation, and illicit and licit substance use, which are utilized to reduce negative affect (pp. 69-70). Behavioral coping strategies refer to external responses to strain (p. 69). Behavioral coping strategies include attempts to reduce or eliminate sources of strain (e.g., regain positive valued stimuli when they have been blocked or lost and attempts to block or terminate the source of negative stimuli) and attempts to seek revenge against those causing the strainful conditions (p. 69). Agnew acknowledges that in the list of coping mechanisms included in his foundation of GST is not a complete list, but suggests they are the most prominent (p. 70).

GST posits that individuals may choose from several forms of legitimate and illegitimate coping strategies when confronted with strain. Individuals who experience high levels of strain and choose illegitimate coping mechanisms will be more likely to respond to strain with deviance. On its face this statement seems conceptually tautological; however, several constraints and other conditioning factors may prevent illegitimate coping strategies from leading to deviance (pp. 70-74). Although individuals have a choice in which coping mechanisms to use, this does not imply that the choice is a free, rational, or conscious decision. Further, coping strategies are not equally distributed. Different individuals will have access to different coping strategies depending upon a variety of other conditioning and dispositional factors (e.g., temperament, self-esteem, social support) (pp. 70-74).

Other Conditioning Factors

Agnew suggests that the presence of certain coping strategies is not the only factor conditioning whether or not an individual will choose illegitimate responses to strainful conditions. Agnew describes a rather extensive, yet partial, list of internal and external factors that may further influence the effects of strain (Agnew, 1992, pp.70-74). Internal factors include such characteristics as temperament, intelligence, and beliefs; external factors refer to characteristics such as structural/environmental circumstances and existing social support structures. Many of these conditioning factors have been incorporated in Agnew's 2001 explication of the 10 most strainful conditions most likely to lead to delinquency/crime (discussed above).

GST assumes that the presence and/or absence of certain conditioning factors encourage problem-solving and act as buffers against strainful situations, thus

ameliorating much of the negative effects of strainful situations. Individuals who possess beliefs, goals, and value definitions in line with conventional society, agreeable temperaments, higher intelligence, interpersonal skills, higher self-esteem, self-efficacy, problem-solving skills, conventional social support systems, a learning history reinforcing conventional behavior, dispositional attributions of blame, and environmental characteristics that are socially organized and lack subculturally deviant influences will be more likely to select non-delinquent coping strategies, than those who lack these traits/conditions (Agnew, 1992, pp. 70-74).

Conditioning factors may also influence the level of subjectivity for strain. That is, internal and external conditioning factors not only moderate the relationship between strain and coping mechanisms, but also the degree to which individuals perceive strain as problematic and negative affect-inducing (Agnew, 2001, p. 333). This suggests internal and external characteristics may directly influence individual levels of strain. Although GST has not fully conceptualized how these conditioning factors may operate, it does suggest that there are multiple factors grounded within various scientific paradigms that are associated with and even cause strain.

GST does not fully explicate how conditioning factors affect illegitimate coping strategies to strain and negative affect, nor does it specify which factors are more important than others. However, it seems logical to assume that individual characteristics such as personality, morals, intelligence, and confidence (i.e., self-esteem, self-efficacy) will affect how individuals react to their environment. For example, individuals with high confidence may be more likely to cope with negative relationships with others by convincing themselves that the strain does not matter—that they can achieve their goals

regardless of the opposition. In another example, individuals that experience negative peer relationships such as being bullied or teased at school who have other positive social support networks in place (e.g., church and family) may be better able to cope with strain through legitimate strategies because the presence of these prosocial support systems helps to alleviate some of the effects of strain. Whereas, individuals who experience the same bullying at school, but lack prosocial support, may turn to drug use or delinquent peer associations to relieve the pressures of the strain. These are just a few examples. Certainly, there are many possible internal and external resources that can influence whether or not strain leads to delinquency.

The present study is particularly concerned with how personality traits or temperament influence the strain-delinquency relationship. In the first and only test to date of GST and personality traits, Agnew et al. (2002, p. 45) have stated that "…the impact of such [personality] traits may be far more pervasive than that of the conditioning variables typically examined…" in the GST research. They have suggested that personality traits can influence individual emotionally responds to strain and the development of deviant coping strategies (Agnew et al., 2002, p. 45). Part of the impetus for suggesting a test of GST and personality was derived from a theoretical discussion of the application of GST in the explanation of differences in life-course trajectories of crime (Agnew, 1997). In this paper, Agnew suggests that personality traits may influence why certain individuals stop offending after adolescence and other continue to offend throughout their lifetime (see Moffitt, 1993).

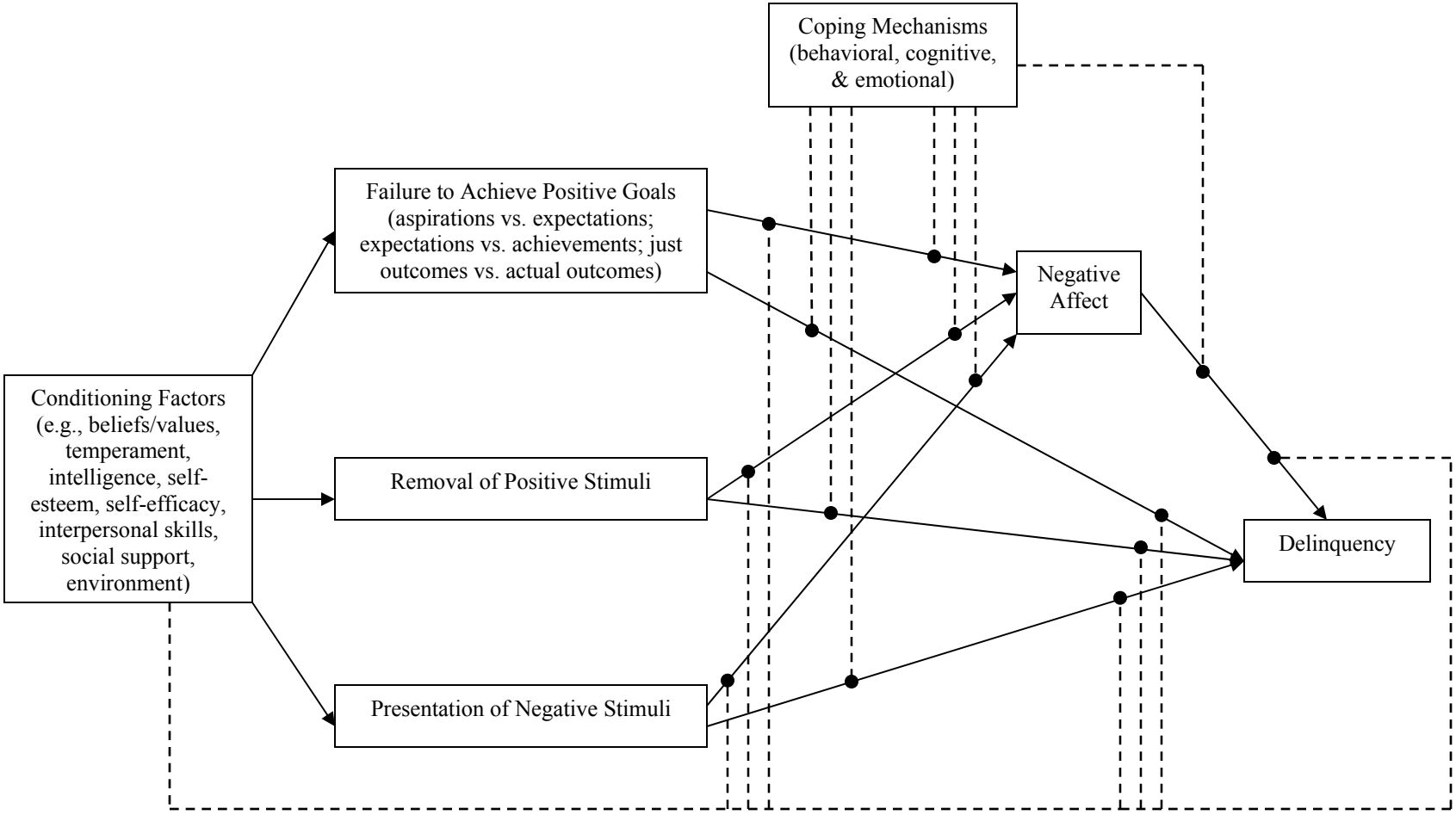
Personality traits describe one's perception and behavior toward the environment and are relatively stable characteristics that are to a certain degree inherent in nature (see

Caspi & Bem, 1990; Ge & Conger, 1999; Roberts & DelVecchio, 2000; Soldz & Vaillant, 1999). Personality traits have been measured in a variety of ways (see John & Srivastava, 1999). Traits may be described by numerous facets of interpersonal, affective, and behavioral terms and definitions such as whether an individual is sociable, warm, trustworthy, modest, sympathetic, organized, responsible, lazy, impulsive, hostile, anxious, content, imaginative, and so on and so forth (see John & Srivastava, 1999). Personality traits can be both conforming (normative) and non-conforming (maladaptive) to society. As such, individuals possessing traits that may make them less able to control emotional responses and impulsivity and more inclined to express and experience negative emotions such as anger, anxiety, and fear, particularly under stressful situations will be more likely to cope with strain through illegitimate coping mechanisms (Agnew et al., 2002).

Figure 1 presents a full models of Agnew's (1992, 2001) general strain theory. Each text box represents a key concept of GST. Path relationships are represented by solid arrows, pointing in the causal direction of the relationship. Mediating relationships are represented by dotted lines, connected at a point on the path its associated measure is hypothesized to mediate. The three main types of strain are illustrated in the model: (1) failure to achieve positive goals, (2) removal of positive stimuli, and (3) presentation of negative stimuli. Strain leads directly to delinquency (refers to any illicit activity). Strain also leads indirectly to delinquency via negative affect. Negative affect is directly related to delinquency. Internal and external conditioning factors are hypothesized to lead directly to strain and mediate the direct and indirect effects of strain on delinquency. Behavioral, cognitive, and emotional coping strategies are predicted to mediate the direct

and indirect effects of strain on delinquency. Of course, this model is a simplified representation of the complex relationships presented in GST. The mediating effects of conditioning factors and coping strategies may not be appropriate for all measures that included within these concepts.

Figure 1: A Model of General Strain Theory



Empirical Support for General Strain Theory

Strain-delinquency. Several studies have provided empirical support for the propositions Agnew has set forth in GST. A significant positive relationship between various strain measures and delinquency has consistently been reported (Agnew, 1985, 1989, 2002; Agnew & Brezina, 1997; Agnew et al., 2002; Agnew & White, 1992; Aseltine et al., 2000; Bao, Haas, & Pi, 2004; Baron & Hartnagel, 1997, 2002; Benda & Corwyn, 2002; Benson, Fox, DeMaris, & Van Wyk, 2003; Brezina, 1999; Broidy, 2001; Eitle, 2002; Eitle & Turner, 2002, 2003; Hoffmann, 2002; Hoffmann & Cerbone, 1999; Hoffmann & Ireland, 2004; Hoffmann & Miller, 1998; Hoffmann & Su, 1997; Kim, Conger, Elder, & Lorenz, 2003; Maxwell, 2001; Mazerolle, 1998; Mazerolle et al., 2000; Mazerolle & Maahs, 2000; Mazerolle & Piquero, 1997, 1998; Mazerolle, Piquero, & Capowich, 2003; Paternoster & Mazerolle, 1994; Peter, LaGrange, & Silverman, 2003; Piquero & Sealock, 2000, 2004; Robbers, 2004; Sharp, Brewster, & Love, 2005; Sigfusdottir, Farkas, & Silver, 2004; Wallace, Patchin, & May, 2005; Warner & Fowler, 2003). For example, negative life events have been consistently reported as related to delinquency. Agnew (2002) has even found that certain forms of vicarious strain are significantly related to delinquency, especially experienced victimization and vicarious victimization of family and friends.

Studies have also indicated that alcohol and illicit drug use may reduce the experience of stress (e.g., Conrod, Pihl, & Vassileva, 1998; Newcomb, Chou, Bentler, & Huba, 1988; Sayette, 1993). A significant positive relationship between various strain measures and substance use has also been noted across a considerable body of literature (Agnew & White, 1992; Aseltine et al., 2000; Boardman, Finch, Ellison, Williams, &

Jackson, 2001; Eitle, 2002; Hoffmann & Su, 1997; Peter et al., 2003). Other empirical studies have shown both delinquency and substance/alcohol abuse, combined, to be positively related to strain (Agnew & Brezina, 1997; Agnew et al., 2002).

Mediating influence of negative affect. On the other hand, empirical studies of the indirect relationship between strain and delinquency, when mediated by negative affect, have been less consistent. These findings may be due to the use of varying measures across studies. While some GST researchers have used composite measures of negative affect (i.e., combining experiences of anger, anxiety, depression, etc. into one index), others have examined negative emotions separately. Thus, inasmuch as GST scholars have rarely used the same combination of emotions in their studies, the comparability of findings across research has been hindered.

Although strain has been significantly and positively associated with anger (Agnew, 1985; Aseltine et al., 2000; Bao et al., 2004; Brezina, 1996, 1998; Broidy, 2001; Hay, 2003; Jang & Johnson, 2003; Mazerolle et al., 2003; Mazerolle & Piquero, 1997, 1998; Piquero & Sealock, 2000, 2004; Sharp et al., 2005; Sigfusdottir et al., 2004), the direction and role of anger as a mediating variable on certain types of delinquency is unclear. Some studies, however, appear to support the assumption that anger serves as a mediator between strain and both general and specific types of delinquency (Agnew, 1985; Aseltine et al., 2000; Bao et al., 2004; Brezina, 1998; Hay, 2003; Jang & Johnson, 2003; Sharp et al., 2005; Sigfusdottir et al., 2004). For example, Jang and Johnson (2003) found that a measure of negative affect, including both internally-directed and externally-directed emotions, completely mediated the effects of a composite measure of strain on measures of general deviance, drug use, and fighting.

Other findings have suggested that anger may be limited in its role as a mediator for the strain-delinquency relationship to measures of violence or interpersonal aggression, but not to acts of non-violent behavior (e.g., property crimes) or substance use (see Aseltine et al., 2000; Piquero & Sealock, 2000). Even more perplexing, Mazerolle and associates (2000) demonstrated that it is actually strain that mediates the relationship between anger and violent delinquency. Along these same lines, Kim et al. (2003) have reported that internalizing problems such as depression and anxiety may exacerbate stressful life conditions. Another study conducted by Mazerolle and colleagues (2003) suggested that differences in the types of anger (i.e., situational versus trait) may explain some of the inconsistencies regarding the role of negative affect. That is, trait anger was significantly related to violent forms of delinquency, while situational anger was shown to be significantly related to both non-violent and violent forms of delinquency (cf. Capowich, Mazerolle, & Piquero, 2001).

Yet, some studies have supported the assumptions of general strain theory when examining alternative measures of negative affect, such as composite measures of negative emotions (Broidy, 2001; Capowich et al., 2001; Sharp et al., 2005), anxiety (Bao et al., 2004; Brezina, 1996; Kim et al., 2003; but see Aseltine et al., 2000), depression (Bao et al., 2004; Brezina, 1996; Hagan & Foster, 2003; Kim et al., 2003; Piquero & Sealock, 2000, 2004), frustration (i.e., a mild form of anger) (Wallace et al., 2005), resentment (Bao et al., 2004; Brezina, 1996), and guilt (Hay, 2003). Even such alternative measures of negative affect have produced mixed results, however. For instance, in a study of conditioning factors of the strain-delinquency relationship among

three waves of data for high school students, Aseltine et al. (2000) found no support of a significant mediating effect of anxiety between strain and delinquency.

Interestingly, Hagan and Foster (2003) reported that anger was actually a source of depression, particularly among females, and that the relationship between anger and depression is partially mediated by delinquency. Sharp and colleagues (Sharp, Terling-Watt, Atkins, & Gilliam, 2001) have also reported a connection between depression and anger. In a test of general strain theory on purging behaviors among college women, the authors indicated a moderating effect of depression on the relationship between anger and purging. In contrast, when depression was high, anger was significantly and positively related to purging, but when depression was low, anger had no significant effect on purging. Furthermore, using structural equation modeling, Sigfusdottir et al. (2004) found that significant mediating effects of depression on the strain-delinquency relationship are suppressed when controlling for anger. Studies have also indicated that delinquency reduces the impact of strain on negative affect (Brezina, 1996; Hoffman & Ireland, 2004), though this moderating effect appears to be more important with regard to anger than other forms of negative affect.

Moderation/mediation of coping mechanisms and other factors. According to general strain theory, certain coping strategies and conditioning factors are hypothesized to reduce (when conducive to legitimate behavior) or enhance (when conducive to illegitimate behavior) the effects of strain on delinquency. However, research has lacked empirical consistency with respect to examining those forms of individual coping strategies posited to directly affect how the individual adapts to strain. When combined, these studies include several measures of conditioning factors such as self control, self-

esteem, self-efficacy, delinquent peers, family communication, moral beliefs, religiosity, and social support.

Several studies have provided empirical support to claims made by GST related to self-efficacy (Agnew & White, 1992; Paternoster & Mazerolle, 1994), delinquent peers (Agnew, 2002; Agnew & Brezina, 1997; Agnew & White, 1992; Bao et al., 2004; Baron & Hartnagel, 2002; Benda & Corwyn, 2002; Hay, 2003; Mazerolle et al., 2000; Mazerolle & Maahs, 2000; Mazerolle & Piquero, 1998; Peter et al., 2003), delinquent norms or beliefs (Bao et al., 2004; Baron & Hartnagel, 2002; Benda & Corwyn, 2002; Brezina, 1998; Hoffmann, 2002; Mazerolle & Maahs, 2000; Mazerolle & Piquero, 1998), and external attribution of blame (Baron & Hartnagel, 2002). Another body of research has focused upon GST concepts of self-esteem or self-concept (Benda & Corwyn, 2002; Hoffman & Ireland, 2004; Jang & Johnson, 2003; Piquero & Sealock, 2000), social support (Boardman et al., 2001; Robbers, 2004; Warner & Fowler, 2003), spirituality or religiosity (Jang & Johnson, 2003; Piquero & Sealock, 2000), and community characteristics (e.g., unemployment) (Hoffman, 2002). Moreover, conditioning factors have also been shown to influence negative affect (e.g., anger, resentment, anxiety, and depression) as predicted by general strain theory (see Brezina, 1996; Jang & Johnson, 2003).

Other researchers have reported conflicting results regarding the role certain conditioning factors play in the moderation of strain (Aseltine et al., 2000; Boardman et al., 2001; Capowich et al., 2001; Eitle & Turner, 2003; Hoffmann & Cerbone, 1999; Hoffmann & Miller, 1998; Piquero & Sealock, 2000). For example, in a three-year longitudinal analysis of the conditioning effects of self-efficacy and self-esteem on the

strain-delinquency relationship, Hoffmann and Miller (1998) found no support for Agnew's claims that self-efficacy and self-esteem moderate the effects of negative life events on delinquency. That is, their analyses revealed that youths who did not associate with delinquent peers were significantly more likely to report increased strain that led to a rise in delinquency. In a study of general strain theory among a juvenile offender population, Piquero and Sealock (2000) examined the moderating effects of five coping skills (cognitive, emotional, social, physical, and spiritual) on two forms of negative affect (anger and depression). Their study found only marginally significant effects for interaction terms between depression and emotional coping skills and between depression and spiritual coping skills.

Similar to delinquency, the stress literature has indicated that conditioning factors and coping mechanisms affect the relationships between stress and substance use (e.g., Brook, Nomaura, & Cohen, 1989; Carvajal, Clair, Nash, & Evans, 1998; Weinrich, Hardin, Weinrich, & Valois, 1997). Moderating effects of conditioning variables on the strain-substance use relationship have been reported in the general strain literature as well (see Agnew & White, 1992; Jang & Johnson, 2003). Clearly this review indicates the need to better understand the salience of coping on the development of antisocial behaviors and emotions.

Distinguishing General Strain Theory from Social Control and Social Learning Theories

Three of the leading criminological explanations of general delinquency are strain, social control, and social learning theories (Agnew, 1992, 2001; Agnew & Brezina, 1997; Alarid, Burton, & Cullen, 2000; Battin, Hill, Abbott, Catalano, & Hawkins, 1998; Bernburg & Thorlindsson, 1999; Kornhauser, 1978). Other theoretical

explanations of crime have been developed; however, these three rubrics have emerged as the dominant micro-level theories in mainstream criminology. In his discussions of the theoretical assumptions of GST, Agnew (1992, 2001) emphasizes the importance of including measures of both social control and social learning/differential association theories to test the empirical validity of GST.

In a recent explication of the specific types of strain most likely to cause delinquency/crime, and toward this end, two of the four characteristics of the most criminogenic strainful conditions were derived exclusively from social control and social learning theories (Agnew, 2001, pp. 335-338). First, strain that is caused by or associated with low social control (derived from social control theory) will be more likely to lead to delinquency than strain that is not. Agnew (p. 335) contends that certain forms of strain, such as parental conflicts and parental rejection, are caused by low social control. Low social control may also reduce access to legitimate coping strategies. Therefore, individuals experiencing strain that is either caused by or associated with low social control may choose or have no other choice than to choose illegitimate coping strategies, which may lead to delinquency.

Second, strain that is associated with peer pressure/incentive to engage in criminal activity (derived in part from differential association/social learning theory) may be more likely to lead to delinquency than strain that is not (Agnew, 2001, p. 337). Individuals who are associated with delinquent subcultures (e.g., gangs) or delinquent peers may be more likely to choose illegitimate coping strategies. In some instances, this may be due to partial or full assimilation of delinquent beliefs and norms and/or reinforcement for modeling delinquent behaviors. In other cases, certain types of strain may require that

individuals respond with delinquency. For example, youths associated with gangs may be required to respond to disrespectful treatment from other youths with violence. Yet, when other forms of strain are experienced, these youths may not respond with delinquency. Under the aforementioned circumstances, the conceptualization of coping strategies appears to be predicated on social control and differential association.

Social Control Theory

Control theory (Durkheim, 1897/1951; Hirschi, 1969; Nye, 1958) assumes that humans are inherently hedonistic, thus people are naturally inclined to violate rules. According to control theory, individuals conform to society's laws because of social controls that prevent them from committing crimes. In other words, natural urges such as intimidation, retaliation, and vengeful retribution are controlled via bonding to conventional others and institutions (Hirschi, 1969). According to Hirschi's social bonding theory (Hirschi, 1969), (1) the level of attachment to parents, teachers/school, peers, or other institutions (e.g., church), (2) commitment (actual or anticipated) in conventional society, (3) involvement in conventional activities, and (4) internalized conventional beliefs an individual possesses are all inversely related to deviance. Deviance results only when these social controls are weakened or broken (Hirschi, 1969; Reiss, 1951). Thus, individuals lacking positive social controls, whether long-term or episodic (see "drift" theory: Matza, 1964), are therefore "free" to satisfy their needs by utilizing delinquent means.

Another form of control theory that has received attention in the GST literature is Gottfredson and Hirschi's (1990) self-control theory. In contrast to social bonding theory (Hirschi, 1969), whereby self-control is a subsumed concept of attachment, this new

theoretical framework revolves completely around the concept of self-control. In their general theory of crime, Gottfredson and Hirschi (1990) state the following:

> [P]eople who lack self-control will tend to be impulsive, insensitive, physical (as opposed to mental), risk-taking, short-sighted, and nonverbal, and they will tend therefore to engage in criminal and analogous acts. Since these traits can be identified prior to the age of responsibility for crime, since there is considerable tendency for these traits to come together in the same people, and since the traits tend to persist through life, it seems reasonable to consider them as comprising a stable construct useful in the explanation of crime. (pp. 90-91)

Although individuals with low self-control will be more likely to commit criminal acts, not all individuals low in self-control will commit crimes. Whether or not an individual will become criminal depends on the existence of several intervening mechanisms, such as parenting style, parental attachment, punishment for deviance, and parental recognition of deviance (related to values/beliefs). Many of these intervening mechanisms are those described by the four elements of social bonding theory, though more proximal in nature. Therefore, as Akers (1997, p. 92) succinctly states, "It may be then assumed that self-control is the key variable, and that other social bonds affect crime only indirectly through their effects on self-control." Thus Agnew's specification that tests of GST include strains associated with low social control calls for measures of self-control, social bonding, or both. Strain will be more likely lead to delinquency if these social controls are sufficiently weakened.

Social Learning/Differential Association Theory

In general, the phrase "social learning theory" refers to any social behavioral explanation. In the field of psychology, social learning theory refers to the "…reciprocal interaction between cognitive, behavioral and environmental determinants…" (Bandura, 1977, p. vii), and includes research by Bandura and other psychologists (Bandura, 1977; Bandura & Walters, 1963; Rotter, 1954). Historically, psychologists and sociologists have applied the concepts of social learning to examinations of deviance and delinquency (Jessor & Jessor, 1977; Patterson, 1995; Patterson & Chamberlain, 1994; Patterson, Reid, & Dishion, 1992; Patterson, Reid, Jones, & Conger, 1975). When criminologists refer to social learning theory, however, this usually pertains to the theory as it was developed by Ronald Akers (Akers, 1973, 1977, 1985; see also, Burgess & Akers, 1966) as a revision of Sutherland's differential association theory (Sutherland, 1947).

Unlike social control theory, social learning theory does not assume that humans are inherently deviant creatures, but are rather creatures that learn deviant behavior from others. Akers' social learning theory offers an explanation of deviance that describes processes that function both to motivate and control deviant behavior, thus serving both to undermine and promote social conformity. Akers explicates the following four primary processes whereby delinquent behavior is learned (Akers, 1973, 1977, 1985): (1) regular association with others who engage in deviant acts–*differential association*, (2) anticipated and actual rewards reinforcing delinquent behavior outweigh the costs of deviance–*differential reinforcement*, (3) imitation or modeling delinquent behavior after observation of such behavior being committed by others–*imitation*, and/or (4) transmission of delinquent attitudes and values–*definitions*.

From a social learning perspective, the motive for delinquency is the anticipated rewards net other costs (i.e., reinforcement) for such behavior. That is, individuals who observe others commit delinquent acts that are perceived to result in more positive outcomes than negative outcomes are more likely to imitate this behavior. When the results of their imitation are also more positive than negative, they are more likely to adjust their own moral attitudes and beliefs to condone such behavior. Individuals with increased exposure to deviant others (i.e., high differential association) are more likely to anticipate reinforcement for deviance and are thus more susceptible to delinquent behavior.

According to Agnew (1992, 2001), associations with deviant others may condition the effects of strain on delinquency by increasing the appeal and availability of illegitimate coping mechanisms or limiting legitimate coping mechanisms. For example, certain types of strain, such as abuse from parents and/or peers, may increase the likelihood that youths will associate with delinquent others (Agnew, 2001, p. 337). This exposure increases the likelihood that they will internalize delinquent beliefs and values and witness positive or reinforcing consequences for delinquent behavior. Therefore, delinquent peer association may influence a youth's perceived costs and rewards for employing delinquent coping strategies for strain. In another example, individuals belonging to certain subcultures (e.g., juvenile gangs) may be "bound" by the definitions and beliefs of that subculture to respond to certain types of strain, such as disrespect or negative relations with other subculture members, with delinquency (Anderson, 1999). These same individuals, however, may choose legitimate coping strategies for other

sources of strain. As a result of this reasoning Agnew asserts that tests of GST should include or control for measures of differential association.

Two Weaknesses of Tests of GST: Tautology and Falsifiability

Despite Agnew's emphasis on the need to control for social control and differential association in tests of GST, it is often the case that measures of strain are correlated with measures of social control and social learning theory (Agnew, 2001); consequently, empirical analyses that model strain along with control or learning variables may produce, in effect, empirical tautologies. In these studies, the theoretical constructs being measured for strain (e.g., strict parental discipline, low grades in school) may overlap with constructs of social control theory and differential association/social learning theory (Agnew, 1995). That is, a construct being measured and tested for strain theory may also be used to test either social control or differential association without changing its operationalization.

In an effort to minimize this issue, some researchers have suggested that one solution for overlapping theoretical concepts depends on the distinctions made about the construct when it is being tested within a particular theoretical model. That is, researchers may simple a priori clarify to which constructs certain measurement items will be assigned. To quote Hay (2003: 118): "The challenge in testing GST is to identify social control and social learning variables that *cannot* reasonably be seen as a strain theory variable." Unfortunately, as Agnew notes (Agnew, 2001, pp. 348-350), this task often proves difficult to achieve. Some researchers have attempted to maintain theoretical distinction by "… assigning some measures to the strain camp, some to the social control camp, and some to the social-learning camp." (Agnew, 2001, p. 348). If

strong associations exist after delineating which overlapping constructs will be assigned to each theory, how does one know if the statistical significance achieved by the strain measure is truly a result of "strain" rather than social control or social learning (Agnew, 2001, p. 349)?

Agnew (Agnew, 2001, pp. 349-350) offers three potential ways, critical tests, to rectify the issue regarding overlapping constructs. First, tests of GST could consider the intervening processes described by each of the theories. The three theories differ in their explanation of how and why (i.e., intervening processes) delinquent/criminal behavior results. General strain theory focuses on the role of intervening mechanism of negative affect. Social control theory focuses on the intervening mechanism of perceptions of lowered costs for delinquency and also assumes a direct, non-mediated, relationship between low social control and delinquency. Social learning theory focuses on the role of the intervening mechanism of perceptions of desirability (beliefs and reinforcements) of delinquency. Therefore, empirical studies of overlapping parental, peer, school, and work concepts including these interventions should be able to distinguish which theory best explains the causal relationship between overlapping strain, social control, and social learning measures and delinquency.

A critical test of GST that includes an examination of the intervening mechanisms of GST, social control, and social learning theory is quite feasible; however, most data sets do not contain enough of the relevant measures to conduct such s test. For the sake of argument, assuming one had a large, nationally representative data set that included several measures of strain, social control, and social learning theories. In this critical test of GST, it would not be necessary to examine all types of strain, only those that

conceptually overlap with social control (negative relationships with parents and teachers) and differential association (delinquent peer associations). On the other hand, it would be crucial to include measures of negative affect (especially anger), differential reinforcement, and deviant beliefs/values as mediators in the model. If analyses revealed that negative relationships with others (strain) or low social control significantly led to delinquency through the mediation of negative affect, a GST perspective would be supported. If the results indicated that negative relationships or low social control led directly, with no significant mediation of negative affect, to delinquency, then a social control approach would be supported, not GST. If the data indicated that delinquent peer associations led to delinquency when mediated by delinquent beliefs and/or differential reinforcement for delinquent behavior, then social learning theory would be supported. (It is also possible that low social control/strain measures may lead to delinquency through differential reinforcement, which would suggest either a social control or social learning explanation. However, if the intention of the test is to examine the empirical support for GST, such a finding would still suggest that GST is not a viable explanation for delinquency.)

Second, tests of GST could control for the effects of social control and social learning in the analysis of the effects of strain. Since Agnew argues that strain may affect delinquency by lowering social control and increasing incentives to engage in delinquency, statistically significant effects of strain on delinquency, when controlling for social control and social learning, would support GST. This approach, however, is not applicable when utilizing measures of strain that "directly index" the more relevant measures of social control or social learning (e.g., low grades) (Agnew, 2001, p. 349).

Thirdly, Agnew recommends that tests of GST could include neutral relationships, in addition to positive and negative relationships, in the operationalization of strain, social control, and social learning measures. With respect to social control theory, neutral relationships (i.e., apathetic) and negative relationships with conventional others should lead to delinquency. From a GST perspective, however, neutral relationships with conventional others, particularly parents, are neither a symptom nor source of strain. Therefore, neutral relationships with others should not be criminogenic.

In one of the only studies to examine competing predictions of GST and social control theory by examining positive, neutral, and negative relationships with parents and teachers, Thaxton and Agnew (2004) used polynomial regression to examine the relationships between parental and teacher attachment and delinquency. They employed a graphic interpretation of the regression of delinquency on a semantic differential scale of attachment ranging from *negative* to *neutral* to *positive* to test whether social control theory or GST was a better predictor that low attachment leads to delinquency. Imagine a line graph, where the x-axis is attachment ranging in value from 1 to 10 with 1 being negative attachment, 5 being neutral attachment, and 10 being positive attachment, and the y-axis is delinquency ranging from none to high. If the slope of the non-linear regression line was near or at zero when delinquency was highest and attachment was lowest (negative attachment), started becoming negative when attachment was 5 (neutral attachment), and approached zero again as delinquency approached 0 and attachment approached 10 (positive attachment), then a social control perspective would be supported by the data. On the other hand, if the slope of the regression line was negative when delinquency was highest and attachment was 1, started to quickly approach zero

when delinquency was low and attachment was 5 (neutral attachment), and continued to flatten out as attachment approached 10 (positive attachment), a GST perspective would be supported by the data. Thaxton and Agnew (2004) reported the shape of the curve describing the relationship between attachment and delinquency supported GST. That is, negatively attached youths were substantially more delinquent than either neutral or positively attached youth, who were comparably delinquent.

Despite these three strategies offered by Agnew to control for overlapping theoretical constructs when testing GST, he admits that none will provide a "perfect" empirical determination of the effects of strain on delinquency. It is therefore crucial that tests of GST recognize such weaknesses and attempt to control for them wherever possible.

In addition to issues with regard to measurement and testing, a second major weakness is that GST studies suffer from the seemingly unfalsifiable nature of the theory. Although general strain theory is a relatively new theory, it has received much theoretical elaboration over the past decade. These theoretical expansions have increased the scope of strain beyond that established in the original foundation of the theory, which was already arguably broad. Consequently, the testability of GST has criticized (Jensen, 1995). Accord to Jensen, "If strain can be defined in so many different ways, then strain theory is virtually unfalsifiable. There is always a new measure that might salvage the theory." (Jensen, 1995, p. 152). Perhaps the solution to proving the falsifiability of GST lies with improving the operationalization and statistical techniques utilized to test the theory. If datasets contained appropriate measures to address Agnew's aforementioned three strategies to separate explained variance attributed to strain theory measures from

that of social control and social learning measures, tests may reveal some enlightening findings that could diminish such criticisms.

It is evident that there are "chinks in the armor" of GST. On one hand, Agnew advocates GST as a complementary theory (Agnew, 1992, p. 76) to social control and social learning theories. He even goes as far as specifying that strain will be more criminogenic when characterized by association with low social control and social learning mechanisms (i.e., delinquent peers). On the other hand, Agnew stresses the need to control for social control and social learning measures, thus treating the theories more like competing, rather than complementing theories. Certainly this inconsistency has contributed to the harsh criticisms by some social scientists by labeling GST as "unfalsifiable". While not resolving these limitations, the present study treats social control and social learning theories as competing, yet highly associated theories by including social control and social learning models in the models and correlating them with the strain measures. In addition, every effort will be made to ensure operational distinction among the measures.

This chapter explained the key constructs of GST and the importance of social control and differential association in tests of GST. Agnew (1992, 2001) consistently stated that social control and differential association may condition the effects of strain on delinquency, but has only recently offered a critical test of GST and social control (Thaxton & Agnew, 2004). Agnew (1992, 2001) has also implicitly stated that personality may condition the strain-delinquency relationship, and recently provided a test of GST and the moderating effects of personality traits (Agnew et al., 2002). The purpose of this study was to elaborate on Agnew et al.'s test of personality and GST.

However, before a discussion of the Agnew et al. (2002) article and the proposed study are presented, it is necessary to understand how personality relates to antisocial behavior.

The next chapter presents a discussion of normative (i.e., conforming) and maladaptive (i.e., non-conforming) personality traits. The relationship between traits and motives is discussed. Next, a description of normative personality traits, including methods used to assess personality traits and empirical correlates of personality traits, is presented. Then, maladaptive personality traits, specifically psychopathic personality traits or psychopathy, are described. Finally, issues of tautology, when examining personality/psychopathy and delinquency, are mentioned.

Chapter 3

Personality Characteristics Affecting Deviance

As stated in the previous chapter, general strain theory expanded the scope of sources of strain and explicated factors that affect the strain-crime relationship (e.g., negative affect, coping mechanisms, and other conditioning factors). Since the introduction of GST, Agnew and others have attempted to improve the comprehensiveness of the processes described in the assumptions of strain theory. Often these theoretical expansions of general strain theory have been guided by the findings of previous studies. These embellishments have provided more specification of criminal motivations (Agnew, 1992), criminogenic types of strain (Agnew, 2001), gender differences (Broidy & Agnew, 1997), structural effects that may condition the strain-crime relationship (Agnew, 1999), developmental or life-course differences in strain (Agnew, 1997), and biological explanations of the strain-crime relationship (Walsh, 2000).

Until recently, the GST literature has ignored what Agnew and associates (Agnew et al., 2002) argue may be one of the most important conditioning effects of the strain-crime relationship, namely the personality traits of the individual experiencing strain. Personality traits are relatively stable characteristics that describe one's perception and behavior toward the environment (Caspi et al., 1994). There is impressive empirical evidence that suggests personality traits may be stable and enduring characteristics,

which are affected by biological and early socialization processes. In his early postulation of GST, Agnew (1992) made no specific mention of personality traits or psychopathic features. He did, however, make reference to internal coping mechanisms such as "temperament." He further stated that chronic strainful conditions may "…have a greater impact on a variety of negative psychological outcomes." (Agnew, 1992, p. 65). This statement suggests that personality traits may influence the strain-delinquency relationship. Several years later, Agnew stated that "[t]he subjective evaluation of an objective strain is a function of a range of factors, including individual traits (e.g., irritability)…" (Agnew, 2001, p. 321). Hence, one can make a tenable argument that personality traits may serve as moderating and mediating factors for the strain-delinquency relationship.

Trait or Motive?

Upon examination of the psychological literature, a novice to the field may ask what the difference is between a *motive* and a personality *trait*. This question is particularly important when testing general strain theory, considering that Agnew (Agnew, 1992, 2001; Agnew et al., 2002) repeatedly emphasizes that GST is distinguished from other criminological theories because of its focus on *motivational* processes. Unfortunately, these concepts are not universally defined; there exists much overlap and ambiguity with regard to the meaning of these two concepts (for a discussion see Winter, John, Stewart, Klohnen, & Duncan, 1998). According to Winter et al. (1998), motives refer to one's desires or goals that vary in relation to the situation or more immediate circumstances (conceptually similar to strain). That is, as circumstances and situations change, motives change, and are, therefore, particularly unstable over time.

Consequently, motives may be difficult to measure either directly or through observation, and may not be intercorrelated. In contrast, traits refer to consistent patterns of perception, behavior, affect, and thinking, though a certain degree of flexibility in behavior patterns still exists (but see Mischel, 1968). In other words, traits are less affected by situational changes, and as such are more stable over time. Traits can be measured directly and are often intercorrelated for certain clusters of behavior.

There is some evidence that traits and motives interact such that traits condition the expression of motives (see Winter, 1996; Winter et al., 1998). A few studies have reported that goal orientation (motives) is a mediating construct between personality traits and outcomes (Elliott & Church, 1997; Zweig & Webster, 2004). There is also evidence that motives are subsumed within traits (Borkenau, 1990; Hofstee, 1994; McCrae, 1994; McCrae & Costa, 1996; Ostendorf & Angleitner, 1994; Read, Jones, & Miller, 1990).

Since the literature contends that personality traits have a fundamental impact on motives, although the magnitude of this interaction remains uncertain, it is quite conceivable that personality traits will both interact with strain and condition the expression of strain. If this is the case, a test of the effect of strain and personality traits on delinquency, including interaction terms of strain and personality traits, should provide a meaningful analysis toward understanding the dynamics of these relationships. That is, if the strain by traits interaction measure significantly affects delinquency, support for the conditioning argument of personality traits and GST will be increased.

It is also conceivable that strain, as a proxy measure of motive, is actually subsumed within personality traits. Such a finding would suggest that traits, rather than

strain, are predictors of crime. If this is the case, a test of the effect of strain on delinquency while controlling for relevant personality traits should determine if strain affects delinquency for reasons related to personality traits. If the strain measure continues to significantly affect delinquency after controlling for such factors, support for GST will be increased.

Furthermore, traits and strain may have reciprocal effects on one another, with each conditioning the effects of the other on delinquency/crime. Tests of this argument would require the use of longitudinal data including measures of strain and personality for at least two separate points over time. If the effects of personality traits and strain at Time 2 are significantly related to personality traits and strain at Time 1, and vice versa, support for a reciprocal argument would be gained. Since GST is based on motivations toward crime, it seems reasonable for researchers to empirically examine the influence of personality.

Personality Traits

Personality is a rather ambiguous concept that is defined in a myriad of ways, depending upon the theoretical paradigm and background of the researcher studying it. Some scholars acknowledge that the concept of personality refers to patterns of thoughts, feelings, and actions; other academics define personality as characteristics that make an individual's behavior predictable to others. The accuracy of the definition itself has not been viewed as vital to the study of its development, dimensions, or differences. Simply put, personality is the distinctive quality or character that defines individuals as themselves. Personality operates at both a conscious and unconscious level and is both dynamic and relatively stable (see Caspi & Bem, 1990; Ge & Conger, 1999; Roberts &

DelVecchio, 2000; Soldz & Vaillant, 1999). The stability of personality traits depends on several factors, such as genes (e.g., McGue, Bacon, & Lykken, 1993), environment (e.g., McNally, Eisenberg, & Harris, 1991; Roberts, Block, & Block, 1984), internal factors (e.g., Asendorpf & Aken, 1991; Clausen, 1993; Helson, Stewart, & Ostrove, 1995; Pals, 1999; Schuerger, Zarrella, & Hotz, 1989), and the ability of the individual to adjust to or fit into the environment (see Caspi, Elder, & Bem, 1988; Caspi & Roberts, 1999).

A large body of literature has shown that personality traits are determined in part by inheritance and/or genes, which according to some researchers accounts for approximately half of the explained variance (ranging from 0.40 to 0.80) in personality (e.g., Bock & Goode, 1996; Carey & Goldman, 1997; Eley, 1998; Gottesman & Goldsmith, 1994; Lykken, 1995; Mednick, Gabrielli, & Hutchings, 1984; Moffitt, 1987; Plomin & Nesselrode, 1990; Rutter, 1996; see also, Walsh, 2000). Research has also indicated that personality is determined by factors other than inheritance, such as socio-cultural determinants (e.g., parenting styles, attachment to others, religion, politics, education, and income), learning mechanisms, and rational choice.

In one such study, Roberts and DelVecchio (2000) conducted a meta-analysis that examined rank-order consistency (i.e., whether groups of individuals report the same rank ordering of measures over time) of both temperament and personality traits across longitudinal studies. The purpose of their study was to examine stability and variability of normal personality over the life-course. Their analyses, employing estimated population test-retest correlations, revealed a linear and increasing trend in stability for personality traits over the life-course, reaching a peak around age 50. Interestingly, the findings demonstrated a slight dip in rank-order consistency around adolescence. These

reduced correlation coefficients corroborate findings from other longitudinal studies of the continuity of personality (correlations range from .32 to .41: Carmichael & McGue, 1994; Haan, Millsap, & Hartka, 1986; Stein, Newcomb, & Bentler, 1986; Stevens & Truss, 1987), implying that adolescence is a phase marked by changes in individual behavioral characteristics. Roberts and DelVecchio (2000) also indicated that the population correlation effect sizes were more consistent for personality traits than temperament, even after controlling for the time span of the longitudinal study (r ranges were .41 to .55 and .35 to .52, respectively).

In addition, maladaptive (i.e., non-conforming) personality traits have been reported to demonstrate relative stability over time (Lenzenweger, 1999). By examining 250 subjects in the Longitudinal Study of Personality Disorder (LSPD) across three assessment waves, Lenzenweger investigated the stability of personality disorders (PD). The results revealed both individual difference stability and mean level stability, though some change occurred over time. These findings came from one of the only studies that examined the stability and change of maladaptive personality traits. As illustrated, these results suggested stability even among these types of personality traits.

Temperament

Temperament refers to a moderately consistent (Asendorpf, 1992; Kagan, 1989; Kochanska, Murray, & Coy, 1997; Matheny, 1989; McDevitt, 1986) behavioral disposition. Such dispositions are linked to one's inherent biological functioning and environmental characteristics during early childhood (see Buss & Plomin, 1975; Goldsmith, 1996; Pedlow, Sanson, Prior, & Oberklaid, 1993; Rothbart & Bates, 1998;

Thomas & Chess, 1977). As an individual matures over the life-course, temperaments begin to be transformed into more cohesive and stable personality traits.

Empirical evidence has begun to connect temperament with the development of adult personality traits (Block, 1993; Block & Kremen, 1996; Caspi & Silva, 1995; Cohen, 1996; see also Ahadi & Rothbart, 1994; Digman & Shmelyov, 1996; Martin, Wisenbaker, & Huttunen, 1994; Wachs, 1994). Yet, these studies have limitations and often have shown only modestly significant correlations. Such research suggests that personality traits may depend, in part, on the consistency of initial temperaments.

Hierarchy of Personality

Since multiple factors can affect personality development, personality theorists have taken numerous approaches when examining personality differences. Personality traits can be measured directly and are often intercorrelated for certain clusters of behavior. Trait theorists often describe personality traits according to levels ranging from very broad to more specific characteristics: that is, (a) superfactors, (b) primary factors, and (c) specific behavior events (Furnham & Heaven, 1999).

Superfactors describe broad clusters or domains of personality traits that can be sub-divided into smaller correlated units of analysis, primary factors, and, on an even smaller scale, specific behavior events. Superfactors are intended to be independent elements that serve as the fundamental building blocks of personalities. Psychologists debate over the most appropriate number of superfactors necessary to describe personality types; some suggest a three-factor model (see PEN: Eysenck, 1977, 1992; Tellegen, 1985), while others suggest five factors (see Five-Factor Model (FFM):

McCrae & Costa, 1990; McCrae & John, 1992; Wiggins, 1996), six factors (Hogan, 1986), or seven factors (Benet & Walker, 1992; Cloninger, Svrakic, & Przybeck, 1993).

The various models of personality differ not only in their specification of the number of factors necessary to describe personality, but also in the way that the measures are derived (i.e., biological, communication indicators, mood scales, and pharmacological). Despite differences in the number of factors and the measurement of traits, the different models of personality demonstrate a considerable amount of conceptual overlap among the overall models. For example, the FFM dimension of Agreeableness and Tellegen's Negative Emotionality map onto very similar domains, and the FFM dimension of Conscientiousness and Tellegen's Constraint map onto similar domains (for a discussion, see Miller & Lynam, 2001).

Regardless of which superfactor model is implemented, the model should describe independent personality domains and include all aspects of behavior. Contrary to the assumption of independence among "superfactors", studies indicate that different superfactor models often contain overlapping constructs (Block, 1995; Church, 1994; Lilienfeld, 1999; Watson, Clark, & Harkness, 1994). However, factors describing extraversion appear to be consistently measured regardless of which superfactor model is employed (see Winter et al., 1998).

Primary factors are sub-divisions within a superfactor that reflects interrelated, yet somewhat distinct, factors. For instance, the superfactor extraversion can be described as containing several primary factors, such as impulsivity and sociability (Furnham & Heaven, 1999). From an even smaller unit of analysis, primary factors can be

characterized as being comprised of specific behavior events. That is, an individual that acts without thinking may be labeled as impulsive.

Personality Traits Affecting Deviance

It has been well established that personality dispositions are associated with antisocial, delinquent, and criminal behavior (e.g., Binder, 1988; Caspi et al., 1997; Caspi et al., 1994; Cleckley, 1941; Cloninger, 1987; Eysenck, 1977; Eysenck & Eysenck, 1985; Eysenck & Gudjonsson, 1989; Farrington, 1986, 1992; Gough & Peterson, 1952; Luengo, Otero, Carrillo-de-la-Peña, & Mirón, 1994; Mak, Heaven, & Rummery, 2003; Miller & Lynam, 2001; Raine, 1993; Robins, 1966; Rutter & Giller, 1983; Schuessler & Cressey, 1950; Tennenbaum, 1977; Tremblay, Pihl, Vitaro, & Dobkin, 1994; Waldo & Dinitz, 1967; Wilson, Rojas, Haapanen, Duxbury, & Steiner, 2001; Zuckerman, 1989). Toward this end, Krueger and associates (Krueger et al., 1994) found that low behavioral Constraint and high Negative Emotionality were significant predictors of self-reported, informant reported, and officially recorded measures of delinquency (cf. Ge & Conger, 1999; Krueger, Caspi, Moffitt, Silva, & McGee, 1996). In addition, impulsivity (e.g., Farrington, Loeber, & Kammen, 1990; Gerbing, Ahadi, & Patton, 1987; Luengo, et al., 1994; Royce & Wiehe, 1988; White et al., 1994), psychoticism as defined by Eysenck and Eysenck (1976) (e.g., Furnham & Thompson, 1991), extraversion (e.g., Furnham, 1984), neuroticism (e.g., Heaven, 1996; Silva, Martorell, & Clemente, 1986), and sensation-seeking (e.g., Newcomb & McGee, 1991; Simó & Perez, 1991; Zuckerman, 1979, 1994) have all been shown to be significantly associated with antisocial behaviors such as conduct problems, delinquency, and criminal behavior. Conversely, Agreeableness (e.g., Heaven, 1996) and Conscientiousness (e.g., Heaven, 1996) have

been reported as inversely associated with antisocial behavior and delinquency. These findings have demonstrated consistency across populations, as personality traits have been significantly associated with antisocial and delinquent behavior in both institutionalized and non-institutionalized samples (e.g., Romero, Luengo, & Sobral, 2001).

Personality traits have also been linked to alcohol and drug use (e.g., Block, Block, & Keyes, 1988; Caspi et al., 1997; Masse & Tremblay, 1997; Wilson et al., 2001). Studies have indicated that the use of alcohol and illicit drugs serves as one of the cognitive motivators to reduce the effects of negative affect among adolescents (Cooper, Frone, Russell, & Mudar, 1995; Loukas, Krull, Chassin, & Carle, 2000; Newcomb et al., 1988; Stewart, Karp, Pihl, & Peterson, 1997). Consequently, scholars have proposed that individuals who possess personality traits that are highly affected by intense emotions may be more susceptible to alcohol and substance use.

Recently, Miller and Lynam (2001) published results from a meta-analysis of 59 studies examining the relationship between the four leading models of personality (i.e., the FFM model, the PEN model, Tellegen's three-factor model, and Cloniger's seven-factor model) and antisocial behavior (defined as official, parent-, teacher-, and/or self-reported crime/delinquency and antisocial personality disorder (APD) symptoms). Their findings indicated that dimensions (or similar dimensions across the four personality models) of Agreeableness and Conscientiousness were moderately and significantly related to antisocial behavior. Dimensions of Extraversion and Neuroticism ranged from non-significant to weak associations with antisocial behavior. Openness to Experience dimensions were not significantly related to antisocial behavior.

Research has shown that adolescents characterized as possessing "difficult temperaments" (i.e., easily frustrated, hyperactive, irritable) were more likely to use alcohol and drugs (Giancola & Parker, 2001; Lerner & Vicary, 1984; Windle, 1991). For example, studies have also examined the influence of the personality trait Negative Emotionality on alcohol and drug use (Caspi et al., 1997; Chassin, Pillow, Curran, Molina, & Barrera, 1993; Colder & Chassin, 1997; Labouvie, Pandina, White, & Johnson, 1990; Shoal & Giancola, 2001; Tarter, Blackson, Brigham, Moss, & Caprara, 1995; Wills, Sandy, Shinar, & Yaeger, 1999), and found that Negative Emotionality was a risk factor for alcohol and drug use. Some studies, however, have found contradictory results regarding the relationship between Negative Emotionality and substance use (Clark, Parker, & Lynch, 1999; Stice & Gonzales, 1998; cf. Shoal & Giancola, 2003). Research has also demonstrated significant relationships between other personality traits and alcohol and drug use, such as low Constraint (i.e., impulsivity) (Ge & Conger, 1999; Krueger et al., 1996; McGue, Slutske, & Iacono, 1999) and Positive Emotionality (Colder & Chassin, 1997; Wills et al., 1999).

Relatedly, alcohol and illicit drug use have been associated with antisocial behavior. A number of studies have demonstrated that delinquency was significantly associated with substance use (e.g., Elliott, Huizinga, & Menard, 1989; Fergusson, Lynskey, & Horwood, 1994; Gillmore et al., 1991; Osgood, Johnston, O'Malley, & Bachman, 1988). Longitudinal research has similarly indicated that an early onset of conduct problems created a high risk of developing substance use problems (Brook, Cohen, Whiteman, & Gordon, 1992; Dobkin, Tremblay, Masse, & Vitaro, 1995; Fergusson & Lynskey, 1998; Pulkkinen, 1983; Windle, 1990). Recently, Lynam,

Leukefeld, and Clayton (2003) reported results from a study of personality, antisocial behavior (i.e., fighting, theft, truancy, vandalism), and substance use (i.e., tobacco, alcohol, and marijuana). They suggested that the personality profiles for substance use and antisocial behavior were similar, such that those persons who were highly antisocial and reported a large amount of substance use were also high in neuroticism and thrill-seeking, but low in agreeableness, conscientiousness, positive emotionality, and warmth. Clearly, the study of personality traits and temperaments has contributed to the research on deviance.

Psychopathic Features Affecting Deviance

Certain personality traits may be more maladaptive and criminogenic than others. One segment of the population that demonstrates severe antisocial behavior is psychopaths, or those people characterized as possessing psychopathic personality features. Historically, the term "psychopathic" has been around since the early 1800s, but it is only within the past fifty years that the concept has acquired a narrower meaning. It was not until the mid-1900s, following the work of Cleckley (1941, 1976, 1982), that the contemporary concept of "psychopathic" was formed. Cleckley's (1941) *The Mask of Sanity* contained the findings of his seminal work with psychopathic patients and included detailed descriptions of their psychological attributes. Interspersed in the clinical descriptions of his patients, Cleckley listed sixteen attributes of a psychopath, such as egocentricity, dishonesty, a lack of remorse, and superficial charm. Cleckley characterized such psychopaths as lacking "normal" emotions.

Many years later, Robert Hare expanded Cleckley's sixteen attributes of a psychopath to twenty-one (see the Psychopathy Checklist (PCL) (Hare, 1980)), which

was later revised to a list of twenty characteristics (see Psychopathy Checklist-Revised (PCL-R) (Hare, 1991)). Hare's operationalization of the characteristics that define psychopaths includes such symptoms as shallow emotions, lack of empathy, deceitful and manipulative, glib and superficial, egocentric and grandiose, lack of remorse or guilt, impulsivity, poor behavioral controls, and thrill-seeking (Hare, 1993). His Psychopathy Checklist (PCL) and Psychopathy Checklist-Revised (PCL-R) have demonstrated considerable empirical reliability and validity (e.g., Hare, 1991; Hart & Hare, 1989; Salekin, Rogers, & Sewell, 1996).

Psychopathic personality or psychopathy is a stable condition (see Blonigen, Carlson, Krueger, & Patrick, 2003 for support of heritability of psychopathy) characterized by aggression, dishonesty, impulsivity, a lack of empathy for others, and egocentricity, particularly among males (Cleckley, 1941; Hare, 1991). Psychopathy is characterized by a cluster of behavioral, interpersonal, and affective features (Hare, 1991). According to Lynam and Gudonis (in press):

> Behaviorally, the psychopath is an impulsive, risk-taker involved in a variety of criminal activities. Interpersonally, the psychopath has been described as grandiose, egocentric, manipulative, forceful, and cold-hearted. Affectively, the psychopath displays shallow emotions, is unable to maintain close-relationships, and lacks empathy, anxiety and remorse. (p. 4)

It is estimated that at least 1 percent of the general population in North America can be characterized as psychopaths (Hare, 1996, 1998b). Among forensic populations (i.e., those having formal contact with the criminal justice system), these prevalence estimates are dramatically higher: for adult males, about 10 to 30 percent (Hare, 1991);

for adult females, roughly 15 percent (Salekin, Rogers, & Sewell, 1997; Salekin, Rogers, Ustad, & Sewell, 1998); and for adolescents, around 30 percent (Brandt, Kennedy, Patrick, & Curtin, 1997; Forth, 1995; Forth, Hart, & Hare, 1990). In reference to the size of the population of psychopaths in North America, Hare (1993) said the following:

> To give you some idea of the enormity of the problem that faces us, consider that there are at least 2 million psychopaths in North America; the citizens of New York City have as many as 100,000 psychopaths among them. And these are conservative estimates. Far from being an esoteric, isolated problem that affects only a few people, psychopathy touches virtually every one of us. (p. 2)

Limitations certainly range across this body of work. Research suggests that, overall, psychopathy is a condition that affects individuals regardless of gender (Bolt, Hare, Vitale, & Newman, 2004; Rutherford, Cacciola, Alterman, & McKay, 1996; Salekin et al., 1997; Salekin et al., 1998; Vitale, Smith, Brinkley, & Newman, 2002), race (Brandt et al., 1997; Cooke, Kosson, & Michie, 2001; Kosson, Smith, & Newman, 1990; see also meta-analysis of Skeem, Edens, Camp, & Colwell, 2004), or ethnicity (Compton et al., 1991; Cooke, 1997; Cooke & Michie, 1999; Gonçalves, 1999; Hobson & Shine, 1998; Moltó, Poy, & Torrubia, 2000; Reiss, Grubin, & Meux, 1999). It appears, however, that the magnitude and expression of certain psychopathic features varies across sociodemographic groups.

A respectable amount of research exists demonstrating the relationship between psychopathy and personality traits. Several studies have examined the relationship between the Five-Factor Model of personality (Neuroticism (N), Extraversion (E), Openness (O), Agreeableness (A), and Conscientiousness (C)) and psychopathy (e.g.,

Harpur, Hart, & Hare, 1994; Lynam, 2002b; Miller, Lynam, Widiger, & Leukefeld, 2001; Widiger & Lynam, 1998; but see Hart & Hare, 1994; Lynam, Whiteside, & Jones, 1999). According to Lynam and Gudonis (in press), psychopathic individuals may be characterized as

> … extremely low in Agreeableness (i.e., suspicious, deceptive, exploitive, aggressive, arrogant, and tough-minded); extremely low in Conscientiousness or Constraint (i.e., having trouble controlling his impulses and endorsing nontraditional values and standards); and tending to experience negative emotions, particularly anger and cravings-related distress. (p. 21-22)

Psychopathy has been shown to be significantly positively associated with extraversion and impulsivity (Blackburn & Coid, 1998; Miller et al., 2001), and to have a negative correlation with internalizing problems (Miller et al., 2001). (Internalizing problems may be measured as negative emotions, which contradicts Lynam and Gudonis' (in press) above characterization of psychopaths. However, internalizing problems is a broad construct which may result in either positive or negative correlations depending upon the way it is measured.) Psychopathy has also demonstrated moderate positive associations with maladaptive personality features such as antisocial, borderline, histrionic, paranoid, narcissistic, and passive-aggressive behavior, and negative associations with compulsive and dependent behavior (Blackburn & Coid, 1998; Miller et al., 2001).

Psychopathic individuals have demonstrated a higher tendency to be motivated by desires for revenge or retaliation (Williamson, Hare, & Wong, 1987) than non-psychopathic individuals. They also reported greater tendencies toward aggression (Heilbrun et al., 1998; Hemphill, Hare, & Wong, 1998; Patrick, Edens, Poythress,

Lilienfeld, & Benning, manuscript in preparation; Salekin et al., 1996) and a higher use of instrumental aggression (Serin, 1991).

The concept of psychopathy is of particular interest when examining crime and other at-risk behavior. Research has indicated that psychopathic adult offenders commit a disproportionately higher amount of crime than non-psychopaths (Blackburn & Coid, 1998; Hare & Jutai, 1983; Hare, McPherson, & Forth, 1988; Kosson et al., 1990; Miller et al., 2001). For example, Hemphill, Hare, and Wong (1998) reported that psychopaths were approximately four times more likely to commit violent crime than those not identified as psychopaths. Individuals possessing psychopathic features are also involved in other types of risk behavior. Psychopathic features are associated with higher rates of alcohol and illicit drug use (Hemphill, Hart, & Hare, 1994; Miller et al., 2001; Rutherford, Alterman, Cacciola, & McKay, 1997; Smith & Newman, 1990) and high risk sexual practices (Tourian et al., 1997). Adults possessing psychopathic features are often more disruptive in institutional and correctional facilities (Forth et al., 1990; Hare & McPherson, 1984; Wong, 1984). Such individuals have also been shown to benefit less from treatment (Ogloff, Wong, & Greenwood, 1990; Rice, Harris, & Quinsey, 1990). In addition, adults characterized as psychopathic are more likely to recidivate (Harris, Rice, & Cormier, 1991; Hart, Kropp, & Hare, 1988; Hemphill et al., 1998; Salekin et al., 1996) and violate conditions of treatment release (Alterman, Rutherford, Cacciola, McKay, & Boardman, 1998; Hare, 1981; Hare, Clark, Grann, & Thornton, 2000; Hare & McPherson, 1984; Hart et al., 1988; Hill, Rogers, & Bickford, 1996; Ogloff et al., 1990; Rice, Harris, & Cormier, 1992; Rice et al., 1990; Serin, 1991; Serin, Peters, & Barbaree, 1990; Wong, 1984; but see Salekin, 2002).

Psychopathy: Taxon or Dimension?

Among scholars studying psychopathy, there is a debate over the nature of the construct. Some scholars consider psychopathy to be dimensional or continuous, whereas others believe it to be taxonomic or categorical. In general, psychopathy has been conceptualized as a global construct that is relatively uniform and continuous (see Skeem, Poythress, Edens, Lilienfeld, & Cale, 2003). This dimensional approach is reflected by the utilization of total scores on psychopathy assessment instruments. Dimensional measures of psychopathy suggest that individuals vary by degree, rather than in kind, with respect to psychopathy (Hare, 1998a). To date, research addressing which approach to operationalizing psychopathy (categorical versus dimensional) is preferable and more accurately reflects variation in the construct is lacking (but see Harris, Rice, & Quinsey, 1994). Recent studies combined with theoretical conjecture, however, have suggested a need to reconsider the measurement of psychopathy.

A few scholars (Karpman, 1941, 1948; Porter, 1996; Mealey, 1995a, 1995b) have postulated that the concept of psychopathy should include two variants: primary psychopathy and secondary psychopathy. On the surface, these two variants of psychopathy share many of the same characteristics. For instance, both primary and secondary psychopaths will demonstrate antisocial, deceptive, hostile, and irresponsible behavior (Skeem et al., 2003).

Although preliminary empirical evidence should be interpreted with caution, primary and secondary psychopathy are believed to differ with regard to the etiology and motivation of these behaviors. Primary psychopathy is believed to be caused by genetic factors and motivated by purposeful and unconscionable efforts to satisfy desires. In

contrast, secondary psychopathy is believed to be caused by negative psychosocial and environmental conditions (e.g., abuse, parental rejection/neglect) (Forth & Burke, 1998; Margolin & Gordis, 2000; Marshall & Cooke, 1995; Porter, 1996; Weiler & Widom, 1996) and motivated by emotional and impulsive responses to negative environmental circumstances.

Research examining the heterogeneity of psychopathic features has revealed findings that may further substantiate the theoretical premise that psychopathy can be described as either primary or secondary in nature. Although the total score of measurement items is usually used to diagnose psychopathy (e.g., for PCL-R a total score of 30 or higher diagnoses psychopathy (Hare, 1991)), studies have shown that psychopathic features cluster nicely into separate interrelated groupings of psychopathic traits. Some scholars suggest that psychopathy is best explained by two factors (see Harpur, Hakstain, & Hare, 1988, but see Hare & Neumann, 2005 for a four-factor model of psychopathy), where Factor 1 refers to the affective and interpersonal features (e.g., callousness, glibness, manipulativeness, shallowness) and Factor 2 refers to the behavioral, antisocial features (e.g., aggression, impulsivity, irresponsibility). Others have recommended three factors for psychopathy (see Cooke & Michie, 2001), such that Factor 1 refers to the interpersonal styles, Factor 2 refers to the affective features, and Factor 3 refers to the impulsive and irresponsible behavior features.

Studies of the subscales or factors of psychopathy (typically conducted on the two factors model of the PCL-R) have demonstrated distinct correlations with other measures. Factor 2 has been positively associated with measures of neuroticism, negative emotionality, and anxiety, while Factor 1 has been negatively associated with these

measures (Blackburn & Coid, 1998; Frick, Lilienfeld, Ellis, Loney, & Silverthorn, 1999; Hare, 1991; Harpur, Hare, & Hakstian, 1989; Patrick, 1994; Patrick et al., manuscript in preparation; Verona, Patrick, & Joiner, 2001; but see Schmitt & Newman, 1999). Factor 1 has been negatively correlated with psychopathological traits of avoidant and dependent behavior (Blackburn & Coid, 1998). Factor 1 has been associated positively with extraversion, and negatively with personality traits of introversion and neuroticism (Blackburn & Coid, 1998). Factor 2 has been positively associated with anger, emotional reactivity, impulsivity, sensation-seeking, and psychopathic deviance, and negatively associated with conscientiousness and constraint (Blackburn & Coid, 1998; Hare, 1991; Harpur et al., 1989; Patrick, 1994; Patrick, Bradley, & Lang, 1993; Verona et al., 2001).

Moreover, studies have examined differences between the relationships of the two factor model of psychopathy and criminality and treatment. In a meta-analysis of psychopathy and recidivism, Hemphill et al. (1998) reported Factor 2 was a greater predictor of general recidivism, while both Factor 1 and Factor 2 predict violent recidivism. Further, Factor 1 has been shown to be associated with recidivism for sex offenses (Seto & Barbaree, 1999). Factor 2 has been shown to be associated with alcohol and drug dependency among criminal offenders with high levels of psychopathy (Patrick et al., manuscript in preparation; Smith & Newman, 1990). Factor 1 has been associated with poor psychological treatment performance (Hughes, Hogue, Hollin, & Champion, 1997) and disruptive behavior in treatment meetings (Hobson, Shine, & Roberts, 2000).

The aforementioned research has demonstrated that variations exist in score configurations across psychopathy factors and significant associations with these distinct factors of psychopathic features. These findings may be useful in distinguishing between

primary and secondary psychopathy. Moreover, examination of the dimensions that underlie psychopathy, in particular affective (e.g., callousness) versus behavioral (e.g., impulsivity/irresponsibility), may lead to a better understanding of the etiology of antisocial behavior, especially delinquency.

Juvenile Psychopathy

In an effort to better understand the etiology and stability of severe antisocial behavior, researchers have begun to extend the construct of psychopathy downward to populations of children and adolescents. Some scholars have raised ethical concerns about extending the concept of psychopathy downward (e.g., Edens, Skeem, Cruise, & Cauffman, 2001; Quay, 1987; Seagrave & Grisso, 2002; Steinberg, 2001; but see Frick, 2002; Hart, Watt, & Vincent, 2002; Lynam, 2002a). Due to limited prospective longitudinal research, these scholars caution that the implications of adolescent psychopathy are premature and may be an uncertain predictor of life-course criminal propensity. They warn against hastily labeling certain adolescents as fledgling psychopaths and potentially providing poor prognoses of life-course psychopaths. Moreover, they argue that, unlike psychopathy among adult populations, the literature on adolescents contains limited and less reliable research pertaining to negative treatment outcomes. In particular, Seagrave and Grisso (2002) have suggested that developmental changes that occur during adolescence may be mistaken for psychopathic characteristics. For these reasons, some scholars stress that evidence that psychopathy exists in adolescents similar to that in adults should be critically examined.

Lynam and Gudonis (in press) offered two counterclaims to the aforementioned criticisms of the downward extension of psychopathic assessment. In response to

concerns that researchers examining psychopathy in youths may actually be examining developmental changes rather than stable psychopathic features, Lynam and Gudonis referred to research that has emphasized both relative and absolute stability levels of psychopathy across adolescence (Frick, Cornell, Barry, Bodin, & Dane, 2003; Lynam et al., in press). In response to critics' concerns that examination of psychopathy among juveniles may result in the misguided application of a negative label for youths found to possess such features, Lynam and Gudonis (in press) contended that it is not so much the label researchers should be concerned about as it is the mindset among some researchers the psychopathy means "untreatable." They emphasized that the focus of research should be on early intervention and treatment of psychopathy, before the development of other reinforcing negative consequences (e.g., association with delinquent peers, reduced family attachment, substance use, etc.). Such findings underscore that while psychopathy has been shown to be stable over time, it is not completely resistant to change.

The impressive volume of recent contributions to the literature on juvenile psychopathy illustrates the interest and importance placed on this topic across several paradigms of research. For example, the journal of *Law and Human Behavior* recently devoted half of one of its issues (volume 26, issue 2) to the discussion of whether or not psychopathy should be examined at a juvenile level; the journal of *Behavioral Sciences and the Law* recently devoted two special issues (volumes 21 and 22) to the topic of juvenile psychopathy; and the journal of *Criminal Justice and Behavior* devoted a special issue (volume 28, issue 4) to psychopathy and risk assessment. Although it is prudent to heed the warnings of critics, knowledge and understanding of juvenile psychopathy can only be acquired through scientific pursuit.

As mentioned, numerous studies have examined juvenile psychopathy. Several studies have examined the reliability (Forth & Burke, 1998; Frick et al., 2003; Lynam, 1997; Lynam et al., in press; Spain, Douglas, Poythress, & Epstein, 2004; Vitacco, Rogers, & Neumann, 2003) and validity (Corrado, Vincent, Hart, & Cohen, 2004; Falkenbach, Poythress, & Heide, 2003; Lee, Vincent, Hart, & Corrado, 2003; Murrie & Cornell, 2002; O'Neill, Lidz, & Heilbrun, 2003; Ridenour, 2001; Rogers, Johansen, Chang, & Salekin, 1997; Salekin, Leistico, Neumann, DiCicco, & Duros, 2004; Vitacco et al., 2003) of youth psychopathy measures with promising results. In general, studies examining the reliability and validity of juvenile psychopathy assessments have been more consistent and have reported stronger findings when examining the total psychopathy scores than subscale scores of psychopathy.

Studies have indicated that youths experiencing psychopathic traits were more likely to exhibit antisocial behavior. Juvenile psychopathy has been associated with aggression (Brandt et al., 1997; Frick, O'Brien, Wootton, & McBurnett, 1994; Lilienfeld & Andrews, 1996; Lynam, 1997; Murrie, Cornell, Kaplan, McConville, & Levy-Elkon, 2004; Rogers et al., 1997; Toupin, Mercier, Dery, Cote, & Hodgins, 1995), use of instrumental aggression (Stafford & Cornell, 2003), and expectations to experience positive rewards for use of aggression (Pardini, Lochman, & Frick, 2003). Juveniles with psychopathic features have exhibited both violent and non-violent offending (Campbell, Porter, & Santor, 2004; Corrado et al., 2004; Forth et al., 1990; Kosson, Cyterski, Steuerwald, Neumann, & Walker-Matthews, 2002; Lynam, 1997; Salekin et al., 2004). Juvenile psychopathy has been associated with an earlier age of onset for delinquency (Campbell et al., 2004; Corrado et al., 2004) and the prediction of early delinquent

behavior (Lynam, 1997). Juvenile psychopaths are at a greater risk of become repeat offenders (Brandt et al., 1997; Catchpole & Gretton, 2003; Corrado et al., 2004; Falkenbach et al., 2003; Forth et al., 1990; Gretton, McBride, Hare, O'Shaughnessy, & Kumka, 2001; Toupin et al., 1995). The predictive validity for non-violent recidivism, however, has been weaker among juvenile psychopath samples than samples of adult psychopaths (Forth et al., 1990).

Psychopathic youths have demonstrated poorer treatment outcomes (e.g., shorter span of participation, slower progress through different phases of treatment, poorer participation, and less clinical improvement) and greater institutional infractions (Brandt et al., 1997; Campbell et al., 2004; Forth et al., 1990; Hicks, Rogers, & Cashel, 2000; Murrie et al., 2004; O'Neill et al., 2003; Rogers et al., 1997; Spain et al., 2004; Stafford & Cornell, 2003). Some studies have reported that psychopathic youths experience problems related to alcohol and substance use/abuse (e.g., earlier age of onset, variation in substances used) (Campbell et al., 2004; Corrado et al., 2004; Mailloux, Forth, & Kroner, 1997; Murrie & Cornell, 2002; Toupin et al., 1995; but see Brandt et al., 1997; O'Neill et al., 2003).

Research has produced mixed results on the association between psychopathic traits and other psychosocial problems (e.g., child maltreatment, family influences, parental attachment, peer rejection, school problems) (see Campbell et al., 2004; Corrado et al., 2004; Forth & Tobin, 1995; Kosson et al., 2002; O'Neill et al., 2003; Piatigorsky & Hinshaw, 2004; Wooton, Frick, Shelton, & Silverhorn, 1997). Nevertheless, research has suggested that the impact of certain psychosocial problems, like family influences, depends on the presence of callous-unemotional (CU) psychopathic features in youths.

When these features were present, youths were at greater risk for antisocial behavior, even in the absence of adverse family factors. When CU features were absent, family factors had a greater influence in the development of antisocial behavior. Psychopathic features have been shown to be adequate predictors of antisocial behavior, when controlling for the influence of measures such as intelligence, social status, prior delinquency, impulsivity and other conduct/disruptive behaviors (Frick et al, 2003; Gretton, Hare, & Catchpole, 2004; Lynam, 1997; Murrie et al., 2004).

Studies of psychopathy among youths have also revealed a relationship between psychopathy and personality traits. Research has found a strong negative relationship between juvenile psychopathy and traits of Agreeableness and Conscientiousness (similar to Constraint) (Lynam, 2002b; Lynam et al., in press; Salekin, Leistico, Trobst, Schrum, & Lochman, in press). These studies have also reported significant associations between juvenile psychopathy and Neuroticism (similar to Negative Emotionality), but the direction of this relationship was uncertain. Two of the studies (Lynam et al., in press; Salekin et al., in press) reported a moderate positive relationship between psychopathy and Neuroticism, while the other (Lynam 2002b) found a negative relationship between psychopathy and Neuroticism.

In addition to experiencing psychopathic symptoms, it has become established that many adolescents are experiencing other psychological problems. Research has indicated a significant positive association between juvenile psychopathy and externalizing behaviors (i.e., disruptive behaviors such as oppositional defiant disorder (ODD), conduct disorder (CD), antisocial personality disorder (APD), and substance abuse/dependency) (Brandt et al., 1997; Campbell et al., 2004; Frick, 2000; Frick, Bodin,

Barry, 2000; Hume, Kennedy, Patrick, & Partyka, 1996; Lynam, 1997; Myers, Burket, & Harris, 1995; Piatigorsky & Hinshaw, 2004). Some of these studies indicated a weak, but significant, positive association between juvenile psychopathy and internalizing behaviors (e.g., anxiety, depression, somatic symptoms, withdrawal) (Brandt et al., 1997; Lynam, 1997; but see Campbell et al., 2004). Lynam (1997), in contrast, observed negative correlations between internalizing behaviors and psychopathy after controlling for general psychopathology. Overall, youths possessing psychopathic traits appeared to have a propensity for externalizing problems, but were relatively unaffected by internalizing problems.

Similar to adult psychopathy assessments, scholars have examined the consistency and validity of factor structures in juvenile assessments of psychopathy. Among juvenile psychopathy measures, two (e.g., Frick et al., 1994), three (e.g., Vitacco et al., 2003), and four (e.g., Forth, Kosson, & Hare, 2003) factor structures have been reported. Findings regarding reliability and validity have been less consistent and weaker than those for the total score, but nonetheless promising. The research to date, however, has indicated some general weakness in juvenile psychopathy research (see Lynam & Gudonis, in press). Disagreement remains over which factor structure optimally describes psychopathy (this remains true for adult psychopathy as well). Overall, the factor subscales were less reliable than using the total score. Furthermore, convergence across the factor subscales of assessments has been rather weak. More research on juvenile psychopathy factor structure is certainly needed to address these issues.

An examination of psychopathy factor dimensions among juveniles has also revealed findings similar to those in adult studies. Utilizing data obtained from two

cohorts from the Pittsburgh Youth Study (Loeber, Farrington, Stouthamer-Loeber, & Kammen, 1998), Lynam and colleagues (in press) studied the relationship between the two-factor model of adolescent psychopathy and the Five-Factor Model of personality. They found significant negative relationships between Factor 1 and Agreeableness, Neuroticism, and a positive association between Factor 1 and Openness. Factor 2 was positively related to Neuroticism and Extraversion, and negatively related to Agreeableness, Conscientiousness, and Openness. The affective/interpersonal factor (Factor 1) has been associated with recidivism (Falkenbach et al., 2003), prior violent convictions (Corrado et al., 2004), and program non-compliance (Falkenbach et al., 2003). The behavioral factor (Factor 2) has been associated with an earlier age of onset and more severe offending (Corrado et al., 2004), recidivism (Falkenbach et al., 2003), school misconduct (Corrado et al., 2004) and program non-compliance (Falkenbach et al., 2003).

The Tautology of Personality Traits and Psychopathic Features and Crime

Personality theories assume that criminality is a "symptom" of a larger problem within the individual (Akers, 1997, p. 53). According to Akers, personality theories assume that "delinquents and criminals have abnormal, inadequate, or specifically criminal personalities or personality traits that differentiate them from law-abiding people." (p. 53). From a criminological perspective, such a generalization about personality and crime suggests a tautological issue conceptually. Assuming that delinquent individuals are by definition fundamentally flawed, such that their very identities are deviant, how can science separate the crime from the criminal? Based on

the conceptualization such an act would be virtually impossible, particularly when examining severely maladaptive personality types.

It is not the intention of this paper to take a stand either for or against arguments about the conceptual tautology of personality theory and crime. Rather, the point of presenting this problem is to acknowledge the existence of this issue when interpreting criminological research that relies upon personality theory and measurement. The conceptual tautology of personality within an etiological context for crime remains an issue for the criminological discipline to resolve. Future efforts should be made to continue pursuing such a resolution.

In addition to conceptual tautology, previous research on personality traits and crime/delinquency and psychopathy and crime/delinquency has suffered from issues of empirical tautologies. As discussed in Chapter 2, an empirical tautology occurs when two independent measures are found to be so highly correlated with each other, that they are essentially measuring the same concept. In the case of personality traits and psychopathy, this has also been referred to as "predictor-criterion overlap" (see Caspi et al., 1994). Some researchers (see Gottfredson & Hirschi, 1990) have claimed that previous studies of personality traits and crime have not been independently measured. For example, both the California Personality Inventory (CPI) and the Minnesota Multiphasic Personality Inventory (MMPI) contain items referring to criminal activities. Yet, these scales and subscales are utilized to predict criminal propensity.

This becomes a point of contention especially among criminologists. When discussing the applicability of personality traits, particularly psychopathy, to the study of crime, many criminologists would agree with Harris, Skilling, and Rice (2001, p. 199)

when they stated, "We had previously suspected that psychopathy was merely a euphemism for a lengthy history of officially recorded criminal conduct." However, after many years of research on psychopathy, Harris and his associates have become convinced that psychopathic features are not concepts that are subsumed under criminal deviance, but a separate phenomenon (Harris et al., 2001). This change of heart was the product of several studies where the researchers controlled for predictors of criminal history and other high-risk predictors of criminality, such as alcohol abuse, prior to introducing measures of psychopathy into their analyses (e.g., Harris et al., 1994; Rice & Harris, 1995). Their findings indicated that psychopathy served as a unique predictor of criminality. However, their findings still do not resolve the problem of tautology.

Despite the claims of some scholars that psychopathy can be studied without committing tautological errors (Levenson, Kiehl, & Fitzpatrick, 1995; Lilienfeld & Andrews, 1996), one might question whether or not it is even possible to have non-criminal psychopaths. For example, Hare states that "…for those who are [psychopaths], crime is less the result of adverse social conditions than of a character structure that operates with no reference to the rules and regulations of society." (Hare, 1993, p. 85; text in brackets not original). Hare continues to say the following:

> In many respects it is difficult to see how *any* psychopaths—with their lack of internal controls, their unconventional attitudes about ethics and morality, their callous, remorseless, and egocentric view of the world, and so forth—could manage to avoid coming into conflict with society at some point in their lives. (Hare, 1993, p. 86)

Yet, based on findings from forensic and non-forensic studies, Hare also states that "…not all psychopaths are criminals…" (p. 86). Schneider (as cited in Cooke & Michie, 2001, p. 185) has also argued that non-criminal psychopaths are well-represented in society. Examples of "non-criminal" psychopaths include individuals such as highly successful business and corporate leaders, like stock brokers, as well as unethical and corrupt lawyers, doctors, politicians, and other white-collar professionals (see Hare, 1993, 1996, 1998b; cf. Babiak, 1995, 2000). Psychopaths may thrive in ultra competitive and chaotic corporate and business environments, though there is no real empirical evidence to support such a claim.

While some may take offense to the claim that these examples of "non-criminal" psychopaths are considered non-criminal, it should be noted that this is a loose interpretation of the term non-criminal. Certainly, one may argue that these morally weakened white-collar professionals are criminal depending upon one's definition of criminal. One could also argue that according to other definitions of "criminal," one would be hard pressed to find individuals that did not violate some moral or legal code. After all, how many people exceed the speed limit or choose to keep the change left in a pay phone? For the purposes of this paper, "criminal" will be most often be defined as the violation of the law, as defined in state statutes.

Researchers have attempted to recruit and study non-forensic psychopaths, selected from the general community population, with unsuccessful results (e.g., Belmore & Quinsey, 1994; Lalumiere & Quinsey, 1996; Widom, 1977; Widom & Newman, 1985)—most of the subjects had histories of criminal justice contact. In an effort to

examine psychopathic features among non-offending populations, perhaps studies that utilize child and adolescent populations may provide such an opportunity.

Studies of personality traits and psychopathic features must be sensitive to the issue of empirical tautology. It is imperative that measures of personality and psychopathy exclude items that conceptually overlap with criminality (see Lynam, 1997). Indeed, with respect to psychopathy, researchers have begun to develop new measures of psychopathy that do not include any explicitly antisocial or criminological items (see Levenson, Kiehl, & Fitzpatrick, 1995; Lilienfeld & Andrews, 1996). Moreover, every effort should be made to control for predictors of criminal history prior to examining the effects of personality traits and psychopathic features. Researchers who are aware of these methodological and measurement issues and employ safeguards against empirical violations will benefit from the scientific integrity of their findings.

The literature examining the influence of personality traits and temperaments on delinquency is longstanding. Although the body of research on psychopathy as it applies to the study of childhood and adolescent delinquency is fairly new, it is growing at a respectable rate. The present study attempts to take advantage of the increasing interest in employing psychopathy and personality traits as relevant explanations of deviance and criminality. However, it is important to examine the influence of personality on delinquent behavior within a theoretical framework.

As Akers stated (1997, p. 1), "An effective theory helps us to make sense of facts that we already know and can be tested against new facts." It is well-established in the GST literature that strain leads to crime/delinquency (e.g., Agnew & Brezina, 1997; Agnew & White, 1992; Aseltine et al., 2000; Bao, Haas, & Pi, 2004; Benda & Corwyn,

2002; Brezina, 1999; Broidy, 2001; Hoffmann, 2002; Hoffmann & Cerbone, 1999; Hoffmann & Miller, 1998; Hoffmann & Su, 1997; Mazerolle, 1998; Mazerolle et al., 2000, 2003; Mazerolle & Maahs, 2000; Mazerolle & Piquero, 1997, 1998; Paternoster & Mazerolle, 1994; Piquero & Sealock, 2000, 2004; Robbers, 2004; Sharp et al., 2005; Sigfusdottir et al., 2004; Wallace et al., 2005). Research has also consistently demonstrated a link between personality and antisocial behavior (e.g., Caspi et al., 1997; Caspi et al., 1994; Cloninger, 1987; Eysenck & Gudjonsson, 1989; Luengo et al., 1994; Mak et al., 2003; Miller & Lynam, 2001; Raine, 1993; Tremblay et al., 1994; Wilson et al., 2001; Zuckerman, 1989) and psychopathy and antisocial behavior (e.g., Brandt et al., 1997; Campbell et al., 2004; Catchpole & Gretton, 2003; Corrado et al., 2004; Forth et al., 1990; Gretton et al., 2001; Kosson et al., 2002; Lynam, 1997; Salekin et al., 2004; Toupin et al., 1995). While there is empirical consistency regarding the direct effects of strain on delinquency, little is really known about factors that condition this relationship, particularly personality. Examination of personality within a GST framework may provide important clues about individual differences in the management of strainful events and conditions.

In the next chapter, a detailed description of Agnew, Brezina, Wright and Cullen's (2002) test of general strain theory and personality is presented. This discussion is followed by a description of the theoretical premise of the present study, and explanation of the conceptual models to be examined.

Chapter 4

General Strain Theory and Personality: Another Theoretical Elaboration

As mentioned in previous chapters, Agnew and associates (2002) have recently advocated for another theoretical elaboration of general strain theory: the examination of the effects of personality traits as conditioning factors on the strain-delinquency relationship. Part of the impetus for advancing this extension of GST was derived from a previously published (Agnew, 1997) theoretical discussion of GST from a developmental perspective, in which Agnew emphasizes the importance of personality traits in GST within the context of GST's ability to explain the stability and change in crime over the life-course.

Agnew (1997) has argued that GST may play a significant role in the explanation of developmental trajectories, developmental pathways that track important transitions occurring over the life-course (see Sampson & Laub, 1993, 1997), of crime. According to Agnew, GST may offer a supplemental explanation of the stability and change in crime over the life-course, specifically addressing how criminal behavior can be characterized as "life-course-persistent"[4] in some individuals and "adolescence-limited"[5] in others (Moffitt, 1993). Within this context, GST postulates that certain personality traits (e.g., impulsivity, hyperactivity, difficult temperament, etc.) increase the likelihood

[4] Life-course-persistent offenders are characterized as having an early age of onset, exhibiting extensive criminal behavior throughout adolescence, and continuing such behavior into adulthood (Moffitt, 1993).
[5] Adolescence-limited offenders are characterized as having a later age of onset and a shorter duration of criminal activity, usually terminating with successful adjustment into adulthood (Moffitt, 1993).

that individuals will experience strain, interpret strainful situations as aversive, and cope with these situations through criminal behavior (Agnew, 1997, p. 107). Agnew suggests that an examination of the development and stability of these personality traits as conditioning factors for strain may help to explain differences between "life-course-persistent" trajectories and "adolescence-limited" trajectories. Agnew and associates (Agnew et al., 2002) have since examined the role of personality traits in GST in a more general context. Although the emphasis on personality traits has been removed from the context of the life-course perspective under this general context, the theoretical propositions linking personality to the strain-delinquency relationship remain the same.

GST and the Conditioning Effects of Personality and Psychopathic Features

As the preceding chapter illustrates, a relationship between personality traits and motives seems tenable. Strain as operationalized by GST is essentially motive-derived from both subjectively and objectively defined negative relationships. Given the link between motives and personality, it seems plausible that Agnew et al. (2002) would have grounds for a test of GST examining the moderating role of certain personality traits on strain. In fact, Agnew et al. recognize the neglect of personality traits as an oversight, not only for GST, but for the criminological field in general. They even go as far as stating that "…the impact of such [personality] traits may be far more pervasive than that of the conditioning variables typically examined…" in the GST research, affecting how individuals (a) emotionally respond to strain, (b) develop non-deviant coping strategies, and (c) develop deviant coping strategies, particularly with respect to perceptions of the costs of illegitimate responses and deviant dispositions (Agnew et al., 2002, p. 45). This argument serves as the impetus for their study of GST and personality traits.

Studies have shown that personality traits can affect the interpretation of stress or strainful conditions (e.g., Eysenck, 1989). For example, Costa, Somerfield, and McCrae (1996) suggested that the personality traits (i.e., Neuroticism, Extraversion, Openness, Conscientiousness, and Agreeableness) influence the ways that individuals cope with stressful conditions. For example, they found that individuals high in Neuroticism cope with stress in a more emotional manner than other personality types, such as becoming irritable or acting childish. Those high in Extraversion cope with stress by making attempts to minimize the situation by joking about it or discussing it with others. Those high in Openness cope by attempting to discover creative and alternative methods for handling the stress. Those high in Conscientiousness cope with stress by focusing on the task and meditating or praying for guidance. Those high in Agreeableness cope with stress via acquiescence. Other researchers have demonstrated similar results comparing coping mechanisms and personality traits (e.g., Brebner, 2001; Uehara, Sakado, Sakado, Sato, & Soomeya, 1999).

In another study of personality and stress, Wofford, Daly, and Juban (1999) found that cognitive-affective structures that are associated with certain personality traits affect responses to school stress and physiological strain. They examined a construct of cognitive-affective stress propensity (CASP) composed of six personality traits (Wofford et al., 1999, p. 44-46): negative affectivity (i.e., introspectiveness), self-esteem, pessimistic attribution style, locus of control, cognitive-affective connectivity, and psychological magnification. Their findings suggest that personality traits, particularly those correlated with expressions of negative affect, significantly lead to stress and physiological manifestations of stress.

Personality traits have also been linked with differences in affect. For example, Brebner (1998; cf. Brebner, 2001) examined the effect of the Big Four personality traits (i.e., Happy, Labile, Stable, and Unhappy) on positive (affection, contentment, joy, and pride) and negative emotions (anger, fear, guilt, and sadness). He found that Labile individuals experienced high levels of both positive and negative emotions, while Stable individuals experienced low levels of both positive and negative emotions. Happy individuals experienced high levels of positive emotions, but low levels of negative emotions; and Unhappy individuals experienced the opposite. Studies have also reported a significant association between psychological distress (i.e., depression, anxiety, somatization, hostility) and Tellegen's (1985) Negative Emotionality domain of personality (i.e., anxiety, anger, rebelliousness/argumentativeness) (Ge & Conger, 1999; Krueger et al., 1996).

The First Test of GST and Personality

Utilizing a sample of nationally representative data obtained from the second wave (in 1981) of the National Survey of Children (NSC), Agnew et al. (2002) presented a cross-sectional study examining the effects of strain, social control, social learning, and personality traits on delinquency. The sample contained 1,423 youths, both male and female, between the ages of 12 and 16 years old. Strain was measured as family strain (e.g., family life tense/stressful, not cooperative, not organized), conflict with parents (e.g., arguments, yelling), parental perception of loss of control, poor peer relations (e.g., picked on by peers), school hatred, neighborhood strain, and a composite index of strain. Social control was measured as attachment to parents, firm parental discipline, school commitment, school attachment, goals for college, amount of time working on homework

each day, and conscience (i.e., shame for doing something wrong). Differential association/social learning was measured as parental perception of troublesome peers. Personality traits were measured as an index of Negative Emotionality (i.e., anxiety, anger, rebelliousness/argumentativeness) and low Constraint (i.e., impulsivity) (see Tellegen, 1985). Delinquency was measured as an index of five items indicating self-reported assault, theft, vandalism, skipping school, and drinking/drunkenness. A measure controlling for prior (from wave one) aggression and vandalism was also included in the analyses.

Agnew et al. (2002) conducted a regression analysis examining the effects of the separate measures of strain, social control, differential association, and Negative Emotionality/low Constraint on delinquency, controlling for prior aggression and vandalism and other sociodemographic variables. The results indicated that several measures of strain (family strain, parental loss of control, school hatred, and neighborhood strain) were significantly, positively related to delinquency. Social control as a measure of school attachment was significantly, negatively related to delinquency. Differential association as a measure of troublesome friends was significantly, positively related to delinquency. Negative Emotionality/low Constraint was also significantly related to delinquency, such that youths high in Negative Emotionality/low Constraint were more likely to self-report acts of delinquency.

Next, the authors examined the role of Negative Emotionality/low Constraint as a moderating variable for strain. They created a composite index of strain using only those measures of strain that significantly affected delinquency. Then, they regressed these measures of strain, social control, differential association, and Negative Emotionality/low

Constraint on delinquency, controlling for prior delinquency and other sociodemographic variables, without and with the inclusion of an interaction term of strain X Negative Emotionality/low Constraint. The findings for the composite strain model excluding the interaction term were consistent with those of the model including separate measures of strain. The composite index of strain was significantly, positively related to delinquency. The findings from the composite strain model including the strain-trait interaction term indicated that Negative Emotionality/low Constraint significantly conditions the effect of strain on delinquency. Strain is more likely to lead to delinquency among youths reporting high Negative Emotionality and low Constraint personality traits. The magnitude of the relationships between the independent and control variables and delinquency were not affected by the introduction of the interaction term, thus suggesting that the strain-delinquency relationship is not spurious with respect to certain personality traits. However, the introduction of the interaction term did not improve much upon the explained variance of the model; the adjusted R^2 increased slightly from 0.19 to 0.20 once the interaction term was included.

The study conducted by Agnew et al. (2002) provides a significant, though empirically limited by the cross-sectional approach and limited measurement of strain and personality, contribution to the literature on GST. Strain appears to be conditioned by personality traits/features, as the psychological literature has previously indicated. Agnew has broached the proposition that traits may condition the effect of strain on delinquency on numerous occasions (see Agnew, 1992, 2001; Agnew et al., 2002). Current research provides partial support for his contentions, but there is need for replication before the relative importance of personality traits within a GST context can

be determined. The present study offers to either strengthen or refute the initial findings of Agnew et al. regarding the role of traits in GST by providing a partial replication and extension of their study using alternative measures of personality.

The Proposed Study

In an article presenting results from a meta-analysis of personality models and antisocial behavior, Miller and Lynam (2001) discussed how personality can affect the development of antisocial behavior/crime. They suggested that the etiology of crime may not depend solely on personality traits, despite evidence indicating that personality is a relatively stable inherent quality, but rather, "the presence of a third variable" (p. 781). Miller and Lynam advocate for the examination of intervening mechanisms between personality and crime. Specifically, they suggest examining how personality traits may influence an individual's environment and decision-making processes.

Based on research from Caspi and Bem (1990) on personality-environment transactions, Miller and Lynam (2001)suggest that a person's personality may influence how he/she interprets and responds to his/her surroundings (i.e., reactive transactions), how others react toward and treat him/her (i.e., evocative transactions), and which types of social environments he/she selects (i.e., proactive transactions). Reactive transactions refer to the way in which an individual responds to situations and circumstances. For example, personality traits may influence the means by which individuals respond to situations. A person characterized as having aggressive personality traits will be most likely to react to situations in an aggressive manner and believe that aggressive coping strategies will provide the most successful outcomes. Evocative transactions refer to the responses that one evokes from others. For example, parents may respond to children

with difficult personalities or temperaments by using harsh and erratic discipline and reducing their interaction with the child as he gets older. Proactive transactions refer to an individual's selection of social environments that are in-line with his/her personality traits. For example, people tend to choose similar others as friends. These reactive, evocative, and proactive transactions describe distal ways in which personality may influence crime (Miller & Lynam, 2001). At a proximal level, personality may also influence immediate decision-making (Miller & Lynam, 2001). For example, individuals low in Constraint may be less likely to base decisions upon information-gathering techniques (Patterson & Newman, 1993)

These distal and proximal interactions between personality and the environment may describe how personality influences the strain-delinquency relationship. As previously discussed in Chapter 2, Agnew has described several conditioning factors. Two of these factors relate to low social control (i.e., evocative transactions) and delinquent peer associations (i.e., proactive transactions). Further, GST postulates that these conditioning factors may directly affect strain and influence the selection and/or availability of legitimate coping mechanisms (Agnew, 1992). If personality can influence the how individual's respond to their surroundings, how others respond to them, which social networks they establish, and what they perceive as viable coping mechanisms available to them, then Agnew et al. (2002) may be justified in assuming that GST will certainly benefit from examination of the moderating and mediating effects of personality traits on strain and delinquency.

In their analysis, Agnew et al. (2002) chose to examine the moderating effects of two domains of Tellegen's (1985) mood-based personality trait model: Negative

Emotionality and Constraint. Tellegen (1985) developed a three-factor model of personality: Positive Emotionality (PEM), Negative Emotionality (NEM), and Constraint (CON). PEM refers to the proclivity for individuals to socially interact with others in a positive manner. NEM refers to the inclination for individuals to express and experience negative emotions such as anger, anxiety, and fear, particularly under stressful situations. As such, NEM typically includes items comprising an aggression subscale as part of its assessment (Miller & Lynam, 2001, p. 779). CON refers to an individuals' ability to control emotions, impulsivity, and rash decisions. According to Agnew and colleagues (2002), both high NEM and low CON have been associated with delinquency; NEM, in particular, is linked with aggression.

In addition to NEM and low CON, other maladaptive personality traits have been linked with aggression and delinquent behavior. In particular, psychopathic personality traits have been linked with aggression and antisocial behavior. A respectable amount of research demonstrates the relationship between psychopathy and normative personality traits and the ability of personality assessments to measure psychopathic features (especially the Five-Factor Model [FFM]) (e.g., Harpur et al., 1994; Lynam, 2002b; Miller et al., 2001; Widiger & Lynam, 1998; but see Hart & Hare, 1994; Lynam et al., 1999). Although most of the studies examining the association between psychopathy and personality have not relied upon Tellegen's three-factor model of personality, scholars have demonstrated that in terms of traits there exists substantial trait agreement across the most widely used personality models [i.e., FFM (McCrae & Costa, 1990; McCrae & John, 1992; Wiggins, 1996), Eysenck's three-factor model (PEN: Eysenck, 1977, 1992), and Tellegen's three-factor model (1985)] (for a discussion see Miller & Lynam, 2001).

As previously discussed in Chapter 3, Lynam and Gudonis (in press) have stated that an individual possessing psychopathic traits tends to be

> … extremely low in Agreeableness (i.e., suspicious, deceptive, exploitive, aggressive, arrogant, and tough-minded); extremely low in Conscientiousness or Constraint (i.e., having trouble controlling his impulses and endorsing nontraditional values and standards); and tending to experience negative emotions, particularly anger and cravings-related distress. (pp. 21-22)

Psychopathic individuals demonstrate a higher tendency to be motivated by desires for revenge or retaliation (Williamson et al., 1987) than non-psychopathic individuals. They also report greater tendencies toward aggression (Heilbrun et al., 1998; Hemphill et al., 1998; Patrick et al., manuscript in preparation; Salekin et al., 1996) and a higher use of instrumental aggression (Serin, 1991). Psychopathic features have also been linked to criminal behavior (Blackburn & Coid, 1998; Hare & Jutai, 1983; Hare et al., 1988; Harris et al., 1991; Hart et al., 1988; Hemphill et al., 1998; Kosson et al., 1990; Miller et al., 2001; Salekin et al., 1996) and alcohol and/or illicit drug use (Hemphill et al., 1994; Miller et al., 2001; Rutherford et al., 1997; Smith & Newman, 1990).

Among juveniles, psychopathy has been associated with aggression (Brandt et al., 1997; Frick et al., 1994; Lilienfeld & Andrews, 1996; Lynam, 1997; Murrie et al., 2004; Rogers et al., 1997; Toupin et al., 1995), use of instrumental aggression (Stafford & Cornell, 2003), and expectations to experience positive rewards for use of aggression (Pardini et al., 2003). Juvenile psychopathic features have been linked to both delinquent behavior (Campbell et al., 2004; Corrado et al., 2004; Forth et al., 1990; Kosson et al., 2002; Lynam, 1997; Salekin et al., 2004) and problems related to alcohol and substance

use (e.g., earlier age of onset, variation in substances used) (Campbell et al., 2004; Corrado et al., 2004; Mailloux et al., 1997; Murrie & Cornell, 2002; Toupin et al., 1995; but see Brandt et al., 1997; O'Neill et al., 2003).

In addition to experiencing psychopathic symptoms, many adolescents demonstrate other maladaptive personality characteristics. Historically, personality and psychopathology (i.e., abnormal personality or mental disorders) have been treated as empirically distinct. Some scholars have suggested, however, that psychopathology is linked to and maps onto broad personality trait domains (e.g., Krueger, 2002; Krueger et al., 1994, 1996, 2002; Krueger, McGue, & Iacono, 2001; Krueger & Tackett, 2003; Livesley, Schroeder, Jackson, & Jang, 1994; Watson et al., 1994). Personality models contain traits that are relevant to a broad range of internalizing and externalizing psychopathological behaviors. For example, in Tellegen's (1985) three-factor model, the CON domain has been negatively correlated with externalizing behaviors (e.g., Blonigen et al., 2003; Krueger et al., 2001), and the NEM domain has been positively correlated with internalizing behavior (e.g., Krueger et al., 2001). Moreover, in relation to psychopathy, youths possessing psychopathic traits appear to have a propensity for externalizing problems (Brandt et al., 1997; Campbell et al., 2004; Frick, 2000; Frick et al., 2000; Hume et al., 1996; Lynam, 1997; Myers et al., 1995; Piatigorsky & Hinshaw, 2004), but are relatively unaffected by internalizing problems (Brandt et al., 1997; Lynam, 1997; but see Campbell et al., 2004).

Not all youths experiencing strain will commit delinquent acts (including illicit substance use). According to GST (Agnew, 1992), the appropriate coping mechanisms and conditioning factors must be present for individuals to become deviant. Similarly,

not all individuals possessing psychopathic features (or even satisfying the threshold for what may be misleading labeled psychopathy—see discussion of primary and secondary psychopathy in Chapter 3) and/or psychopathological characteristics will become deviant. It is the premise of this study, however, that youth who are high in maladaptive personality characteristics (psychopathic features and general psychopathological characteristics) will be more likely to respond to strainful conditions with delinquency. Youths high in maladaptive personality traits will be more likely to view negative relationships with others as aversive and experience intense emotional reactions to these circumstances. They will also be more likely to respond to these situations through aggression and antisocial means. Similar to Agnew et al.'s (2002) use of NEM and low CON, the present study examines the influence of psychopathic, externalizing, and internalizing personality characteristics that have demonstrated a tendency to be behaviorally reactive and weak in prosocial coping mechanisms under stressful conditions and situations of criminal opportunity.

GST, Personality, Delinquency, and Drug Use Problems

Due to the relatively small sample size being used in this study (see discussion of the sample in Chapter 5), the study presented must be parsimonious, and is therefore limited in the number of measures that can be examined. Data reduction techniques, such as factor analysis, are used to maintain model parsimony. Multivariate structural equation models (SEM) of the hypothesized relationships between measures of strain, social control, differential association, personality/psychopathic traits, and delinquency and drug use are tested.

Consistent with Agnew's (1992, 2001, 2002) insistence that studies of GST include measures of social control and social learning, the present study includes measures of social control (parental attachment, parental firmness, and school attachment) and differential association/social learning (delinquent peer associations). While these measures are considered to be indicators of rival theories, low social control and low differential association are viewed as correlated with high levels of strain. This decision is predicated on Agnew's (2001) specification of criminogenic strainful conditions. That is, strain accompanied by low social control and high differential association should be more crime-inducive.

The literature on social control has consistently indicated that poor parental relationships, particularly maltreatment, increase the risks that a youth will become involved in delinquency and substance use (e.g., Dembo et al., 1990; Dembo et al., 1992a; Dembo, Williams, Werner, Schmeidler, & Brown, 1992b; Ireland & Widom, 1994; Kakar, 1996; Lemmon, 1999; Smith & Thornberry, 1995; Widom, 1991; cf. Ireland, Smith, & Thornberry, 2002). Moreover, harsh parenting styles (Smith, & Myron-Wilson, 1998; Stormshak, Bierman, McMahon, & Lengua, 2000) and ineffective parenting (Berg-Nielsen, Vikan, & Dahl, 2002; McCoy, Frick, Loney, & Ellis, 1999; Wootton et al., 1997) have been linked to higher risks for aggression and antisocial behavior. Research has also suggested that the presence of deviant peers fosters the development of both delinquency and substance use (Dishion, Patterson, Stoolmiller, & Skinner, 1991; Elliott et al., 1989; Fergusson & Horwood, 1996; Fergusson, Woodward,

& Horwood, 1999; Haynie, 2001; Kandal, 1973; Moss, Lynch, & Hardie, 2003; Piquero, Gover, MacDonald, & Piquero, 2005; Simons, Wu, Conger, & Lorenz, 1994; Warr, 2002).

Research on adolescent psychopathic traits has demonstrated a significant association between psychopathy and aggression (Brandt et al., 1997; Frick et al., 1994; Lilienfeld & Andrews, 1996; Lynam, 1997; Murrie et al., 2004; Pardini et al., 2003; Rogers et al., 1997; Stafford & Cornell, 2003; Toupin et al., 1995) and delinquency (Campbell et al., 2004; Corrado et al., 2004; Forth et al., 1990; Kosson et al., 2002; Lynam, 1997; Salekin et al., 2004). Juvenile psychopathy has also been linked to substance use (Campbell et al., 2004; Corrado et al., 2004; Mailloux et al., 1997; Murrie & Cornell, 2002; Toupin et al., 1995), though not as consistently (see Brandt et al., 1997; O'Neill et al., 2003). Based on these studies, psychopathic individuals, those characterized by impulsivity, thrill-seeking, hostility, low self-control, and low empathy for others, are at risk for involvement in delinquency and substance abuse.

In the previous chapter, it was reported that psychopathy has been studied in two ways: (a) as a uniform construct (i.e., the total score) and (b) as specific variants of the construct. According to Skeem et al. (2003), numerous studies have examined the associations between a uniform construct of psychopathy based on the total scores of psychopathic assessment instruments (e.g., PCL-R). This total score combines affective, interpersonal, and behavioral features of psychopathy. However, other scholars have suggested that psychopathy is a heterogeneous construct comprised of several specific clusters and variants of psychopathic features (see Cooke & Michie, 2001; Hare & Neumann, 2005; Harpur et al., 1988, for different factor models of psychopathy; see

Skeem et al., 2003, for a discussion of variants of psychopathy). These factors and variants have both unique and common associations with other constructs (e.g., emotionality, personality traits, crime), which may reflect differences in etiology (Skeem et al., 2003). Overall, variants related to the behavior features of psychopathy are classified by characteristics of aggression, impulsivity, thrill-seeking, hostility, and low self-control. These features are similar to the qualities of NEM and low CON and represent those qualities most likely to predispose individuals to delinquent (including drug use) coping in strainful situations. On the other hand, the variants of psychopathy that are related to affect and interpersonal characteristics (e.g., lack of empathy, glibness) are marked by a quality of indifference and are least likely to lead to delinquent coping for strain. Therefore, the present study will be limited to an examination of the behavioral factor for its measure of psychopathy, specifically the impulsivity/irresponsibility domains of psychopathy.

The models described in Figures 2 and 3 are tested utilizing measures from two separate adolescent psychopathic screening devices, the Antisocial Process Screening Device (APSD) and the Youth Psychopathic features Inventory (YPI). Both devices contain three factors of psychopathy (APSD: narcissism, impulsivity, and callous-unemotional; YPI: grandiose-manipulative, impulsive-irresponsible, and callous-unemotional). However, the models tested in this study will only include the behavioral factor of each psychopathic assessment instrument: Impulsivity for the APSD and Impulsive-Irresponsible for the YPI.

Research on externalizing and internalizing behaviors has also demonstrated an association with aggression, delinquency, and drug use (e.g., Lynam, 2002b; Lynam et

al., in press; Salekin, Leistico, Trobst, Schrum, & Lochman, in press). Characteristics that are indicative of externalizing behaviors, such as impulsivity, angry temperaments/dispositions, and rebelliousness, have also been associated with psychopathy (Brandt et al., 1997; Campbell et al., 2004; Frick, 2000; Frick et al., 2000; Hume et al., 1996; Lynam, 1997; Myers et al., 1995; Piatigorsky & Hinshaw, 2004). Characteristics that are indicative of internalizing behaviors, such as depression, have been associated with psychopathy, although less consistently (Brandt et al., 1997; Lynam, 1997; but see Campbell et al., 2004). Externalizing and internalizing behaviors are also expected to influence delinquent coping in strainful situations.

Figure 2 and Figure 3 are listed below. The models are identical with one exception: Figure 2 pertains to self-reported delinquency, while Figure 3 pertains to drug use problems. The following is a list of hypotheses being examined in this study by these specific models within a general strain theory framework:

H1. Strain at Time 1 will be positively related to delinquency and drug problems at Time 2. These effects will remain significant when low social control and differential association are included in the models.

H2. Strain will have positive reciprocal effects with psychopathic features of impulsivity, externalizing behaviors, and internalizing behaviors at both Time 1 and Time 2.

H3. Externalizing behaviors, internalizing behaviors, and psychopathic features of impulsivity at Time 1 will be positively related to strain at Time 2.

H4. Strain at Time 1 will be positively related to externalizing behaviors and internalizing behaviors at Time 2.

H5. Time 1 psychopathic features of impulsivity, externalizing behaviors, and internalizing behaviors will moderate the effects of strain at Time 1 on delinquency and drug problems at time 2.

H6. Psychopathic features of impulsivity and externalizing behaviors at Time 1 will be positively related to delinquency and drug problems at Time 2; while internalizing behaviors at Time 1 will be negatively related to delinquency and positively related to drug problems at Time 2.

Figures 2 and 3 provide an interpretation of this structural model for delinquency and drug problems, respectively. Rectangles represent the following observed variables: psychopathy impulsivity, externalizing behaviors, internalizing behaviors, and delinquency. Circles represent the various latent variables: strain, low social control, delinquent peer associations, and drug problems. Single-headed arrows indicate the hypothesized relationships being examined, with the arrow pointing the direction of the relationship. A double-headed arrow illustrates the expected correlation between two variables. Thicker lines indicate which variables are hypothesized to have moderating effects leading to delinquency or drug use problems. Non-recursive or reciprocal relationships are illustrated by the upward and downward pointing arrows between strain and the three personality trait measures.

Figure 2: Non-Recursive Model of Strain and Personality Features on Delinquency

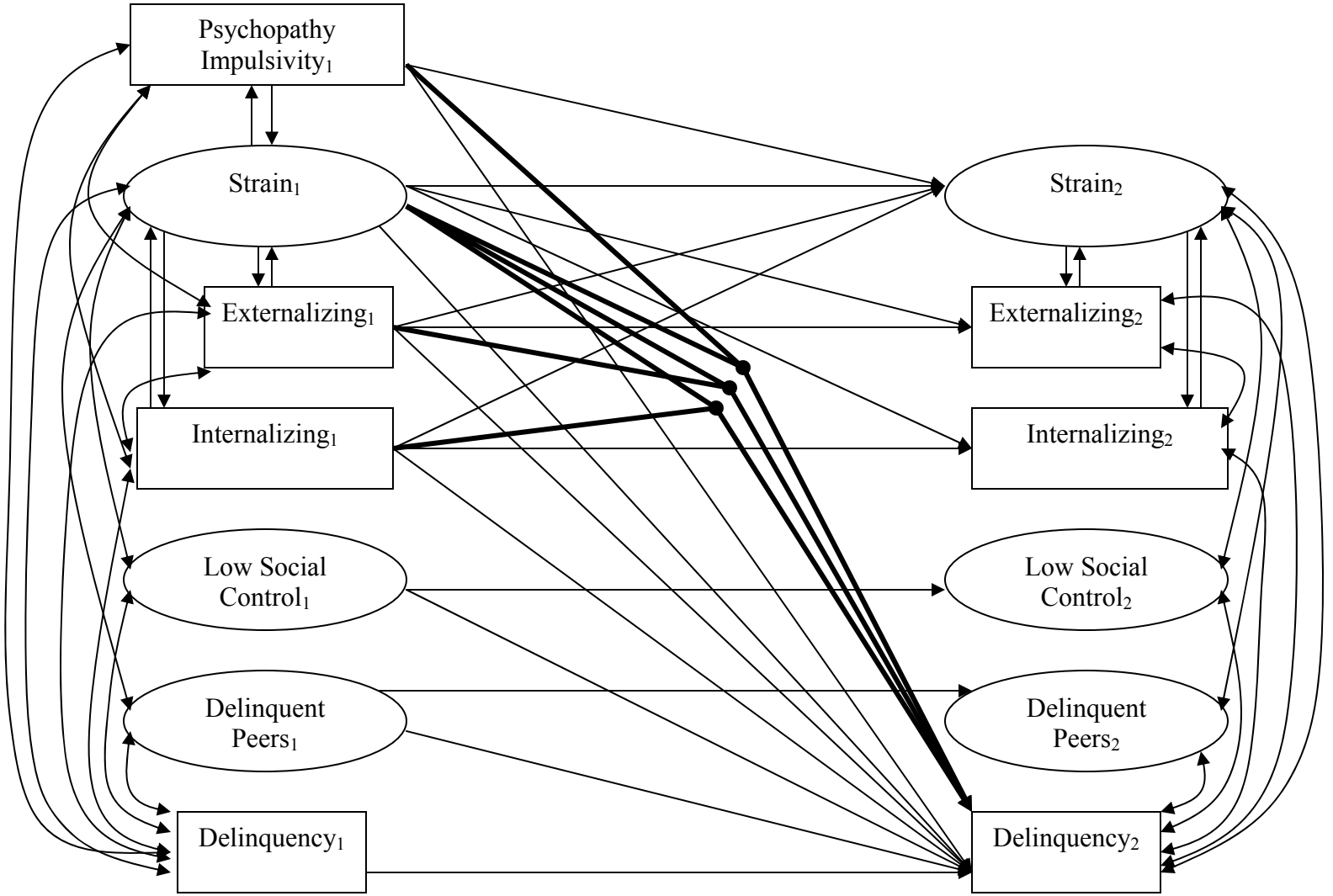
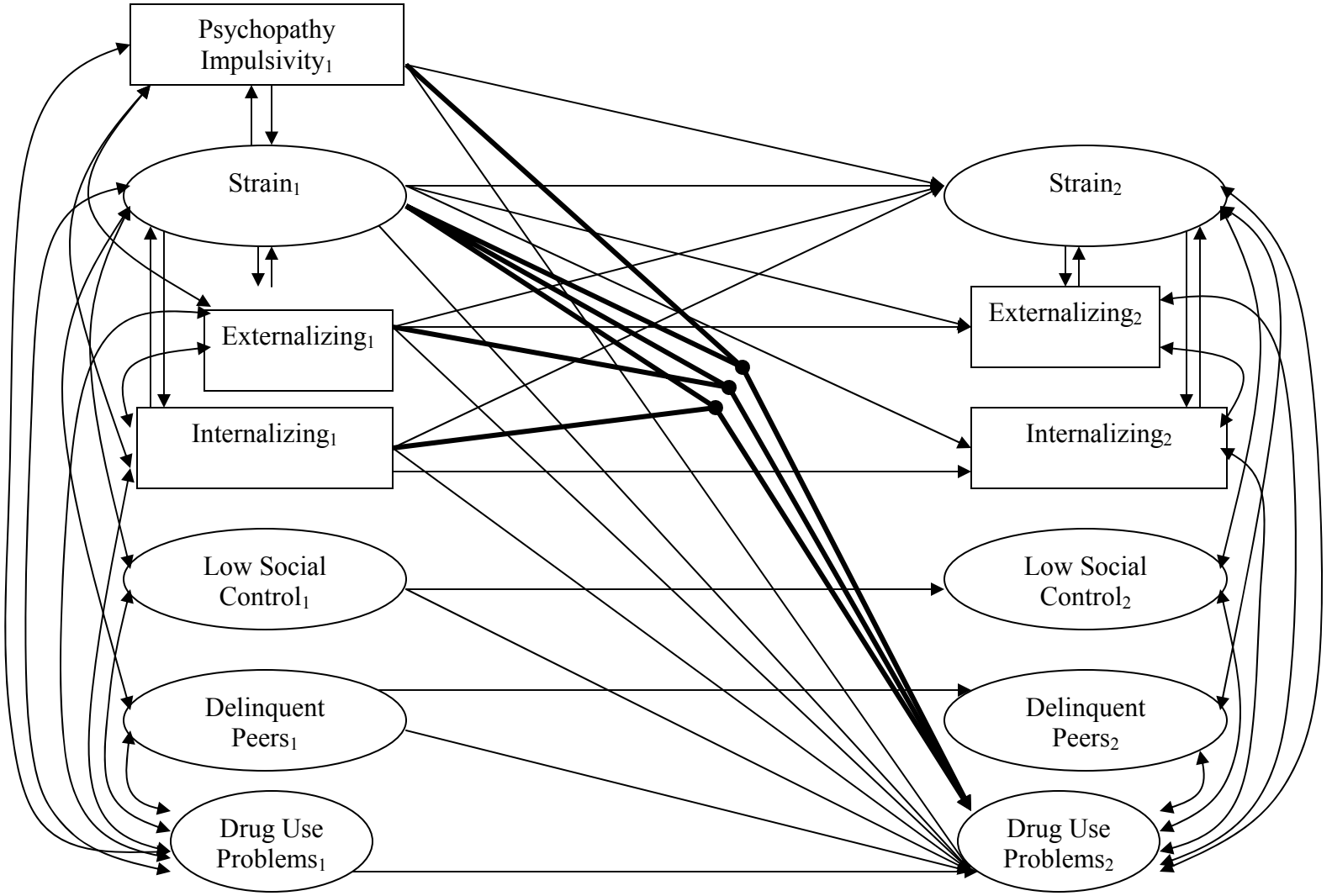


Figure 3: Non-Recursive Model of Strain and Personality Features on Drug Use Problems



The proposed study will contribute to the literature in several ways. First, it will serve to replicate Agnew et al.'s (2002) personality trait extension of GST; thus, potentially strengthening or weakening their argument. Second, Agnew and associates (2002) argue that "…much recent work in psychology suggests that personality traits may have a fundamental effect on the experience of and reaction to strain. In particular, the impact of such traits may be far more pervasive than that of the conditioning variables typically examined in the research." (p. 45). Therefore, the proposed study may help to clarify the importance of personality traits as conditioning variables in the strain-delinquency relationship. Further, the present study expands on Agnew's personality and GST study by examining alternative and separate measures of personality traits and psychopathic features, rather than a single index of negative emotionality/low constraint. The present study also expands on Agnew's previous study by examining the effects of personality and psychopathic features on delinquency as well as substance use; thus providing elucidation of which personality features are more conducive to delinquent versus substance use behaviors. In addition, this study expands on Agnew et al.'s (2002) study by examining reciprocal effects between strain and personality. Finally, since this study examines personality characteristics, it may offer a more practical benefit by providing insight into how maladaptive personality characteristics influence delinquency and drug use problems. These results may help to guide future policy and treatment programs that could be designed to better serve at-risk youths.

The next chapter describes the sample used in this study. In addition, the methodology used to derive the measures used in Figure 2 and 3 are discussed. Tables presenting descriptive statistics and other important information about these measures are included.

Chapter 5

Method

A large portion of empirical tests of general strain theory have utilized cross-sectional data or taken a cross-sectional approach with longitudinal data. Overall, cross-sectional studies of the relationship between strain and delinquency have been considered methodologically appropriate because GST postulates a contemporaneous or short-term influence of strain on deviance (Agnew, 1992). Hoffmann and Miller (1998), however, have argued that the operationalization of strain may include variables (e.g., negative relations with parents/teachers) that cause the temporal order of the strain-delinquency relationship to become suspect. That is, cross-sectional tests of GST include variables that may be a negative outcome, rather than cause, of delinquency. For example, a youth may commit a delinquent act that his/her parents and teacher may find out about. As a result, his/her parents and teachers may begin to treat him/her differently, such as increasing restrictions and supervision. In this case, delinquency actually led to an increase in strain for the youth. Cross-sectional tests including these negative consequences can produce misleading findings that they "lead" to delinquency, when the temporal direction of the relationship may be quite the opposite. Therefore, it is important for GST studies examining certain strain variables, such as negative parent/teacher relations, to conduct longitudinal analyses. The present study provides a

prospective, longitudinal analysis of GST, which allows for a better examination of the temporal order of strain, delinquency, and certain moderating and mediating factors.

Sample

The data used in this study are secondary data obtained as part of an innovative intervention program (called the Arbitration Intervention Worker service—see Poythress, Dembo, & DuDell, 2004) for justice referred youths in Hillsborough County, Florida. The data set contains deidentified information for 137 youths who voluntarily participated in the intervention and completed both baseline and follow-up interviews.

The Arbitration Intervention Workers Service (AIW)

The AIW project was an experimental, prospective clinical trial that evaluated the performance outcomes (e.g., program completion, recidivism rates, cost-effectiveness) of an intervention service involving arrested youths referred to a court-based juvenile diversion program, the Juvenile Arbitration diversion program (referred to henceforth as Arbitration). All youths entering the Arbitration program between June 2002 and June 2003, between the ages of 11 and 18, living within a fifteen-mile radius of the Hillsborough County Juvenile Assessment Center[6] (JAC) were eligible to participate in the AIW project.

The Arbitration program is a juvenile diversion program that provides an alternative to adjudication for youths who have been arrested, or in some cases simply charged without being taken into custody, for a minor offense (e.g., petit theft, simple assault, disturbing the peace). Qualified youths are referred to the Arbitration program

[6] The JAC is a centrally located, multi-agency facility designed to process all juveniles taken into custody by the various county-wide law enforcement agencies. Juveniles are directed to qualifying intervention and treatment programs and detained on-site when necessary. (See Dembo & Brown, 1994)

by the State Attorney's Office. If a youth chooses not to enter the program, he/she may be prosecuted to the full extent of the law. Youths that choose to enter Arbitration are assigned a counselor (arbitrator) who designates a set of mandatory sanctions and monitors the youth's compliance with the program. Sanctions may include restitution (e.g., community service, financial restitution to victim, letter of apology, etc.) and participation in psychoeducational interventions (i.e., offense specific treatment or educational programs). Youths participate in the Arbitration program for at least five weeks. The duration of their involvement may be extended beyond the minimum five weeks from six months to a year, depending on the curriculum of assigned psychoeducational or clinical interventions. Youths who satisfactorily complete all assigned sanctions graduate from the program and are spared adjudication for their offenses.

All youths (and their families) volunteering to participate in the AIW project remained involved with the Arbitration program, receiving the usual services. Subsequent to completing a baseline interview, youths were randomly assigned to either the control group or the intervention group. The control group families were provided a telephone number that reached AIW staff to be accessed, at their discretion, should they need assistance locating local community resources (e.g., educational programs, agencies providing financial assistance, private psychiatric and drug treatment programs, etc.). (During the AIW project, 30 families utilized this referral service.)

The intervention group received in-home, clinically supervised, case management services for a maximum duration of sixteen weeks. The case management services were modeled after the Treatment Accountability for Safer Communities (TASC: Cook, 1992),

which has been shown to be an effective intervention for substance-involved youths (see Aledort, 2001; Cook, 1992, 2002; Godley et al., 2000). The case management services were designed to (a) assist the youth in successfully completing Arbitration and (b) assist families in identifying problem areas and accessing community resources best suited to assist them in dealing with any emerging problems.

Previous studies of the effectiveness of the AIW intervention with respect to program compliance, drug use, recidivism, and other psychosocial functioning outcomes have revealed weak to non-significant treatment effects (Dembo, Wareham, Poythress, Cook, & Schmeidler, 2004a, 2004b, 2004c). Among the 137 youths completing both a baseline and follow-up interview, there were no significant differences between AIW intervention and non-intervention groups for the following demographic characteristics: age ($F = 0.103$, $df = 1, 135$, $p = 0.749$), sex (Pearson chi-square = 0.378, $p = 0.329$), race (Fisher's Exact Test = 3.950, $p = 0.398$), and ethnicity (Pearson chi-square = 1.514, $p = 0.150$). In addition, examination of differences (age, sex, race, ethnicity, and charges leading to placement in Arbitration) between youths who completed a follow-up interview (n=137) and those who did not complete the follow-up interview (n=28) have revealed no significant differences between the two group on any of these characteristics (Dembo et al., under review). Hence, control and intervention group data were combined for this study.

The sample contains only youths from a court-referred diversion program population. Although the exclusively offending nature of the sample may lead to criticism regarding the generalizability of the results of this study, other published tests of GST have utilized offender populations (see Piquero & Sealock, 2000, 2004). According

to Piquero and Sealock (2000, p. 454), "Insofar as GST is a general theory of criminal behavior, its applicability to offending populations warrants empirical study." Other scholars have advocated the value in testing theories utilizing various types of populations (Broidy & Agnew, 1997; Nagin & Paternoster, 1991). Further, some scholars (Piliavin, Thornton, Gartner, & Matsueda, 1986, p. 104) have suggested that research focused on criminal offenders and offenses are beneficial for public policy decisions. Therefore, similar to Piquero and Sealock, this paper attempts to investigate the "generality" of general strain theory in characterizing delinquency in an offending population. Unlike the sample of juveniles placed on probation that comprised the Piquero and Sealock (2001, 2004) samples, the youths examined in this study are mostly first-time misdemeanor offenders. In this regard, the present study may benefit not only policy-makers, in general, but also those interested in juvenile intervention, treatment, and prevention.

Sociodemographic Information at Time 1

Table 1 contains sociodemographic information about the youths and their families collected during the baseline interview. These measures are similar to the sociodemographic information reported by Agnew et al. (2002). The sample is comprised of slightly more male adolescents (51.8%) than female adolescents (48.2%). Most of the youths identified themselves as White (63.5%); approximately 36 percent considered their racial identity to be something other than White (most were African-American). Regardless of race, approximately 25 percent of the youths considered themselves to be of Hispanic ethnicity. The youths ranged in age from 11 to 18 years old

(the age range reflects the eligibility criteria discussed above). The average age of participants was 14 (standard deviation = 1.697).

A majority of youths (77.4%) lived in family situations with only one biological parent (e.g., single parent, remarried parent, single parent living with a significant other but not married). Approximately 20 percent still lived with both of their biological parents; 3 percent lived with neither biological parent. Youths were asked to indicate the total number of years of education each parent/guardian had received. Regarding the educational background of primary caretakers, 39 percent had received 12 years of school, and almost 35 percent had attended school beyond high school.

Based on a hierarchy of occupational status developed by Hollingshead and Redlich (1958), a proxy measure of socioeconomic status (SES) was created using information pertaining to the occupation of the head of the household. The distribution of the occupational status variable suggests that the youths in this study lived in families with low to moderate SES. Only 6 percent of the chief wage earners in these families held higher executive, administrative, or management positions. Twenty-seven percent of the chief wage earners held skilled or semi-skilled positions, while 13 percent held unskilled positions or were unemployed. Seven percent of the youths could not describe or did not know what type of job the head of their household held.

Table 1: Sociodemographic Information at Time of Baseline Interview (N = 137)

Gender	*n*	*%*	*Race*	*n*	*%*
Female	66	48.2	Non-White	50	36.5
Male	71	51.8	White	87	63.5
	137	100.0		137	100.0
Living with	*n*	*%*	*Ethnicity*	*n*	*%*
Both Biological Parents	27	19.7	Hispanic	35	25.5
Neither Parent	4	2.9	Non-Hispanic	102	74.5
Single Biological Parent	106	77.4		137	100.0
	137	100.0			
Age	*n*	*%*	*Years of Education for Primary Parent*	*n*	*%*
11	3	2.2	3	1	0.7
12	22	16.1	8	1	0.7
13	22	16.1	9	4	2.9
14	28	20.4	10	5	3.6
15	22	16.1	11	7	5.1
16	24	17.5	12	53	38.7
17	15	10.9	13	8	5.8
18	1	0.7	14	15	10.9
	137	100.0	15	4	2.9
			16	17	12.4
Mean =	14.32		17	1	0.7
Standard Deviation =	1.697		18	2	1.5
			20	1	0.7
			Unknown/Missing	18	13.1
				137	100.0

(Continued on the next page)

Table 1: (Continued)

Family Occupation Level	*n*	*%*
Medium business managers and lesser professionals	8	5.8
Administrative personnel, managers, minor professionals and small business owners	15	10.9
Clerical and sales, technicians and small businesses	50	36.5
Skilled manual labor	18	13.1
Semi-skilled	19	13.9
Unskilled & unemployed	18	13.1
Unknown or uncodable information	9	6.7
	137	100.0

Measures

The measures described below were collected as part of a baseline and follow-up protocol that was administered to youths participating in the AIW clinic trial described above. The majority of this protocol included manual administration of the CASI (including the CASI addendum questions, usually not included in the computerized version) (Meyers et al., 1999). Youths were also administered the Antisocial Process Screening Device (APSD) (Frick & Hare, 2001), the Youth Psychopathic features Inventory (YPI) (Andershed, Kerr, Stattin, & Levander, 2002), and the National Youth Survey (NYS) (Elliott, Ageton, Huizinga, Knowles, & Cantor, 1983) as part of the AIW project protocol.

The Comprehensive Adolescent Severity Inventory (CASI)

The CASI (Meyers et al., 1999) is a semi-structured, clinical assessment and outcomes instrument that collects information on youths' psychosocial problems and strength-resiliency factors across a number of life areas. It is comprised of ten independent modules, each reflecting separate life areas: drug/alcohol use; education; family/household member relationships; health information; legal issues; mental health; peer relationships; sexual behavior; stressful life events; and use of free time. (In this study the legal issues, sexual behavior, and stressful life events modules were not administered as part of the AIW project protocol.) According to Meyers and her associates (Meyers et al., 1999, p. 239), the primary life areas covered by the CASI provide a broad enough assessment of adolescent functioning that they can be used to inform clinical adolescent treatment. The CASI has demonstrated excellent psychometric properties (Meyers et al., in press; Meyers, Webb, Hagan, & Frantz, submitted).

Questions contained in the CASI address whether or not certain behaviors have *ever* occurred, occurred within the *past month*, occurred within the *other 11 months* of the past year, and the *age of onset*. For the most part, the answers are dichotomous (1 = yes, 0 = no). The questions are phrased so that the youth only responds affirmatively if the question refers to a condition or event that has occurred for a "significant period" during the appropriate time frame (e.g., past month, other 11 months, past year). "Significant period" is a rather ambiguous term, but interviewers are instructed by the CASI developers and training instructors to inform, and regularly remind, interviewees that the term refers to anything that has occurred long enough or often enough that is has become a problem with regard to the life area being addressed. In this sense, the CASI responses

represent *subjective* evaluations of objectively defined life area events and conditions (see Agnew, 2001). There are, however, some exceptions where isolated incidents, rather than those occurring over a significant duration, are recorded (rape/sexual assault, physical abuse, sexual abuse, animal cruelty, arson/fire setting, suicide attempts, and self-mutilation). In addition, the age of onset portion of each question refers to the first time the youth experienced or performed a specific problematic life area event or condition.

The developers of the CASI provide a scoring manual that can be utilized to construct theoretically appropriate and psychometrically sound subscales of risk and protective behaviors or symptoms. The subscales reflect raw scores indicating the presence or absence of certain risk and protective behaviors. The subscales are created by taking the average of the sum of specified dichotomous variables (0 = no, 1 = yes) within each life area module. Scores for the subscales range from 0 to 1, with a higher score indicating greater risk or protective factors, depending on the subscale. The pre-defined subscales for externalizing behaviors, internalizing behaviors, and alcohol/drug related problems (serious consequences, narrowing of behavior repertoire, loss of control, and physical dependence scales) were used in this study for the year prior to the baseline interview (Time 1) and the year prior to the follow-up interview (Time 2).

The initial intention was to utilize the CASI subscales for life areas of family, education, and peer associations to replicate the Agnew et al. (2002) study. Further examination of the items included in the CASI subscales, however, revealed considerable conceptual overlap regarding GST and social control measures within scales. Therefore, individual items were used to create more appropriate scales for this particular sample of youths.

Deriving Appropriate Measures from the CASI

Similar to Agnew et al. (2002), items believed to be measures of strain, social control, or differential association were grouped into three categories: family, peer, and school. Then an exploratory factor analysis (EFA) was conducted for theoretically relevant measures within each category (family, peer, and school, separately) for Time 1 (baseline). This approach was utilized to maintain conceptual distinction between the strain items and social control items within each life area (see Agnew et al., 2002, p. 50).

Since the items from the CASI were categorical, each EFA was performed using Mplus version 3.12 (Muthén & Muthén, 2004). Mplus is a multivariate statistical modeling program that estimates a variety of simple and sophisticated models (e.g., path analysis, growth models, multilevel models) for continuous and categorical, observed and latent variables. In these analyses, a chi-square test is used to test the fit of the models to the data. Lack of significance indicates an acceptable model fit.

Mplus also provides a number of descriptive fit measures to assess the closeness of fit of the model to the data. Three fit indices were used to evaluate the model fit: (1) the comparative fit index (CFI) (Bentler, 1990), (2) the Tucker-Lewis coefficient (TLI) (Tucker & Lewis, 1973), and (3) root mean square error of approximation (RMSEA) (Byrne, 2001). The typical range for both TLI and CFI is between 0 and 1 (although TLI can exceed 1.0), with values greater than .95 indicating a good fit (Browne & Cudeck, 1993; Hu & Bentler, 1999). For RMSEA, values at .05 or less indicate a close model fit, and values between .05 and .08 indicating a mediocre model fit (Browne & Cudeck, 1993). In addition, Mplus was utilized because it contains a missing data imputation procedure for both categorical and continuous variables. The missing imputation

component was especially important in this study for preserving the sample size; thus, maintaining power in the analyses.

Unlike Agnew's test of GST and personality, orthogonally rotated factor scores, rather than oblique, were used as a basis for creating the strain, social control, and differential association measures. Orthogonal rotation is "aimed at maximizing variance of the factors" (Pedhazur & Schmelkin, 1991, p. 613) and minimizing the correlation between factors. Although it is very likely that the family, school, and peer factors are moderately correlated, orthogonal rotation was used to minimize conceptual overlap for the factor. (The loadings for EFA promax correlated rotations were very similar to the loadings of the Varimax rotations. Therefore, the decision to choose orthogonal rotation over correlated factor rotation for interpretation of the data did not impact measurement decisions. The promax oblique correlation values are reported in Appendix A.)

Appendix A reports the Varimax rotated EFA results for Time 1 family, peer, and school categorical items. (EFA results supported a priori speculation for membership of the family, peer, and school items into factors of strain, social control, and differential association.) For Time 1, 98.5 percent or more of the data were present for missing imputation within family, peer, and school items. Within the family category, twenty items were examined. For the family EFA, seven factors with an eigenvalue greater than one were identified in the data. However, the data loaded well onto three factors (Chi-square = 38.86, df = 29, p = 0.10; RMSEA = 0.050), and examination of output for four or more factors did not indicate a substantial improvement in the fit of the data. Therefore, three factors were examined in subsequent confirmatory factor analyses of Time 1 and Time 2 measures.

Within the peer category, eleven items were examined. For the peer EFA, three factors with an eigenvalue greater than one were identified in the data. However, the data loaded well onto two factors (Chi-square = 22.08, df = 17, p = 0.18; RMSEA = 0.047). Therefore, two factors were examined in subsequent confirmatory factor analyses of Time 1 and Time 2 measures.

Within the school category, seven items were examined. For the school items EFA, two factors with an eigenvalue greater than one were identified in the data. The data loaded very well onto these two factors (Chi-square = 4.02, df = 6, p = 0.67; RMSEA = 0.000).

If the factor results for Time 1 were replicated in confirmatory factor analyses (CFA) results for Time 2 measures, greater confidence in the validity of the factors would be established for this particular sample. Therefore, CFAs were conducted on family, peer, and school items for Time 1 and Time 2, respectively, to examine the validity of the measures. (Mplus does not save factor scores for data using EFA; factor scores can only be saved using CFA techniques.) Tables 2, 3, and 4 describe the CFA results for the individual CASI items.

For the family items, CFAs specifying three factors for Time 1 and Time 2 measures were completed and found to fit the data rather well (Time 1: chi-square = 43.73, df = 34, p = 0.12; CFI = 0.952; TLI = 0.956; RMSEA = 0.046; Time 2: chi-square = 25.06, df = 17, p = 0.09; CFI = 0.942; TLI = 0.925; RMSEA = 0.059). Two factors appeared to describe strain measures of *family disruption* and *family abuse/neglect*. The third factor described low social control measures of *parental attachment and commitment*. The item loadings ranged from .35 to .91. Each of the variables loaded

significantly on these factors; however, at Time 2 the "other member ignored or given the silent treatment" item was only marginally significant (critical-ratio = 1.944). Summary factor scores developed by Mplus were saved for use in the models, where higher scores indicate family related problems.

For the peer items, CFAs specifying two factors for Time 1 and Time 2 measures were completed and found to fit the data well (Time 1: chi-square = 19.92, df = 17, p = 0.28; CFI = 0.987; TLI = 0.988; RMSEA = 0.035; Time 2: chi-square = 20.33, df = 19, p = 0.37; CFI = 0.996; TLI = 0.996; RMSEA = 0.023). One factor reflected strain measures of negative or *poor peer* relationships. The other factors described *delinquent peer associations*. The item loadings ranged from .49 to .94. Each of the variables loaded significantly on these factors. Summary factor scores developed by Mplus were saved for use in the models, where higher scores indicate peer relationship problems and delinquent peer associations.

For the school items, CFAs specifying two factors for Time 1 and Time 2 measures were completed and found to fit the data rather well (Time 1: chi-square = 6.77, df = 9, p = 0.66; CFI = 1.000; TLI = 1.017; RMSEA = 0.000; Time 2: chi-square = 7.41, df = 8, p = 0.49; CFI = 1.000; TLI = 1.007; RMSEA = 0.000). The factors described the social control measures of *school attachment* and *school commitment*. Unlike Agnew et al. (2002), none of the factors described strain measures of negative school relationships. The factor loadings ranged from .39 to .98. Each of the variables loaded significantly on these factors; however, at Time 2 "felt safe at school" (reverse coded) was only marginally significant (critical-ratio = 1.729). Mplus summary factor scores were saved for use in the models, where higher scores indicate school problems.

Table 2: CFA Standardized Loadings for Family Items for Time 1 and Time 2

Latent Variable	*Family Items*	*Time 1 Standardized Loadings*	*Time 2 Standardized Loadings*
Family	Repeatedly insulted/criticized	.85	.70
Disruption	Other member insulted criticized	.54	.68
	Ignored or given "silent treatment"	.90	.58
	Home felt like safe place [reversed]	.59	.89
	Family works out problems non-violently [reversed]	.66	.78
	Ran away from home	.62	.47
	Felt loved by someone in home [reversed]	.67	.91
	Family contacted about domestic disputes	.48	.70
	Eigenvalue =	3.66	4.25
	Variance =	45.8	53.1
Parental	Couldn't get along/fighting with family member	.51	.56
Attachment	Parents disagree on limits/punishment	.75	.60
	Hard to talk to/confide in parents	.76	.72
	Parents don't listen to you	.83	.90
	Parents unavailable to you	.76	.84
	Parents covered/made excuses for you	.44	.40
	Rules not consistently enforced	.55	.56
	Given praise for good behavior [reversed]	.66	.68
	Parents really know what/where you go/do [reversed]	.35	.53
	Eigenvalue =	3.73	3.93
	Variance =	41.5	43.6

(Continued on the next page)

Table 2: (Continued)

Latent Variable	*Family Items*	*Time 1 Standardized Loadings*	*Time 2 Standardized Loadings*
Family	Other member threw object, punched walls	.73	.46
Abuse	Hit hard (physically abused)	.82	.71
	Other member ignored or "silent treatment"	.86	.43
	Eigenvalue =	1.94	0.90
	Variance =	64.8	30.1

Time 1: $\chi^2 = 43.73$, df = 34, p = 0.12; CFI = 0.952; TLI = 0.956; RMSEA = 0.046.

Time 2: $\chi^2 = 25.06$, df = 17, p = 0.09; CFI = 0.942; TLI = 0.925; RMSEA = 0.059.

Table 3: CFA Standardized Loadings for Peer Items for Time 1 and Time 2

Latent Variable	*Peer Items*	*Time 1 Standardized Loadings*	*Time 2 Standardized Loadings*
Peer	Difficulty making/keeping friends	.85	.82
Strain	Had no friends	.55	.64
	Preferred to be alone	.67	.76
	Felt friends were not loyal	.76	.94
	Hard to talk to friends	.87	.84
	Dissatisfied with quality of friendships	.81	.86
	Consistently teased/bullied	.49	.63
	Eigenvalue =	3.70	4.40
	Variance =	52.9	62.8
Delinquent	Hung out with people who use drugs/drink	.92	.88
Peers	Hung out with people who commit illegal acts	.74	.84
	Hung out with gang members	.80	.86
	Hung out with people who skipped/dropped school	.70	.84
	Eigenvalue =	2.53	2.91
	Variance =	63.3	72.7

Time 1: $\chi^2 = 19.92$, df = 17, p = 0.28; CFI = 0.987; TLI = 0.988; RMSEA = 0.035.

Time 2: $\chi^2 = 20.33$, df = 19, p = 0.37; CFI = 0.996; TLI = 0.996; RMSEA = 0.023.

Table 4: CFA Standardized Loadings for School Items for Time 1 and Time 2

Latent Variable	*School Items*		*Time 1 Standardized Loadings*	*Time 2 Standardized Loadings*
School Commitment	Had failing grades/difficulty learning		.71	.65
	Skipped class/arrived late consistently		.59	.81
	Were suspended, expelled, had detention		.42	.67
	Had little or no interest in school		.98	.83
		Eigenvalue =	1.98	2.20
		Variance =	49.6	55.0
School Attachment	Went to school prepared [reversed]		.86	.98
	Felt you belonged in school [reversed]		.78	.84
	Felt safe at school [reversed]		.60	.39
		Eigenvalue =	1.70	1.82
		Variance =	56.8	60.8

Time 1: $\chi^2 = 6.77$, df = 9, p = 0.66; CFI = 1.000; TLI = 1.017; RMSEA = 0.000.

Time 2: $\chi^2 = 7.41$, df = 8, p = 0.49; CFI = 1.000; TLI = 1.007; RMSEA = 0.000.

Strain Measures

Three measures of strain were estimated as comprising one latent variable of strain for Time 1 and Time 2: family disruption, family abuse, and poor peer relationships. These measures are similar in nature to those included in Agnew et al. (2002), except without the school strain measure. One potential weakness of the measures in this study, however, is that multi-informants were not available for the sample being studied. The items reflect youth self-report data only. The strain items examined in this study, however, may represent more subjective appraisals of each measure because youths were directed to provide affirmative responses only if the event or condition occurred for a problematic period of time (see Agnew, 2001 for a discussion).

Family disruption. Youths were asked to indicate whether several statements pertaining to family or household (i.e., any person living in the residence with them) relationships had occurred for significant periods during the past year. For all CASI items, responses for each statement were dichotomous (1 = yes, 0 = no). Past year measures were created for Time 1 by combining "past month" and past "other 11 months" responses. Past year measures for Time 2 reflected responses from the "since last contact" items. (For detailed discussion of CASI item response categories see the above mentioned section describing the CASI.) Therefore, possible responses for Time 1 were 0 = no significant problems, 1 = significant problem in past month or past other 11 months, or 2 = significant problems in both past month and other 11 months, and possible responses for Time 2 were 0 = no significant problems or 1 = significant problems since last contact. High scorers on the family disruption factor (see Table 2) stated that in their

family life they were "repeatedly insulted/criticized," "ignored or given the silent treatment," other family members were "repeatedly insulted/criticized," the family was "contacted by police… about domestic disputes," home did not feel "like a safe place," the family could not "work out problems with you in a non-violent manner," they did not feel "loved by someone" in the family, and they "ran away from home." In short, high scorers on this measure experienced disruptive, potentially violent, negative relationships with their family members (alpha reliability: Time 1 =.72, Time 2 = .56).

Family abuse/neglect. Youths were asked to indicate whether three statements pertaining to family or household abuse or neglect had occurred for significant periods during the past year. Similar to the family disruption items, responses for these items were also categorical, ranging from 0 to 2 for Time 1 and 0 to 1 for Time 2 past year occurrences. High scorers on the family abuse factor stated that in their family life they were "hit so hard they had… bruises, broken bones…," other family members "threw objects, punched walls…" when angry, and other family members were "ignored" for extended periods of time. In short, high scorers on this measure experienced abusive or neglectful family relationships (alpha reliability: Time 1 = .64, Time 2 = -.09). Although the CFA for Time 2 suggested a good fit of the family factors to the model, the internal consistency of the family abuse factor for Time 2 is very weak. Indeed, it seems the Time 2 family abuse scale items are not correlated. As seen in Table 2, the factor does not exceed an eigenvalue of 1, which also suggests less coherence within this factor. The lack of coherence over time proved problematic for the SEM analyses discussed in Chapter 6.

Peer strain. This scale contains 7 items from the CASI peer relationships module. Youths were asked to indicate whether statements referring to poor peer relationships had occurred for significant periods during the past year. Similar to the family disruption items, responses for these items were also categorical, ranging from 0 to 2 for Time 1 and 0 to 1 for Time 2. High scorers on the peer strain factor stated that among their friends and peers they "preferred to be alone," "had no friends," felt their friends were "not loyal," " had "difficulty making/keeping friends," found it "hard to talk to …" their friends, "were "dissatisfied with the quality of ...friendships," and were "consistently teased or bullied by…peers." High scorers on this measure experienced negative relationships with peers and friends (alpha reliability: Time 1 = .76, Time 2 = .78).

Social Control Measures

Three measures of social control were estimated as comprising one latent variable for low social control for Time 1 and follow-up Time 2, respectively, (see Tables 2 and 4). These measures are also similar in nature to those included in Agnew et al.'s (2002) test of GST and personality traits. These measures refer to proximal relationships between the youth and his/her family and distal relationships between the youth and school.

Low parental attachment/commitment. This scale contains nine items from the CASI family/household relationships module. Youths were asked to indicate whether statements referring to familial relationships had occurred for significant periods during the past year. Similar to the strain items, responses for these items were categorical, ranging from 0 to 2 for Time 1 and 0 to 1 for Time 2. High scorers on the parental

attachment/commitment factor stated that they "couldn't get along with another household member," "found it hard to…talk with" their parents, "rules were not consistently enforced," were not "given credit or praise for doing the right thing," their parents "disagreed on…what limits…consequences" to set, "did not listen to what [they] had to say," "were unavailable to" them, "covered for" them, and did not "really know where…who [they] hung out with." High scorers on this measure experienced low parental attachment/commitment (alpha reliability: Time 1 = .73, Time 2 = .66).

Low school attachment. Responses to three items in the CASI education module loaded highly on this factor. Youths were asked to indicate whether statements referring to school experiences had occurred for significant periods during the past year. Similar to the strain items, responses for these items were categorical, ranging from 0 to 2 for Time 1 and 0 to 1 for Time 2. High scorers on the school attachment factor stated that they did not go to "school prepared," did not feel they "belonged in school," and did not feel "safe at school." High scorers on this measure experienced low school attachment (alpha reliability: Time 1 = .60, Time 2 = .49).

Low school commitment. Responses to four items in the CASI education module loaded highly on this factor. Youths were asked to indicate whether statements referring to school experiences had occurred for significant periods during the past year. Similar to the strain items, responses for these items were categorical, ranging from 0 to 2 for Time 1 and 0 to 1 for Time 2. High scorers on the school commitment factor stated that they "had failing grades or had difficulty learning," "cut class/school…on a consistent basis," were "suspended, expelled, had numerous detentions," and "had little or no

interest in school." High scorers on this measure experienced low school commitment (alpha reliability: Time 1 = .63, Time 2 = .66).

At the time of the baseline interview, nine youths were not actively in school. Seven youths had been out of school less than 12 months, one of whom had graduated from high school. One youth was being home schooled, and had been doing so for the past 3 years. One youth had been out of school for almost 2 years. For the baseline CASI, youths not attending school were asked the exact same questions as those attending school. When responding to the baseline education questions, however, youths not currently enrolled in school were asked to refer to the 12 months prior to leaving school. For youths not attending school at Time 1, comparable items referring to the 12 months prior to their last day in school were used.

For the follow-up interview, the CASI does not contain items for youths not attending school that are comparable to items provided for youths attending school. There were eighteen youths not attending school during Time 2. Missing imputations were utilized to create the latent factor for social control at Time 2 for missing cases on the school attachment and school commitment measures.

Social Learning/Differential Association Measures

One measure of differential association was examined for both Time 1 and Time 2. Agnew et al.'s (2002) test of GST and personality traits included a single item measuring parental perceptions of their children's delinquent peers. The present study examines a factor of differential association that contains four items concerning delinquent peers. Youths were asked to indicate whether or not they hung around people who "used drugs or got drunk regularly," "committed illegal acts," "were members of a

gang," and "dropped out of school…didn't attend regularly." As with the strain and social control items, responses for these items were categorical, ranging from 0 to 2 for Time 1 and 0 to 1 for Time 2. High scorers on this measure were highly associated with delinquent/deviant peers (alpha reliability: Time 1 = .75, Time 2 = .76).

Personality and Psychopathic Features

The present study examined the influence of maladaptive personality characteristics using psychopathy, externalizing behaviors, and internalizing behaviors as proxy measures. As previously mentioned, research has suggested the construct of psychopathy may be heterogeneous (Karpman, 1941, 1948; Porter, 1996; Mealey, 1995a, 1995b). To reiterate, psychopathy may be best characterized as having two variants: primary and secondary psychopathy. Primary psychopathy is believed to be caused by genetic factors and motivated by purposeful efforts to satisfy desires. This variant of psychopathy taps the affective dimension of the construct. In contrast, secondary psychopathy is believed to be caused by negative psychosocial and environmental conditions (e.g., abuse, parental rejection/neglect) (Forth & Burke, 1998; Margolin & Gordis, 2000; Marshall & Cooke, 1995; Porter, 1996; Weiler & Widom, 1996) and motivated by emotional and impulsive responses to negative environmental circumstances. This variant of psychopathy taps the behavioral dimension of the construct. As such, the behavioral domain of psychopathy seems more in line with the theoretical premise of GST. Therefore, the models examined in the present study are limited to the inclusion of the impulsivity/irresponsibility or behavioral domains of psychopathy.

This study used two measures of psychopathy: (1) the Antisocial Process Screening Device (APSD: Frick & Hare, 2001) and (2) the Youth Psychopathic traits Inventory (YPI: Andershed et al., 2002). In addition, proxy measures for personality disposition were examined using the CASI subscales for externalizing behavior and internalizing behavior.

Criminological tests of personality, especially antisocial personality disorder and psychopathy, must be cautious when constructing measures. Since many of the assessments for these types of maladaptive behaviors include measures of criminality as part of their assessment, it is essential to eliminate any potential criterion contamination. One item of the APSD refers to criminal activity, which creates criterion contamination when attempting to study the causation of crime. This item, however, does not contribute to the impulsivity or behavioral domain being studied here. The YPI does not contain items measuring criminal activity.

APSD psychopathic features. The self-report version of the APSD contains 20 items that measure several of the same psychopathic features as the Psychopathic Checklist-Revised (Hare, 1991) (discussed in chapter 3). The APSD was initially designed for use with youths between the ages of 6 and 13 years old with ratings provided by familiar adults (e.g., parents, teachers, etc.), rather than as a self-report tool. The APSD items yield a Total score of psychopathic features and load well onto a three-factor structure for describing psychopathic features: (1) Narcissism, an interpersonal factor; (2) Callous-Unemotional, an affective factor; and (3) Impulsive, a behavioral factor (Frick et al., 2000). Research supports the construct validity of the administered

version of the APSD (see Blair, 1999; Blair, Monson, & Frederickson, 2001; Loney, Frick, Clements, Ellis, & Kerlin, 2003; O'Brien & Frick, 1996).

Although the APSD was not specifically designed for use with justice-involved youths, a previous analysis of youths from the AIW project (Poythress, Dembo, Wareham, & Greenbaum, in press) revealed the APSD possessed adequate psychometric properties. In addition, limited research has revealed promising results regarding the construct validity of the self-report APSD, though the internal consistency of the factors have been modest (Falkenbach et al., 2003; Lee et al., 2003; Murrie & Cornell, 2002; Pardini et al., 2003).

The self-report version of the APSD is designed for use with older adolescents (i.e., between 12 and 18 years of age). The self-report APSD items yield a Total score of psychopathic features and load onto the three-factor structure for describing psychopathic features (Vitacco et al., 2003). Narcissism is comprised of 7 items, such as "Your emotions are shallow and fake." Callous-Unemotional contains 6 items, such as "You are concerned about the feelings of others (reverse scored)." Impulsive includes 5 items, such as "You act without thinking of the consequences." Each item is rated on a 3-point scale, with responses indicating *not at all true* (0), *sometimes true* (1), or *definitely true* (2). The APSD was only administered once during the AIW clinical trial, at Time 1.

A summary score was created for the APSD impulsivity domain. This additive index contained the five APSD impulsivity domain items. Possible scores ranged from 0 to 10. High scorers on the APSD impulsivity index indicated higher impulsive and risk-taking characteristics (alpha reliability = .54).

YPI psychopathic features. The YPI is a 50-item measure containing items that represent several of the psychopathic dimensions of the Psychopathic Checklist-Revised (Hare, 1991) as well. The YPI is a self-report tool that was designed to be administered to youths over the age of 12. According to its developers (Andershed et al., 2002), the YPI offers an advantage over the APSD because it was designed specifically for self-report and may suffer from less response bias based on the phrasing of the YPI items versus the APSD items. The YPI also contains multiple items to represent the Psychopathic Checklist-Revised psychopathic features (see Falkenbach et al., 2003).

The YPI items yield a Total score of psychopathic features and load well onto a hierarchical three-factor model of personality traits (cf. Cooke & Michie, 2001): (1) Grandiose-Manipulative, an interpersonal factor; (2) Callous-Unemotional, an affective factor; and (3) Impulsive-Irresponsible, a behavioral factor. Each factor or domain contains multiple sub-scales (a total of 10) of psychopathic features.

Within the Grandiose-Manipulative domain, sub-scales are created for Dishonest Charm (e.g., "It's easy for me to charm and seduce other to get what I want from them"), Grandiosity (e.g., "I have talents that go far beyond other people's"), Manipulation (e.g., "I am good at getting people to believe in me when I make something up"), and Lying (e.g., "Sometimes I lie for no reason, other than because it is fun"). Within the Callous-Unemotional domain, sub-scales characterize Remorselessness (e.g., "When someone finds out about something that I've done wrong, I feel more angry than guilt"), Unemotionality (e.g., "To be nervous and worried is a sign of weakness"), and Callousness (e.g., "I think that crying is a sign of weakness, even if no one sees you"). Within the Impulsive-Irresponsible domain, sub-scales describe for Thrill-Seeking (e.g.,

"I like to be where exciting thing happen"), Impulsivity (e.g., "It often happens that I talk first and think later"), and Irresponsibility (e.g., "If I won a lot of money in the lottery I would quit school or work and just do things that are fun"). Respondents are asked to rate the degree to which each item applies to them using a 4-point Likert-type response: *does not apply at all* (0), *does not apply well* (1), *applies fairly well* (2), or *applies very well* (3). The YPI was only administered once during the AIW clinical trial, at Time 1.

The YPI was also not specifically designed for use with justice-involved youths. Skeem and Cauffman (2003) have published one of the only studies examining the application of the YPI in a delinquent sample. Their results suggest the YPI possesses adequate internal consistency and concurrent validity when compared to the youth version of the Psychopathic Checklist-Revised.

Summary scores were created for the YPI impulsivity-irresponsibility domain, as well as the three dimensions within this domain—impulsivity, irresponsibility, and thrill-seeking. The additive index for the YPI impulsivity-irresponsibility scale contained 15 items and 5 items for each dimension. Possible scores for the overall domain ranged from 0 to 45. Scores for the three dimensions comprising the overall impulsivity-irresponsibility domain range from 0 to 15. High scorers on the YPI impulsivity index reported higher impulsive, irresponsible, and risk-taking characteristics (alpha reliability: Impulsivity-irresponsibility = .84, Impulsivity = .68, Irresponsibility = .68, Thrill-seeking = .69).

CASI mental health measures. In addition to the psychopathy measures, two indexes from the CASI mental health module were included in this study: externalizing problems and internalizing problems. The externalizing problems indexes past year

responses to five items that describe various behavioral constructs, such as hyperactivity, impulsivity, thrill-seeking, rebelliousness, and hostility. Youths were asked to indicate whether or not (0 = no, 1 = yes) they had experienced significant mental health life area problems over the past year. These items referred to externalizing behavioral problems such as "restless, fidgety…extremely distractible," "impulsive, did dangerous things for the thrill of it," "intentionally violate rules," "consistently lost your temper," and "extremely hostile…excessive outbursts." Responses for these items were summarized as an additive index, ranging from 0 to 10 for Time 1 (for Time 1 combined ten items: past month and past other 11 months) and 0 to 5 for Time 2. High scorers on this measure indicated expressing greater amounts of externalizing behaviors (alpha reliability: Time 1 = .82, Time 2 = .68).

The Internalizing problems indexes were comprised of past year responses to seven items that describe various behavioral constructs, such as depression, anxiety, and low self-esteem. Youths were asked to indicate whether or not (0 = no, 1 = yes) they had experienced significant mental health life area problems over the past year. These items referred to internalizing behavioral problems such as "thoughts of failure, lacked self confidence," "extremely intimidated, shy," "extremely anxious, felt panicky," "constantly preoccupied with food," "thoughts you could not get rid of…same things over and over again," "sad, hopeless…cried a lot," "extremely tired or had little energy." Responses for these items were summarized as an additive index, ranging from 0 to 14 for Time 1 (for Time 1 combined fourteen items: past month and past other 11 months) and 0 to 7 for Time 2. High scorers on this measure expressed greater problems with internalizing behaviors (alpha reliability: Time 1 =.86, Time 2 = .79).

Delinquency

Youths in this study provided self-report delinquency information as part of the baseline and follow-up protocol. The self-report delinquency measures were based on the work of Elliott and associates (1983). Respondents were asked to indicate how many times within the past 12 months they had engaged in 23 specific delinquent behaviors (e.g., stole a motor vehicle, stole something worth between $5 and $50, broke into a building or vehicle, aggravated assault, hit a student, etc.). Youths who reported committing an offense 10 or more times within the past year were also asked to provide an average estimate of how often they engaged in such behavior based on specific frequency categories (i.e., two or more times a day, once a day, two or three times a week, once a week, once every two or three weeks, once a month). This served as a check-and-balance system to control overestimation. Youths were also asked to indicate the age of onset for any behavior they admitted to committing.

Based on this information, a summary measure of 18 of the NYS items for self-reported delinquency was created. Youths were asked how many times within the past 12 months they had committed the following: stolen a motor vehicle; gone joyriding; broke into a building or vehicle; stolen something worth more than $50; stolen something worth between $5 and $50; stolen something worth $5 or less; used force to get money from a student; used force to get money from a teacher; used force to get money from other people; held stolen goods; carried a hidden weapon; attacked someone with the idea of hurting them; been paid for having sexual relations; had sexual relations with someone against their will; been involved in a gang fight; hit a teacher; hit a parent; and hit a student. Responses for each of these questions were summed to create an additive scale

of delinquency. High scorers on this measure admitted engaging in more delinquent behavior (alpha reliability: Time 1 = .29, Time 2 = .43; alpha reliability (log transformed): Time 1 = .67, Time 2 = .79).

The following five items were omitted from the total delinquency index: sold marijuana/hashish; sold cocaine/crack; sold other hard drugs; been loud/rowdy in a public place; and begged for money from strangers. The drug items were omitted because the CASI drug problems measure (described below) captured legal problems with drugs. The other two items were excluded because they referred to less severe delinquent/public nuisance acts and were not consistent with the severity of the other 18 items.

Table 5 indicates that the 137 youths reported relatively high rates of delinquency. As illustrated, there is a high prevalence rate for total delinquency (Time 1: 80%, Time 2: 41%), with 2 percent and 6 percent for Time 1 and Time 2, respectively, of the adolescents reporting engagement in 100 times or more of these offenses. Since the delinquency scale reflected high skewness (without log transformation: Time 1 = 6.89, Time 2 = 6.50; log transformed: Time 1 = 0.09, Time 2 = 1.33) and kurtosis (without log transformation: Time 1 = 54.04, Time 2 = 48.28; log transformed: Time 1 = -0.19, Time 2 = 0.98), it was logarithmically transformed to the base 10, with –1 being assigned to students reporting no delinquent offenses (after taking the log). This scoring provided a more meaningful interpretation of differences in terms of delinquent involvement than the raw scores. That is, equal intervals on the transformed scale would represent equal differences in involvement. Specifically, the differences between no offense and 1, 1 and 10, 10 and 100, and 100 and 1000 offenses would be interpreted as comparable.

Table 5: Self-Reported Delinquency (N = 137)

	Frequency during 12 Months Prior to Baseline Interview							
	0	*1-4*	*5-29*	*30-54*	*55-99*	*100-199*	*200+*	*Total*
Total Delinquency	20%	50%	23%	4%	0%	<1%	2%	100%

	Frequency during Period between Baseline and Follow-Up Interview							
	0	*1-4*	*5-29*	*30-54*	*55-99*	*100-199*	*200+*	*Total*
Total Delinquency	59%	24%	13%	1%	0%	2%	4%	100%

Drug and Alcohol Use Problems

Research has shown that substance use and abuse among youths can be described as a series of progressively more intense or severe usage (Kandel, 1975, 2002; Kandel, Kessler, & Margulies, 1978; Kandel, Yamaguchi, & Chen, 1992). Most youths begin their substance use with tobacco or alcohol use, which progresses to marijuana, and then the use of other drugs (e.g., cocaine, heroin, amphetamines, opiates) (often referred to as the "gateway" theory). A measure of the level of drug involvement was created to examine the degree or level of alcohol/drug use among youths participating in this study.

A categorical variable was created for Time 1 and Time 2 to describe the youths' level of past year drug involvement. This measure involves four categories: (1) none, (2) used only tobacco and/or alcohol, (3) used marijuana and perhaps tobacco or alcohol (not other drugs), and (4) used other drugs (cocaine, amphetamines, barbiturates/sedatives, inhalants, hallucinogens, and opiates) and perhaps tobacco, alcohol, or marijuana. For Time 1, 48 percent of the youths reported they used no drugs in the past year, 15 percent reported using only tobacco or alcohol, 28 percent reported using marijuana and not other drugs, and 9 percent reported using other drugs. For Time 2, 64 percent of the youths

reported they used no drugs in the past year, 14 percent reported using only tobacco or alcohol, 15 percent reported using marijuana and not other drugs, and 8 percent reported using other drugs.

The developers of the AIW project have derived a scale of drug use problems that takes into account the progressive nature of juvenile substance use and incorporates the alcohol/drug use problem CASI subscales (for further detail see Dembo et al., under review; Dembo, Wareham, Poythress, Cook, & Schmeidler, in press). This drug problems scale examines past year drug use, drug involvement, and effects of drug use. The drug problems measure was reproduced for the 137 youths completing the AIW follow-up interview in this study.

Comparison of the self-reported drug use levels with urine and hair drug test analyses provided a conservative assessment of the validity of the drug use measures. Urine and/or hair drug test results were available for 113 (83%) of the youths for Time 1 and 69 (50%) of the youths for Time 2. A crosstabulation comparing the four self-reported drug involvement categories with positive biological assays suggests that overall self-report drug use was consistent with the drug test findings. Among youths in Time 1 who provided both self-reported drug use and biological assays, the following drug positive rates for one or more drugs were found: (1) none (12%), (2) used only tobacco and/or alcohol (0%), (3) used marijuana but not other drugs (63%), and (4) used other drugs (25%) (Fisher's Exact Test = 21.07, $p < .001$). Among youths in Time 2 who provided both self-reported drug use and biological assays, the following drug positive rates for one or more drugs were found: (1) none (0%), (2) used only tobacco and/or alcohol (8%), (3) used marijuana but not other drugs (69%), and (4) used other drugs

(23%) (Fisher's Exact Test = 27.90, $p < .001$). These findings suggest that the self-report measures of drug/alcohol use among this sample are fairly valid.

The developers of the CASI provide several subscales describing alcohol and other drug use problem behaviors. Each subscale is created by taking the arithmetic average of responses to three dichotomous questions about past year substance use consequences. The results are continuous censored measures, with responses ranging from 0 to 1 for each subscale.

Four of the five CASI subscales were used for this study at Time 1 and Time 2. For the *serious consequences* subscale, youths were asked to indicate significant periods of time having "repeated arguments with family, friends,…because of substance use," experiencing "substance-related legal issues," and " having "accidents or…injuries when using substances" (alpha reliability: Time 1 = .49, Time 2 = .51). For the *loss of control* subscale, youths were asked to indicate significant periods of time where they "continued use while in…situations that were…dangerous," wanting "to cut down, stop using," and taking "substance(s) in larger amounts…than originally intended" (alpha reliability: Time 1 = .67, Time 2 = .61). For the *narrowing of behavior repertoire* subscale, youths were asked to indicate whether or not they had significant periods where they "spent a great deal of time in activities…to obtain, ingest or recover from using," "attended activities…under the influence," and "consistently used instead of going to…doing thing" (alpha reliability: Time 1 = .43, Time 2 = .61). For the *physical dependence* subscale, participants were asked to report whether or not they "had to do more…to feel the same effect," "experienced withdrawal symptoms," and "used substance(s) to avoid withdrawal" (alpha reliability: Time 1 = .46, Time 2 = .52).

Drug problems. For Time 1 and Time 2, a CFA was conducted on the categorical measure of past year drug usage (created above), number of drugs tested positive, and the four CASI drug use and consequences subscales. Since the drug involvement and drug test positive measures were categorical and there was a respectable amount of missing data on the drugs assay measure (Time 1: 27%, Time 2: 50%), the factor analyses were produced using Mplus (Muthén & Muthén, 2004). Table 6 reports the CFA results for the drug use problems measure.

A confirmatory factor analysis, specifying one factor, was completed for Time 1 and Time 2 drug problem measures. Initial CFA results suggested the fit of both models could be improved (Time 1: chi-square = 24.54, df = 5, p = 0.00; CFI = 0.760; TLI = 0.856, RMSEA = 0.169; Time 2: chi-square = 41.79, df = 4, p = 0.00; CFI = 0.837; TLI = 0.837; RMSEA = 0.263). Modification indices for Time 1 suggested that correlations between (a) past year drug usage and drug test results and (b) serious consequences and physical dependency problems would improve the fit of the model. Modification indices for Time 2 also suggested that a correlation between past year drug use and drug test results would improve the fit of the model. The revised models were found to fit the data rather well (Time 1: chi-square = 5.95, df = 5, p = 0.31; CFI = 0.988; TLI = 0.993 RMSEA = 0.037; Time 2: chi-square = 1.30, df = 4, p = 0.86; CFI = 1.000; TLI = 1.012; RMSEA = 0.000). Each of the variables loaded significantly on the revised factors. Summary factor scores were saved in Mplus for use in testing the hypothesized model (Figure 3). Higher scores on the factors indicated higher drug involvement, effects, and negative consequences (alpha reliability: Time 1 = .77, Time 2 = .83).

Table 6: CFA Standardized Loadings for Drug Use Problems for Time 1 and Time 2

Latent Variable	*Peer Items*		*Time 1 Standardized Loadings*	*Time 2 Standardized Loadings*
Drug	Past year drug use		.64	.70
Problems	Drug test results		.50	.22
	Serious consequences		.60	.84
	Narrowing of behavior repertoire		.74	.85
	Loss of control		.75	.82
	Physical dependence		.79	.90
		Eigenvalue =	2.73	3.44
		Variance =	45.5	57.3

Time 1: $\chi^2 = 5.95$, df = 5, p = 0.31; CFI = 0.988; TLI = 0.993 RMSEA = 0.037.

Time 2: $\chi^2 = 1.30$, df = 4, p = 0.86; CFI = 1.000; TLI = 1.012; RMSEA = 0.000.

Table 7: Descriptive Statistics for Observed Measures

Time 1: Baseline Interview

Variables	*Minimum*	*Maximum*	*Mean*	*Standard Deviation*
Family Disruption	-0.6684	2.1623	0.1020	0.6460
Family Abuse	-0.3134	1.6886	0.1071	0.4585
Peer Strain	-0.5680	2.1619	0.1011	0.6187
Parent Attachment	-0.4558	1.1831	0.0492	0.4069
School Attachment	-0.5295	1.7630	0.0931	0.6018
School Commitment	-0.5503	1.3772	0.0882	0.5286
Delinquent Peers	-0.7064	1.7284	0.0793	0.6960
Total Delinquency	0	400	12.0949	42.9827
Total Delinquency (log)	-1.00	2.60	0.2741	0.8340
Drug Problems	-0.2872	3.8867	0.0067	0.6009
Internalizing	0	13	1.9708	2.8516
Externalizing	0	10	2.5985	2.6050
APSD Impulsivity	0	8	3.58	1.8930
YPI Impulsivity-Irresponsibility	1	39	17.94	8.4330
YPI Impulsivity	0	14	6.42	3.4520
YPI Irresponsibility	0	13	3.86	3.2790
YPI Thrill-Seeking	1	15	7.66	3.4900

(Continued on the next page)

Table 7: (Continued)

Time 2: Follow-Up Interview

Variables	*Minimum*	*Maximum*	*Mean*	*Standard Deviation*
Family Disruption	-0.1815	1.8851	0.1264	0.4849
Family Abuse	-0.0834	0.9222	0.0395	0.2368
Peer Strain	-0.4399	1.8603	0.1313	0.5732
Parent Attachment	-0.3297	1.0089	0.0563	0.3761
School Attachment	-0.4951	1.7965	0.1247	0.6580
School Commitment	-0.4163	1.1864	0.0652	0.4670
Delinquent Peers	-0.5556	1.5080	0.0943	0.6243
Total Delinquency	0	911	22.6350	101.7792
Total Delinquency (log)	-1.00	2.96	-0.2789	1.0195
Drug Problems	-0.2462	3.9414	0.0067	0.6764
Internalizing	0	7	1.1314	1.7185
Externalizing	0	5	1.2482	1.3974
APSD Impulsivity	---	---	---	---
YPI Impulsivity-Irresponsibility	---	---	---	---
YPI Impulsivity	---	---	---	---
YPI Irresponsibility	---	---	---	---
YPI Thrill-Seeking	---	---	---	---

Description of Observed Variables

The mean, minimum, maximum, and standard deviation values for the Time 1 and Time 2 strain, social control, differential association, delinquency (both before and after log transformation), drug problems, and personality measures are reported above in Table

7. In general, the measures reflect factor scores. Therefore, the scale for these measures is relatively small, based on the range of possible values. On average, the youths in this sample reported low levels of strain, social control, delinquent peers, internalizing behavior, and externalizing behavior. The youths reported average impulsivity characteristics that were modest in size. Bivariate correlations for these final measures are shown in Appendix B. Most of the measures were significantly correlated in the expected direction.

The next chapter describes the analytic strategy employed in the present study. As mentioned previously, the small size of the sample used in this study limited the complexity of the analyses conducted herein. In most cases, the measures described above were used to create latent measures. Since the "observed" measures were factor scores created through CFA, the latent measures may be conceptualized as second-order factor analyses. Findings from the analyses are reported and interpreted in the next chapter.

Chapter 6

Results

Chapter 5 discussed the steps taken to create the Time 1 and Time 2 measures of strain, social control, differential association, delinquency, drug problems, and personality characteristics. Since the sample used in this study is limited to only 137 cases for Time 1 and Time 2, any analyses of this data must be parsimonious. Figures 2 and 3 (described in Chapter 4) reflect an attempt to maintain parsimony, while maximizing the empirical and theoretical contribution of this study. Unlike Agnew et al.'s (2002) study of strain and personality, this study is limited to examining key latent and observed variables, without controlling for influential demographic characteristics (e.g., age, race/ethnicity, gender, SES).

Analytic Strategy

The present study tests longitudinal structural equation models (SEM) (see Figures 2 and 3 in Chapter 4) of strain on delinquency and drug problem behaviors. Structural equation modeling is a statistical technique used to examine a priori specified relationships between both observed and unobserved (i.e., latent) measures (for detail see Bollen, 1989; Byrne, 2001). SEM provides the opportunity for graphic or pictorial description of the relationship between variables that represent a series of structural (i.e., regression) equations. Generally, the SEM model can be described as containing two submodels: a structural model and a measurement model. The structural model describes

the relationships between the latent variables (though conceptually, observed variables may also be treated as latent and included in the structural model). The measurement model describes the relationship between the observed and latent variables. That is, it describes how the observed measures load onto or relate to the latent variables. The measurement model was described in Chapter 4.

Due to the complexity of the models in Figures 2 and 3, the measurement models are not included in the SEM illustration. The SEM models show latent variables for strain, social control, delinquent peers, and drug problems. The structural model for Time 1 and Time 2 strain contains three "observed" factors of strain estimated as loading onto one overall latent measure. Family disruption, family abuse, and poor peer relations factor scores are estimated as the latent variable, *strain*. The structural model for the latent variable, social control, is hypothesized to be comprised of the following three "observed" factor scores: parental attachment, school attachment, and school commitment. Delinquent peers and drug problems were included as "observed" factor scores, rather than latent measures. This data reduction to second-order latent variables helped to lower the number of parameter estimates required to successfully compute the full SEM models.

The SEM analyses were completed using Mplus version 3.12 (Muthén & Muthén, 2004). Mplus is a versatile, sophisticated statistical modeling program. It permits the estimation of continuous and categorical, both observed and latent, variables. Mplus provides a chi-square test of the null hypothesis to test the fit of models to their data. Lack of significance for the chi-square indicates an acceptable fit of the model to the data. The software also provides a number of goodness of fit measures to assess the

closeness of the fit of the model to the data (e.g., CFI, TLI, RMSEA). Mplus also allows the application of various estimators (e.g., maximum likelihood estimation) of the parameters in the model, some of which provide chi-square test statistics that are robust to non-normality in the data.

The premise of this study is to examine the relationship between strain and maladaptive personality characteristics on delinquency and drug use problems within a GST framework. As such, a stepwise approach was taken, beginning with the most simplistic GST model and progressing to richer, more complex models—eventually to those illustrated in Figures 2 and 3. Assuming the relationship between the latent strain measure and delinquency/drug use problems were statistically significant, the social control, differential association, and personality measures were then examined in subsequent models.

Findings

Initial GST Models

The first step was to address the hypothesis that strain at Time 1 has significant positive effects on delinquency/drug problems at Time 2. Preliminary analyses were conducted testing the effects of strain on the self-reported total delinquency index (log transformed) and drug use problems factor. First *simple* models were estimated for the strain measures on delinquency and drug problems, respectively. Then more *complex* models examining the influence of social control and delinquent peer association factors on the strain-delinquency and strain drug problems relationships were examined.

As Tables 8 and 9 show, the analyses indicated that three of the four models did not fit the data. Indeed, the delinquency models could not be estimated properly due to

negative residuals caused by latent correlation values greater than or equal to 1, which suggests linear dependency, and data convergence issues. For the drug use problems models, the simple model was estimated normally after correlating the error terms between poor peer relations items for the latent strain variables across Time 1 and Time 2 (unstandardized estimate = 0.125, standardized estimate = 0.354, $p < .05$). Although the simple model for the drug problems factor fit the data well after making this modification (Chi-square = 20.30, df = 16, p = .21, CFI = 0.979, TLI = 0.962, RMSEA = 0.044), the relationship between strain at Time 1 and drug use problems at Time 2 did not attain statistical significance (using a one-tailed test). Drug problems at Time 1 were significantly and positively related to drug problems at Time 2. Strain at Time 1 was significantly and positively related to strain at Time 2. The model explained 25 percent of the variance in drug problems at Time 2 ($R^2 = 0.251$). None of the complex models in Tables 8 and 9 could be estimated due to data convergence issues.

Table 8: Delinquency (log) on Strain, Social Control, and Delinquent Peer Factors Estimates (Standardized Estimates)

	Simple Model			*Complex Model*					
	Delinquency (Log)			*Delinquency (Log)*					
Endogenous Variables	*Strain (T1)*	*Strain (T2)*	*Delinquency (T1)*	*Strain (T1)*	*Strain (T2)*	*Social Control (T1)*	*Social Control (T2)*	*Delinquent Peer (T1)*	*Delinquency (T1)*
Family Disruption	1.000	1.000							
	(0.846)	(0.527)							
Family Abuse	0.520**	0.178*							
	(0.620)	(0.192)							
Peer Strain	0.451**	0.797**			(No convergence. Number of iterations exceeded.)				
	(0.399)	(0.355)							
Parental Attachment									
School Commitment									
School Attachment									
Strain (T2)	0.485**								
	(1.038)[a]								
Social Control (T2)									
Delinquent Peer (T2)									
Delinquency (Log) (T2)	0.114		0.420**						
	(0.062)		(0.348)						

Note. * p < .10, ** p < .05.

a. Model could not be fully estimated. Correlation exceeds 1.

Table 9: Drug Problems Factor on Strain, Social Control, and Delinquent Peer Factors Estimates (Standardized Estimates)

	Simple Model					*Complex Model*					
	Drug Problems Factor					*Drug Problems Factor*					
Endogenous Variables	*Strain (T1)*	*Strain (T2)*	*Drug Problems (T1)*	*R^2 (T1)*	*R^2 (T2)*	*Strain (T1)*	*Strain (T2)*	*Social Control (T1)*	*Social Control (T2)*	*Delinquent Peer (T1)*	*Drug Problems (T1)*
Family Disruption	1.000	1.000									
	(0.938)	(0.558)		0.879	0.311						
Family Abuse	0.456**	0.111									
	(0.602)	(0.127)		0.363	0.016						
Peer Strain	0.352**	0.718**					(No convergence. Number of iterations exceeded.)				
	(0.345)	(0.338)		0.119	0.114						
Parental Attachment											
School Commitment											
School Attachment											
Strain (T2)	0.407**										
	(0.912)										
Social Control (T2)											
Delinquent Peer (T2)											
Drug Problems (T2)	0.186*		0.469**								
	(0.167)		(0.419)		0.251						

Note. * p < .10, ** p < .05.

Simple Model: Chi-square = 20.30, df = 16, p = .21, CFI = 0.979, TLI = 0.962, RMSEA = 0.044.

SEM of GST for Time 1 Only

The *simple* models described in the above tables suggested that Time 1 and Time 2 strain were linearly dependent (i.e., latent correlation greater than or equal to 1). (The strain T2 on strain T1 standard estimate was 1.038 for the delinquency model and 0.912 for the drug problems model.) Negative variance or residual variance can sometimes occur when models are not properly specified (Muthén & Muthén, 2004). Therefore, the analyses proceeded by examining the models described in Figures 2 and 3 without the Time 2 strain, social control, and delinquent peer association measures.

Table 10 describes the findings for the Time 1 strain only (simple) models. The model testing self-reported total delinquency (log transformed) regressed on strain at Time 1 fit the data moderately well (Chi-square = 7.44, df = 4, p = .11, CFI = 0.967, TLI = 0.917, RMSEA = 0.079). The observed strain items loaded significantly and positively on the latent strain variable. Strain at Time 1 did not significantly predict the measure for self-reported delinquency (estimate = 0.017, critical-ration = 0.120). Delinquency at Time 1 had a significant positive effect on delinquency at Time 2 (estimate = 0.489, critical-ratio = 4.827). The model explained only 16 percent of the variance in Time 2 delinquency ($R^2 = 0.163$).

The model examining the effects of Time 1 strain on drug use problems could not be properly estimated due to extreme latent correlations (see loading/standardized estimate for family disruption item on strain T1: standardized estimate = 1.040). Since the Time 1 simple models reflect a minimalist approach, it is unlikely that the model suffers from further misspecification. Mplus can be sensitive to the distribution of variable values; therefore, it is more likely that the measures themselves are problematic.

Table 10: Delinquency (log) and Drug Problems Factor on Time 1 Strain Estimates (Standardized Estimates)

	Simple Model			*Simple Model*	
	Delinquency (Log)			*Drug Problems Factor*	
Endogenous	*Strain*	*Delinquency*		*Strain*	*Drug Problems*
Variables	*(T1)*	*(T1)*	R^2	*(T1)*	*(T1)*
Family Disruption	1.000			1.000	
	(0.972)		0.945	(1.040)[a]	
Family Abuse	0.424**			0.371**	
	(0.581)		0.337	(0.544)	
Peer Strain	0.332**			0.293**	
	(0.337)		0.114	(0.318)	
Delinquency (T2)	0.017	0.489**			
	(0.011)	(0.400)	0.163		
Drug Problems (T2)				0.133	0.502**
				(0.132)	(0.446)

Note. * p < .10, ** p < .05.

a. Model could not be fully estimated. Correlation exceeds 1.

Delinquency: Chi-square = 7.44, df = 4, p = .11, CFI = 0.967, TLI = 0.917, RMSEA = 0.079.

Variable Adjustment

In an effort to minimize any estimations problems that are a consequence of the variance and distribution of the measures, the certain measures were adjusted or recoded to improve the estimation of the models. The variable adjustment process began by recoding and adjusting the delinquency and drug use measures. Three new measures for delinquency and one measure for drug use were created. The self-reported total delinquency log transformed measure was first altered by shifting the distribution one unit to the right of the y-axis. This was accomplished by increasing the log transformed value by one. The result was a delinquency measure that started at zero, but maintained the same conceptual agreement regarding rates of offending as the original log

transformed measure. Next, delinquency was recoded into four categories: 0 (delinquency = 0), 1 (delinquency = 1 to 10), 2 (delinquency = 11 to 100), and 3 (delinquency = 101 to 1000). Finally, delinquency was recoded as a dichotomous measure (0 = 0 offenses, 1 = 1 or more offenses). The past year drug use measure containing four categories (none, used only tobacco and/or alcohol, used marijuana and perhaps tobacco or alcohol, and used other drugs and perhaps tobacco, alcohol, or marijuana) was used in place of the drug problem factor (see Chapter 5 for description). As mentioned earlier, this scale is consistent with the "gate way" drug literature (Kandel, 1975, 2002; Kandel et al., 1978; Kandel et al., 1992). Table 11 provides the descriptive statistics for these new measures.

Table 11: Descriptive Statistics for Adjusted Delinquency and Drug Measures

Time 1(Baseline)

Variables	*Minimum*	*Maximum*	*Mean*	*Standard Deviation*
Delinquency (log + 1)	0	3.6000	1.2741	0.8340
Delinquency (categorical)	0	3	1.0100	0.6910
Delinquency (0/1)	0	1	0.8000	0.4050
Drug Use Level	0	3	0.9700	1.0570

Time 2(Follow-Up)

Variables	*Minimum*	*Maximum*	*Mean*	*Standard Deviation*
Delinquency (log + 1)	0	3.9600	0.7211	1.0195
Delinquency (categorical)	0	3	0.5900	0.8540
Delinquency (0/1)	0	1	0.4100	0.4930
Drug Use Level	0	3	0.6700	1.0010

Despite the recodes for the self-reported delinquency and substance use measures, SEM analyses for these measures regressed on strain (Time 1 and Time 2) were unsuccessful. Each model continued to experience issues with the Time 1 and Time 2 strain relationships. The estimates for the models are presented in Table 12. Once again, the models could not be estimated due to negative variance or correlations exceeding scores of 1 between strain Time 1 and strain Time 2: for delinquency (log + 1) r = 1.038; for delinquency (categorical), r = 1.142; for delinquency (dummy), r = 1.051; and for drug use (categorical), r = 1.118. Moreover, in the adjusted delinquency models strain at Time 1 continued to be non-significantly related to delinquency at Time 2. The revised

drug use measure, however, did appear to improve the estimation of Time 2 drug use level on strain at Time 1.

The models were replicated using Time 1 strain only, and the results were similar to those reported in Table 12 for the three delinquency measures. As Table 13 shows, the models for the adjusted delinquency measures for categorical and dichotomous classification and drug use categories could not be properly estimated due to correlations exceeding values of 1 on family disruption. The results for the log shift measure of delinquency were the same as the log transformed delinquency model in Table 10—as expected. Strain was not a significant predictor of 12-month follow-up delinquency.

The variable adjustments made to the delinquency and drug problems measures were intended to improve the fit of the full Time 1 and Time 2 strain model to the data (i.e., improve estimation). Unfortunately, operational changes did not improve the estimations of the models. The models remained too complex for the data.

Table 12: Recoded Delinquency and Drug Use on Strain Estimates (Standardized Estimates)

	Delinquency (Log+1)			*Delinquency (Categorical)*		
Endogenous Variables	*Strain (T1)*	*Strain (T2)*	*Delinquency (T1)*	*Strain (T1)*	*Strain (T2)*	*Delinquency (T1)*
Family Disruption	1.000	1.000		1.000	1.000	
	(0.849)	(0.527)		(0.783)	(0.528)	
Family Abuse	0.520**	0.178*		0.509**	0.163*	
	(0.620)	(0.192)		(0.562)	(0.177)	
Peer Strain	0.451**	0.797**		0.512**	0.794**	
	(0.399)	(0.355)		(0.418)	(0.355)	
Strain (T2)	0.485**			0.578**		
	(1.038)[a]			(1.142)[a]		
Delinquency (T2)	0.144		0.420**	0.162		0.536**
	(0.619)		(0.348)	(0.607)		(0.369)

	Delinquency (Dummy)			*Drug Use (Categorical)*		
Endogenous Variables	*Strain (T1)*	*Strain (T2)*	*Delinquency (T1)*	*Strain (T1)*	*Strain (T2)*	*Drug Use (T1)*
Family Disruption	1.000	1.000		1.000	1.000	
	(0.834)	(0.525)		(0.828)	(0.484)	
Family Abuse	0.506**	0.148		0.470**	0.134	
	(0.594)	(0.159)		(0.548)	(0.132)	
Peer Strain	0.465**	0.817**		0.502**	0.967**	
	(0.405)	(0.363)		(0.434)	(0.396)	
Strain (T2)	0.497**			0.491**		
	(1.051)[a]			(1.118)[a]		
Delinquency (T2)	0.376					
	(0.202)		[b]			
Drug Use (T2)				0.377**		0.527**
				(0.201)		(0.555)

Note. * p < .10, ** p < .05.

a. Model could not be fully estimated. Correlation exceeds 1.

b. Could not be calculated. Caused a singular weight matrix error.

Table 13: Recoded Delinquency and Drug Use on Strain (Time 1 Only) Estimates (Standardized Estimates)

	Delinquency (Log+1)			*Delinquency (Categorical)*	
Endogenous Variables	*Strain (T1)*	*Delinquency (T1)*	R^2	*Strain (T1)*	*Delinquency (T1)*
Family Disruption	1.000			1.000	
	(0.972)		0.945	(1.137)[a]	
Family Abuse	0.424**			0.309	
	(0.581)		0.337	(0.480)	
Peer Strain	0.332**			0.207	
	(0.337)		0.114	(0.240)	
Delinquency (T2)	0.017	0.489**		0.082	0.641**
	(0.011)	(0.400)	0.163	(0.053)	(0.405)

	Delinquency (Dummy)		*Drug Use (Categorical)*	
Endogenous Variables	*Strain (T1)*	*Delinquency (T1)*	*Strain (T1)*	*Drug Use (T1)*
Family Disruption	1.000		1.000	
	(1.041)[a]		(1.113)[a]	
Family Abuse	0.370**		0.317**	
	(0.538)		(0.484)	
Peer Strain	0.248*		0.246*	
	(0.277)		(0.277)	
Delinquency (T2)	0.214	0.416		
	(0.140)	(0.166)		
Drug Use (T2)			0.279	0.753**
			(0.150)	(0.623)

Note. * p < .10, ** p < .05.

a. Model could not be fully estimated. Correlation exceeds 1.

Delinquency (Log+1): Chi-square = 7.44, df = 4, p = 0.11, CFI = 0.967, TLI = 0.917, RMSEA = 0.079.

In a final effort to improve the fit of the SEM models, the family, peer, and school observed measures were recoded. Similar to Wallace et al.'s (2005) recent GST test, additive indexes of strain measures were created using the EFA and CFA factor loadings as a measurement guide. This transformation had no effect on the internal consistency (i.e., alpha reliability) of the strain (family disruption, family abuse, and poor peer relations), social control (low parental attachment/commitment, low school attachment, and low school commitment), and delinquent peer association indexes. However, it did change the scale of the measures, thereby making them less problematic for conducting the SEM analyses. These scores are integers, rather than small continuous factor scores, reflecting a summary of the CASI family, peer, and school life area items described in Chapter 5. Table 14 provides the descriptive statistics for the strain, social control, and differential association indexes.

Table 14: Descriptive Statistics for Strain, Social Control, and Social Learning Indexes

Time 1(Baseline)

Variables		*Minimum*	*Maximum*	*Mean*	*Standard Deviation*
Strain:	Family disruption	0	13	1.68	2.521
	Family abuse	0	6	0.45	1.063
	Peer strain	0	13	1.85	2.600
Social Control:	Parental attachment	0	15	3.15	3.420
	School attachment	0	8	1.93	2.010
	School commitment	0	6	1.13	1.571
Social Learning:	Delinquent peers	0	8	2.18	2.355

(Continued on the next page)

Table 14: (Continued)

		Time 2(Follow-Up)			
Variables		*Minimum*	*Maximum*	*Mean*	*Standard Deviation*
Strain:	Family disruption	0	7	0.71	1.219
	Family abuse	0	2	0.21	0.430
	Peer strain	0	7	1.15	1.652
Social Control:	Parental attachment	0	10	1.82	2.104
	School attachment	0	4	1.18	1.253
	School commitment	0	2	0.28	0.610
Social Learning:	Delinquent peers	0	4	1.20	1.367

The Time 1 and Time 2 strain simplified model proved problematic, despite all efforts to recode the measures. Analyses consistently revealed linear dependency problems (high multicollinearity) for the strain measures over time. These results remained consistent even when estimators robust to non-normality in the data (e.g., weighted least square mean variance [WLSMV] and maximum likelihood with robust errors [MLR]) were used (see Muthén & Muthén, 2004). The robust estimators were thought to be an acceptable application given the slight skewness of the family disruption, family abuse, and parental attachment measures. Consequently, all subsequent analyses were conducted using Time 1 endogenous measures and Time 2 delinquency and drug use/problems measures.

As seen in Table 15, the simplified SEM models predicting that strain at Time 2, as measured by the family, peer, and school additive indexes, leads to delinquency (log transformed) and drug use fit the data quite well (delinquency: chi-square = 3.04, df = 4,

p = .55, CFI = 1.000, TLI = 1.060, RMSEA = 0.000; drug use: chi-square = 0.50, df = 3, p = .92, CFI = 1.000, TLI = 1.155, RMSEA = 0.000). (The drug problems model is not reported in Table 15 because it experienced negative residuals between Time 1 and Time 2 drug use.) Delinquency at Time 1 significantly predicted higher delinquency at Time 2. Drug use at Time 1 significantly predicted higher drug use levels (i.e., progressive use of drugs) at Time 2. For the delinquency and drug use models, strain at Time 1 does not, however, significantly predict delinquency or drug use in the follow-up year. Even more noteworthy was the fact that the three strain index measures do not load significantly onto the strain latent variable. The only strain measure that loaded significantly on the strain at Time 1 was poor peer relations for the delinquency model. This underscores the lack of cohesion in the latent variable strain. Obviously, the variables used to measure strain at Time 1 and Time 2 (both factor scores and indexes) lack sufficient conceptual cohesion to be estimated by one overall latent measure.

After extensive data manipulation, the SEM analyses testing the effects of strain at Time 1 on delinquency/drug use at Time 2 failed to support hypothesis #1. For the justice referred youths in this sample, strain does not directly affect self-reported delinquency or drug use problems. As a result, hypotheses 2 through 6 were also not supported by the SEM models.

Table 15: Delinquency (log) and Drug Problems Factor on Time 1 Strain Index Estimates (Standardized Estimates)

	Simple Model			*Simple Model*		
	Delinquency (log)			*Drug Use Factor*		
Endogenous	*Strain*	*Delinquency*		*Strain*	*Drug Use.*	
Variables	*(T1)*	*(T1)*	R^2	*(T1)*	*(T1)*	R^2
Family Disruption	1.000		0.343	1.000		0.730
	(0.586)			(0.854)		
Family Abuse	0.113		0.025	0.073		0.022
	(0.157)			(0.148)		
Peer Strain	0.783**		0.198	0.368		0.093
	(0.445)			(0.305)		
Delinquency (T2)	0.019	0.479**				
	(0.027)	(0.392)				
Drug Use (T2)				0.093	0.548**	
				(0.200)	(0.577)	
Delinquency (T1)			0.163			
Drug Use (T1)						0.426

Note. * p < .10, ** p < .05.

Delinquency: Chi-square = 3.04, df = 4, p = .55, CFI = 1.000, TLI = 1.060, RMSEA = 0.000.

Drug Use: Chi-square = 0.50, df = 3, p = .92, CFI = 1.000, TLI = 1.155, RMSEA = 0.000.

Supplemental Analyses

Path Analyses of Strain Leading to Delinquency/Drugs

As the preceding section illustrates, the SEM analyses of the GST models in Figures 2 and 3 were not sufficiently specified. In part, this difficulty was caused by the limited sample size (n=137), which complicated parameter estimation. The small sample size meant that the hypothesized models also had to be limited in their scope. Another limitation contributing to the SEM outcomes was the types of measures available to operationalize the strain constructs, irrespective of social control and differential

association measures. Given these obstacles and the unaccommodating SEM results, one option was to conclude that hypotheses 2 through 6 were summarily unanswerable using these data. An alternative option was to re-specify the models. The latter approach was taken. The models were re-specified and supplemental analyses of GST and personality were pursued employing path analyses of the individual indexes comprising the latent strain and social control variables, as well as the delinquent peer association index.

Utilizing the same "bottoms-up" approach employed in the SEM analyses, simple models of past year self-reported delinquency (log transformed) (DELINQ) and drug problems (DRUGPROB) or drug usage (DRUGUSE) at Time 2 were regressed on the three Time 1 strain indexes: family disruption (FAMDIS), family abuse/neglect (FAMABUS), and poor peer relationships (POORPEER). Mplus version 3.12 (Muthén & Muthén, 2004) was used to conduct the path analyses of GST and personality characteristics.

Table 16 reports the findings for the basic path analysis models regressing delinquency and drug problems/use on the three indexes of strain. All three models found no significant relationships between strain at Time 1 and deviance at Time 2. Since the models are just-identified (i.e., all parameters specified in the model), the chi-square test and goodness of fit measures could not be calculated for the basic strain path models. Yet the size and non-significance of the estimates corroborate the SEM findings.

Table 16: Unstandardized Estimates for Path Analyses of Self-Reported Delinquency and Drug Problems-Usage on Strain (T1)

	Exogenous Variables						
Endogenous Variables	*Family Disruption*	*Family Abuse*	*Peer Strain*	*Delinquency*	*Drug Problems*	*Drug Use*	R^2
Model 1: Delinquency (log) (T2) on strain (T1) & delinquency (T1)							
Delinquency	-0.007	0.100	0.004	0.490**			0.173
Model 2: Drug problems factor (T2) on strain (T1) & delinquency (T1)							
Drug problems	0.035	0.055	0.004		0.497**		0.263
Model 3: Drug use level (T2) on strain (T1) & delinquency (T1)							
Drug use	0.086*	-0.062	0.021			0.745**	0.428

Note. * p < .10, ** p < .05.

Path Analyses of Delinquency/Drugs Leading to Strain

Scholars have suggested that criminological theories can be organized according to the emphasis they place on individual differences (Johnson, Hoffmann, Su, & Gerstein, 1997). According to Johnson et al. (1997), theories will utilize either a "population heterogeneity" or "state dependence" (Nagin & Farrington, 1992; Nagin & Paternoster, 1991) approach when examining individual differences. From a "population heterogeneity" perspective, individual differences in crime/delinquency result from developmental differences that arise early in life (i.e., childhood and adolescence) and remain somewhat stable over the life-course. From a "state dependence" perspective, individual differences in crime/delinquency result from changes that arise as a consequence of committing a criminal/deviant act (e.g., changes in perceptions of costs and benefits of crime).

In general, GST advocates population heterogeneity as the etiological explanation for deviance. Individuals are driven to commit their first and subsequent deviant acts by the need to quickly and easily relieve the pressure of unsatisfied or blocked desires. Differences in the magnitude, duration, and frequency of strain, conditioned by developmental differences in coping mechanisms and other conditioning factors (e.g., personality), result in different trajectories of crime.

Accordingly, differences in strainful characteristics, as well as social control, differential association, and personality characteristics, should have significant effects on delinquency and drug problems/use among youths in this study. Almost all of the participants were first-time official offenders (first documented arrest or charge) (91%) prior to their Arbitration diversion program offense. Almost all of the cases (90%) had

baseline interviews completed within 60 days of the program offense. Since the questions pertaining to strain referred to events and conditions that occurred 12 months prior to the initial interview, it is likely that the strainful events capture characteristics that are precursors, rather than consequences, of delinquent behavior. Therefore, a population heterogeneity explanation of crime should have predicted delinquency and drug use at Time 2 based on Time 1 strain.

One of the potential explanations for the null findings of the baseline strain effects on follow-up year delinquency and drug problems/use may lie in the nature of the sample. As mentioned in the description of the demographic characteristics of this sample, many of these youths come from relatively low to modest SES backgrounds, and have experienced prolonged periods of school and family difficulties. Therefore, it may be less the case that the baseline interview strain reflects problematic conditions, and more the case that these experiences have been somewhat prolonged, almost normal circumstances. Assuming this is true, population heterogeneity for this sample may not provide a viable explanation for delinquency and drug use.

Among this sample of youths, a better explanation for criminal propensity may require a state dependence approach to GST. A state dependence explanation of GST would hypothesize that delinquency results in negative consequences that increase the likelihood of subsequent strain and delinquency. That is, delinquency causes both strain and future delinquency. Youths who report higher levels of delinquency/drug use at Time 1 should be more likely to experience subsequent strain and delinquency/drug use than those reporting little or no delinquency/drug use.

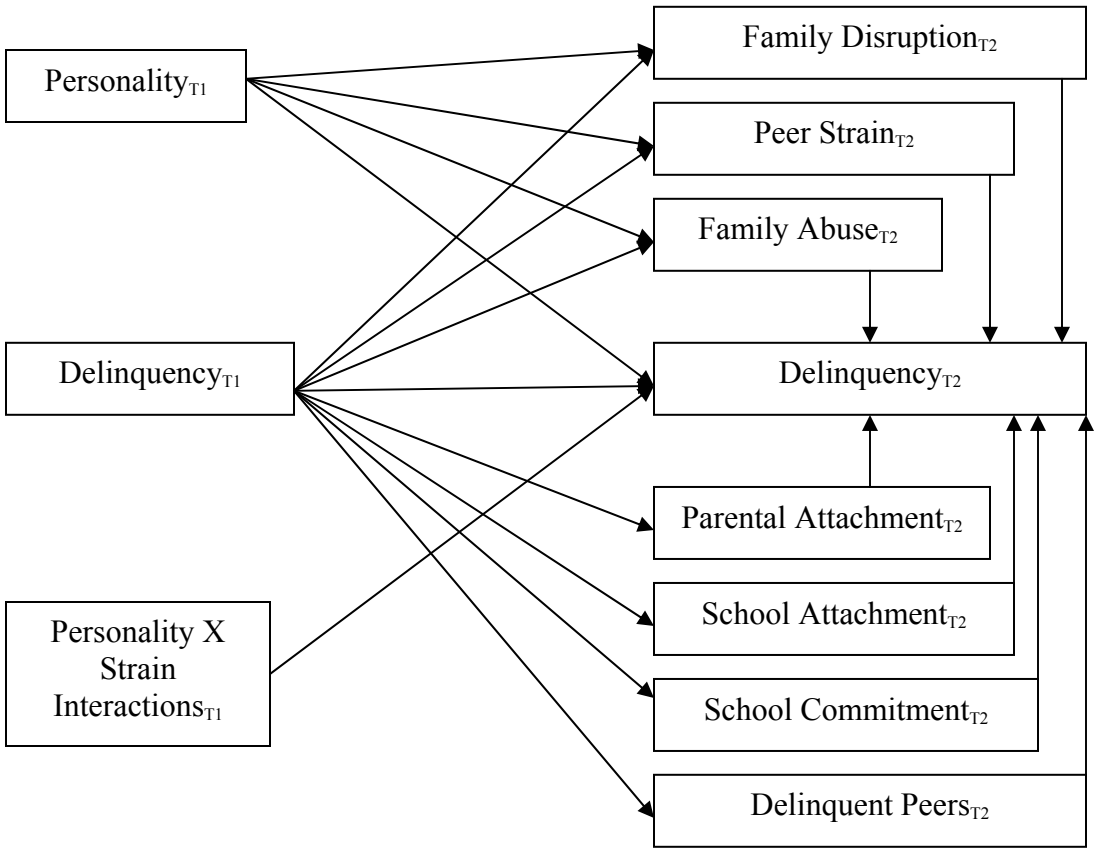
In the GST literature, two studies, in particular, have examined the longitudinal, reciprocal effects of stressful life experiences on subsequent experiences of strain (Aseltine et al., 2000; Kim et al., 2003). In both of these studies, strain and delinquency were considered to be both predictors and outcomes of previous and subsequent strain and delinquency. Overall, these studies reported that early experiences of strain led to delinquency, which, in turn, led to higher levels of strain. Further, other research has demonstrated that delinquent activities can lead to increased stress and strain (e.g., Elliott et al., 1985, 1989; Herrenkohl et al., 2000; Sampson & Laub, 1993, 2003).

Based on the body of literature that suggests that delinquency may cause and/or exacerbate subsequent strain, the models examined in the present study were modified for *ad hoc* analyses. In the ad hoc model, Time 1 delinquency and drug use (not shown in Figure 4) were hypothesized to lead to delinquency/drug use and strain at Time 2. Personality characteristics at Time 1 were hypothesized to significantly affect strain at Time 2. Since GST postulates that the nexus between strain and delinquency may be rather contemporaneous (Agnew, 1992), strain at Time 2 was predicted to significantly and positively affect delinquency/drug use at Time 2. Strain at Time 2 was hypothesized to be a partial mediator of the relationship between personality characteristics and delinquency. Similar to Figures 2 and 3, social control and differential association/social learning theory are viewed as complementary theories.

Figure 4 provides an interpretation of this ad hoc model for delinquency. The same model will be used to examine the effects of strain on drug problems and drug use (replacing the term delinquency with the appropriate drug measure). Moderating effects of personality characteristics at Time 1 on the strain-deviance Time 2 relationship will

also be examined by including interaction measures in the model. Any significant findings from this model regarding strain and delinquency/drug problems should be considered cross-sectional in nature. Therefore, the causal nature of subsequent findings must be viewed and interpreted with caution.

Figure 4: Ad Hoc Contemporaneous Model of Strain, Social Control, and Delinquent Peers



Path analyses for self-reported delinquency and drug problems/use were carried out in a stepwise manner. Mplus version 3.12 (Muthén & Muthén, 2004) was used to perform the analyses, which included application of the missing imputation feature. As seen in Table 17, a total of 23 models were examined for delinquency. All of the models have marginal goodness-of-fit values in terms of the chi-square, CFI, TLI, and RMSEA values (see bottom of Table 17). In the first step, self-reported delinquency at Time 1 and the three measures of strain at Time 2 were regressed on self-reported delinquency at Time 2 (see Model 1). Next, self-reported delinquency at Time 1 and the three measures

of social control and delinquent peers at Time 2 were regressed on self-reported delinquency at Time 2 (see Model 2). (School attachment was excluded from the model. Bivariate correlations indicated school attachment and school commitment suffered from multicolinearity issues [r = .919].) The social control and delinquent peer association measures explained twice as much of the variance in delinquency (39%) at Time 2 as the simple strain model ($R^2 = 0.16$).

Simple models regressing delinquency at Time 2 on the personality characteristics and psychopathy impulsivity dimensions are reported in Models 3 through 8. The internalizing and externalizing behavior measures for Time 1 did not significantly relate to delinquency at Time 2 (see Model 3). The psychopathy measures for impulsivity were all significantly and positively related to delinquency in the following year (see Models 4 to 8). The personality and psychopathy characteristics explained approximately 20 percent of the variance in delinquency at Time 2.

Secondly, the effects of delinquency leading to strain, leading to delinquency were examined (see Model 9). Delinquency at Time 1 was significantly related to family disruption at Time 2. Family abuse at Time 2 was significantly related to Time 2 delinquency. The addition of the strain measures predicting Time 2 delinquency nearly doubled the explained variance ($R^2 = 0.28$) of the model for delinquency at Time 2. Time 2 effects for the social control and delinquency measures were similarly tested (see Model 10). Higher delinquency at Time 1 significantly predicted low parental attachment, low school commitment, and higher delinquent peer associations at Time 2, which were significantly related to Time 2 delinquency.

In Model 11, the strain items are combined with the social control and differential association measures. The relationships described in Models 9 and 10 remain significant and relatively the same in magnitude. This combined model explained 46 percent of the variance in delinquency at Time 2.

Models 12 through 17 report the effects of personality characteristics at Time 1 on Time 2 strain measures. Internalizing behaviors was significantly and positively related to family disruption. The YPI impulsivity-irresponsibility and irresponsibility indexes were significantly and positively related to poor peer relations. However, poor peer relations was not significantly related to Time 2 delinquency. Moreover, the addition of the personality measures did not substantially improve the explained variance of the models.

Finally, the psychopathy/personality measures were included in the model examining the effects of strain, social control, and delinquency as mediators for Time 1 and Time 2 delinquency (see Models 18 through 23). Internalizing behaviors was significantly and positively related to family disruption. The YPI impulsivity-irresponsibility and irresponsibility indexes were significantly and positively related to poor peer relations. However, poor peer relations was not significantly related to Time 2 delinquency. The YPI impulsivity-irresponsibility domain was also significantly and positively related to family disruption. The addition of the personality measures did not substantially improve the explained variance of the models.

The indirect effects of Time 1 psychopathy and personality on delinquency at Time 2 via strain were examined using Mplus. Mplus is capable of reporting the partial and total indirect effects of regression pathways. None of the indirect estimates were

significant for the models presented in Table 17. Therefore, the specific psychopathic and personality characteristics examined in this study do not significantly mediate the strain-delinquency relationship.

In addition to the mediating role of personality characteristics, the ad hoc path analyses attempted to examine the moderating influence of personality on strain. Interaction terms were created by multiplying the psychopathy, internalizing, and externalizing scores by the strain indexes. Then these interaction terms were included in the full models of delinquency. Unfortunately, none of the interaction models fit the data well (*internalizing/externalizing:* chi-square = 165.60, df = 45, p = 0.00, CFI = 0.702, TLI = 0.444, RMSEA = 0.140; *APSD impulsivity:* chi-square = 131.46, df = 25, p = 0.00, CFI = 0.709, TLI = 0.349, RMSEA = 0.176; *YPI impulsivity-irresponsibility:* chi-square = 129.03, df = 24, p = 0.00, CFI = 0.713, TLI = 0.331, RMSEA = 0.179; *YPI impulsivity:* chi-square = 106.89, df = 56, p = 0.00, CFI = 0.754, TLI = 0.425, RMSEA = 0.159; *YPI irresponsibility:* chi-square = 107.69, df = 24, p = 0.00, CFI = 0.759, TLI = 0.438, RMSEA = 0.160; *YPI thrill-seeking:* chi-square = 138.67, df = 24, p = 0.00, CFI = 0.686, TLI = 0.267, RMSEA = 0.187). Further, the modification indices for these models did not provide any theoretically meaningful recommendations for improving the fit of the models. The specific psychopathic and personality characteristics examined in this study do not significantly moderate the strain-delinquency relationship.

Table 17: Unstandardized Parameter Estimates of the Path Models of Delinquency (log), Strain (T2), and Personality Characteristics (T1) (N = 137)

	Exogenous Variable				*Endogenous Variable*						
Endogenous Variable	*Delinq (T1)*	*Internal*	*External*	*Impulsive*	*Famdis*	*Famabus*	*Poorpeer*	*Paratt*	*Sklcmt*	*Delpeer*	R^2
Model 1: Strain (T2) on delinquency (T1) only											
Famdis	0.481**										0.108
Famabus	0.076*										0.022
Poorpeer	0.247										0.016
Delinq	0.493**										0.163
Goodness of Fit Measures: Just-identified model. No goodness of fit statistics available.											

Note. * p< .10, ** p < .05.

Delinq = delinquency; Delpeer = delinquent peers; External = externalizing behaviors; Famabus = family abuse;

Famdis = family disruption; Impulsive = psychopathy impulsivity; Internal = internalizing behaviors;

Paratt = parental attachment; Poorpeer = peer strain; Sklcmt = school commitment.

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Table 17: (Continued)

	Exogenous Variable				*Endogenous Variable*						
Endogenous Variable	*Delinq (T1)*	*Internal*	*External*	*Impulsive*	*Famdis*	*Famabus*	*Poorpeer*	*Paratt*	*Sklcmt*	*Delpeer*	R^2
Model 2: Social control & delinquent peers (T2) on delinquency (T1) only											
Paratt	1.064**										0.178
Sklcmt	0.385**										0.064
Delpeer	0.475**										0.084
Delinq	0.493**										0.391
Goodness of Fit Measures: Just-identified model. No goodness of fit statistics available.											

Note. * p< .10, ** p < .05.

Delinq = delinquency; Delpeer = delinquent peers; External = externalizing behaviors; Famabus = family abuse;

Famdis = family disruption; Impulsive = psychopathy impulsivity; Internal = internalizing behaviors;

Paratt = parental attachment; Poorpeer = peer strain; Sklcmt = school commitment.

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Table 17: (Continued)

	Exogenous Variable				*Endogenous Variable*						
Endogenous Variable	*Delinq (T1)*	*Internal*	*External*	*Impulsive*	*Famdis*	*Famabus*	*Poorpeer*	*Paratt*	*Sklcmt*	*Delpeer*	R^2
Model 3: Internalizing & externalizing characteristics											
Delinq	0.464**	0.039	0.261								0.182
Goodness of Fit Measures: Just-identified model. No goodness of fit statistics available.											
Model 4: APSD impulsivity characteristics											
Delinq	0.404**			0.093**							0.187
Goodness of Fit Measures: Just-identified model. No goodness of fit statistics available.											
Model 5: YPI impulsivity-irresponsibility domain											
Delinq	0.332**			0.033**							0.220
Goodness of Fit Measures: Just-identified model. No goodness of fit statistics available.											

Note. * p< .10, ** p < .05.

Delinq = delinquency; Delpeer = delinquent peers; External = externalizing behaviors; Famabus = family abuse; Famdis = family disruption; Impulsive = psychopathy impulsivity; Internal = internalizing behaviors; Paratt = parental attachment; Poorpeer = peer strain; Sklcmt = school commitment.

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Table 17: (Continued)

	Exogenous Variable				*Endogenous Variable*						
Endogenous Variable	*Delinq (T1)*	*Internal*	*External*	*Impulsive*	*Famdis*	*Famabus*	*Poorpeer*	*Paratt*	*Sklcmt*	*Delpeer*	R^2
Model 6: YPI impulsivity dimension											
Delinq	0.405**			0.055**							0.192
Goodness of Fit Measures: Just-identified model. No goodness of fit statistics available.											
Model 7: YPI irresponsibility dimension											
Delinq	0.398**			0.067**							0.203
Goodness of Fit Measures: Just-identified model. No goodness of fit statistics available.											
Model 8: YPI thrill-seeking dimension											
Delinq	0.377**			0.063**							0.200
Goodness of Fit Measures: Just-identified model. No goodness of fit statistics available.											

Note. * p< .10, ** p < .05.

Delinq = delinquency; Delpeer = delinquent peers; External = externalizing behaviors; Famabus = family abuse; Famdis = family disruption; Impulsive = psychopathy impulsivity; Internal = internalizing behaviors; Paratt = parental attachment; Poorpeer = peer strain; Sklcmt = school commitment.

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Table 17: (Continued)

	Exogenous Variable				*Endogenous Variable*						
Endogenous Variable	*Delinq (T1)*	*Internal*	*External*	*Impulsive*	*Famdis*	*Famabus*	*Poorpeer*	*Paratt*	*Sklcmt*	*Delpeer*	R^2
Model 9: With delinquency (T2) on strain											
Famdis	0.477**										0.106
Famabus	0.076*										0.022
Poorpeer	0.247										0.016
Delinq	0.390**				0.061	0.772**	0.063				0.284
Goodness of Fit Measures: Chi-square = 3.60, df = 2, p = 0.16; CFI = 0.975; TLI = 0.876; RMSEA = 0.076.											

Note. * p< .10, ** p < .05.

Delinq = delinquency; Delpeer = delinquent peers; External = externalizing behaviors; Famabus = family abuse;

Famdis = family disruption; Impulsive = psychopathy impulsivity; Internal = internalizing behaviors;

Paratt = parental attachment; Poorpeer = peer strain; Sklcmt = school commitment.

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Table 17: (Continued)

	Exogenous Variable				*Endogenous Variable*						
Endogenous Variable	*Delinq (T1)*	*Internal*	*External*	*Impulsive*	*Famdis*	*Famabus*	*Poorpeer*	*Paratt*	*Sklcmt*	*Delpeer*	R^2
Model 10: With delinquency (T2) on social control & delinquent peers											
Paratt	1.064**										0.182
Sklcmt	0.386**										0.064
Delpeer	0.475**										0.084
Delinq	0.212**							0.112**	0.216**	0.165**	0.391
Goodness of Fit Measures: Chi-square = 4.12, df = 1, p = 0.04; CFI = 0.977; TLI = 0.771; RMSEA = 0.151.											

Note. * p< .10, ** p < .05.

Delinq = delinquency; Delpeer = delinquent peers; External = externalizing behaviors; Famabus = family abuse;

Famdis = family disruption; Impulsive = psychopathy impulsivity; Internal = internalizing behaviors;

Paratt = parental attachment; Poorpeer = peer strain; Sklcmt = school commitment.

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Table 17: (Continued)

Endogenous Variable	*Exogenous Variable*				*Endogenous Variable*						
	Delinq (T1)	*Internal*	*External*	*Impulsive*	*Famdis*	*Famabus*	*Poorpeer*	*Paratt*	*Sklcmt*	*Delpeer*	R^2
Model 11: With delinquency (T2) on strain, social control, & delinquent peers											
Famdis	0.518**										0.121
Famabus	0.075*										0.021
Poorpeer	0.247										0.016
Paratt	1.064**										0.188
Sklcmt	0.358**										0.055
Delpeer	0.475**										0.084
Delinq	0.218**				-0.117	0.517**	-0.032	0.135**	0.198**	0.189**	0.458
Goodness of Fit Measures: Chi-square = 12.07, df = 6, p = 0.06; CFI = 0.976; TLI = 0.889; RMSEA = 0.086.											

Note. * p< .10, ** p < .05.

Delinq = delinquency; Delpeer = delinquent peers; External = externalizing behaviors; Famabus = family abuse;

Famdis = family disruption; Impulsive = psychopathy impulsivity; Internal = internalizing behaviors;

Paratt = parental attachment; Poorpeer = peer strain; Sklcmt = school commitment.

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Table 17: (Continued)

	Exogenous Variable				*Endogenous Variable*						
Endogenous Variable	*Delinq (T1)*	*Internal*	*External*	*Impulsive*	*Famdis*	*Famabus*	*Poorpeer*	*Paratt*	*Sklcmt*	*Delpeer*	R^2
Model 12: With delinquency (T2), internalizing, & externalizing on strain											
Famdis	0.443**	0.454**	-0.142								0.146
Famabus	0.072	-0.053	0.106								0.036
Poorpeer	0.207	-0.095	0.550*								0.041
Delinq	0.372**	0.057	0.159		0.059	0.753**	0.055				0.293
Goodness of Fit Measures: Chi-square = 5.08, df = 2, p = 0.08; CFI = 0.957; TLI = 0.612; RMSEA = 0.106.											

Note. * p< .10, ** p < .05.

Delinq = delinquency; Delpeer = delinquent peers; External = externalizing behaviors; Famabus = family abuse;

Famdis = family disruption; Impulsive = psychopathy impulsivity; Internal = internalizing behaviors;

Paratt = parental attachment; Poorpeer = peer strain; Sklcmt = school commitment.

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Table 17: (Continued)

	Exogenous Variable				*Endogenous Variable*						
Endogenous Variable	*Delinq (T1)*	*Internal*	*External*	*Impulsive*	*Famdis*	*Famabus*	*Poorpeer*	*Paratt*	*Sklcmt*	*Delpeer*	R^2
Model 13: With delinquency (T2) & APSD impulsivity on strain											
Famdis	0.418**			0.061							0.114
Famabus	0.055			0.022							0.029
Poorpeer	0.180			0.070							0.021
Delinq	0.330**			0.069	0.054	0.747**	0.058				0.297
Goodness of Fit Measures: Chi-square = 3.59, df = 2, p = 0.16; CFI = 0.976; TLI = 0.830; RMSEA = 0.076.											

Note. * p< .10, ** p < .05.

Delinq = delinquency; Delpeer = delinquent peers; External = externalizing behaviors; Famabus = family abuse;

Famdis = family disruption; Impulsive = psychopathy impulsivity; Internal = internalizing behaviors;

Paratt = parental attachment; Poorpeer = peer strain; Sklcmt = school commitment.

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Table 17: (Continued)

	Exogenous Variable				*Endogenous Variable*						
Endogenous Variable	*Delinq (T1)*	*Internal*	*External*	*Impulsive*	*Famdis*	*Famabus*	*Poorpeer*	*Paratt*	*Sklcmt*	*Delpeer*	R^2
Model 14: With delinquency (T2), &YPI impulsivity-irresponsibility domain on strain											
Famdis	0.367**			0.022							0.124
Famabus	0.071			0.001							0.022
Poorpeer	-0.014			0.054**							0.073
Delinq	0.263**			0.029**	0.043	0.758**	0.034				0.325
Goodness of Fit Measures: Chi-square = 3.80, df = 2, p = 0.15; CFI = 0.977; TLI = 0.839; RMSEA = 0.081.											

Note. * p< .10, ** p < .05.

Delinq = delinquency; Delpeer = delinquent peers; External = externalizing behaviors; Famabus = family abuse;

Famdis = family disruption; Impulsive = psychopathy impulsivity; Internal = internalizing behaviors;

Paratt = parental attachment; Poorpeer = peer strain; Sklcmt = school commitment.

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Table 17: (Continued)

	Exogenous Variable				*Endogenous Variable*						
Endogenous Variable	*Delinq (T1)*	*Internal*	*External*	*Impulsive*	*Famdis*	*Famabus*	*Poorpeer*	*Paratt*	*Sklcmt*	*Delpeer*	R^2
Model 15: With delinquency (T2) & YPI impulsivity dimension on strain											
Famdis	0.441**			0.022							0.109
Famabus	0.079*			-0.002							0.022
Poorpeer	0.114			0.082*							0.041
Delinq	0.313**			0.051**	0.057	0.772**	0.048				0.307
Goodness of Fit Measures: Chi-square = 3.60, df = 2, p = 0.16; CFI = 0.977; TLI = 0.837; RMSEA = 0.076.											

Note. * p< .10, ** p < .05.

Delinq = delinquency; Delpeer = delinquent peers; External = externalizing behaviors; Famabus = family abuse;

Famdis = family disruption; Impulsive = psychopathy impulsivity; Internal = internalizing behaviors;

Paratt = parental attachment; Poorpeer = peer strain; Sklcmt = school commitment.

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Table 17: (Continued)

	Exogenous Variable				*Endogenous Variable*						
Endogenous Variable	*Delinq (T1)*	*Internal*	*External*	*Impulsive*	*Famdis*	*Famabus*	*Poorpeer*	*Paratt*	*Sklcmt*	*Delpeer*	R^2
Model 16: With delinquency (T2) & YPI irresponsibility dimension on strain											
Famdis	0.403**			0.053							0.124
Famabus	0.072			0.002							0.022
Poorpeer	-0.026			0.192**							0.142
Delinq	0.324**			0.057**	0.052	0.755**	0.026				0.308
Goodness of Fit Measures: Chi-square = 3.95, df = 2, p = 0.14; CFI = 0.977; TLI = 0.840; RMSEA = 0.084.											

Note. * p< .10, ** p < .05.

Delinq = delinquency; Delpeer = delinquent peers; External = externalizing behaviors; Famabus = family abuse;

Famdis = family disruption; Impulsive = psychopathy impulsivity; Internal = internalizing behaviors;

Paratt = parental attachment; Poorpeer = peer strain; Sklcmt = school commitment.

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Table 17: (Continued)

	Exogenous Variable				*Endogenous Variable*						
Endogenous Variable	*Delinq (T1)*	*Internal*	*External*	*Impulsive*	*Famdis*	*Famabus*	*Poorpeer*	*Paratt*	*Sklcmt*	*Delpeer*	R^2
Model 17: With delinquency (T2) & YPI thrill-seeking dimension on strain											
Famdis	0.386**			0.049							0.123
Famabus	0.066			0.005							0.023
Poorpeer	0.192			0.030							0.019
Delinq	0.298**			0.055**	0.042	0.760**	0.059				0.313
Goodness of Fit Measures: Chi-square = 3.62, df = 2, p = 0.16; CFI = 0.976; TLI = 0.834; RMSEA = 0.077.											

Note. * p< .10, ** p < .05.

Delinq = delinquency; Delpeer = delinquent peers; External = externalizing behaviors; Famabus = family abuse;

Famdis = family disruption; Impulsive = psychopathy impulsivity; Internal = internalizing behaviors;

Paratt = parental attachment; Poorpeer = peer strain; Sklcmt = school commitment.

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Table 17: (Continued)

	Exogenous Variable				*Endogenous Variable*						
Endogenous Variable	*Delinq (T1)*	*Internal*	*External*	*Impulsive*	*Famdis*	*Famabus*	*Poorpeer*	*Paratt*	*Sklcmt*	*Delpeer*	R^2
Model 18: With delinquency (T2), internalizing, & externalizing on strain, social control, & delinquent peers											
Famdis	0.478**	0.491**	-0.267								0.162
Famabus	0.073*	-0.044	0.064								0.027
Poorpeer	0.221	-0.090	0.396								0.029
Paratt	1.064**										0.186
Sklcmt	0.358**										0.054
Delpeer	0.475**										0.086
Delinq	0.219**	0.010	-0.045		-0.113	0.519**	-0.030	0.131**	0.204**	0.194**	0.462
Goodness of Fit Measures: Chi-square = 19.18, df = 9, p = 0.02; CFI = 0.963; TLI = 0.829; RMSEA = 0.091.											

Note. * p< .10, ** p < .05.

Delinq = delinquency; Delpeer = delinquent peers; External = externalizing behaviors; Famabus = family abuse;

Famdis = family disruption; Impulsive = psychopathy impulsivity; Internal = internalizing behaviors;

Paratt = parental attachment; Poorpeer = peer strain; Sklcmt = school commitment.

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Table 17: (Continued)

Endogenous Variable	*Exogenous Variable*				*Endogenous Variable*						
	Delinq										
Endogenous Variable	*(T1)*	*Internal*	*External*	*Impulsive*	*Famdis*	*Famabus*	*Poorpeer*	*Paratt*	*Sklcmt*	*Delpeer*	R^2
Model 19: With delinquency (T2), APSD impulsivity on strain, social control, & delinquent peers											
Famdis	0.458**			0.064							0.129
Famabus	0.059			0.016							0.025
Poorpeer	0.180			0.070							0.021
Paratt	1.064**										0.188
Sklcmt	0.357**										0.055
Delpeer	0.475**										0.084
Delinq	0.226**			-0.012	-0.120*	0.518**	-0.033	0.138**	0.199**	0.194**	0.459
Goodness of Fit Measures: Chi-square = 12.88, df = 7, p = 0.08; CFI = 0.978; TLI = 0.891; RMSEA = 0.078.											

Note. * p< .10, ** p < .05.

Delinq = delinquency; Delpeer = delinquent peers; External = externalizing behaviors; Famabus = family abuse;

Famdis = family disruption; Impulsive = psychopathy impulsivity; Internal = internalizing behaviors;

Paratt = parental attachment; Poorpeer = peer strain; Sklcmt = school commitment.

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Table 17: (Continued)

	Exogenous Variable				*Endogenous Variable*						
Endogenous Variable	*Delinq (T1)*	*Internal*	*External*	*Impulsive*	*Famdis*	*Famabus*	*Poorpeer*	*Paratt*	*Sklcmt*	*Delpeer*	R^2
Model 20: With delinquency (T2), YPI impulsivity-irresponsibility on strain, social control, & delinquent peers											
Famdis	0.396**			0.025**							0.144
Famabus	0.073			0.000							0.021
Poorpeer	-0.007			0.052**							0.069
Paratt	1.064**										0.186
Sklcmt	0.363**										0.057
Delpeer	0.475**										0.084
Delinq	0.181*			0.011	-0.115	0.531**	-0.037	0.128**	0.188**	0.177**	0.463
Goodness of Fit Measures: Chi-square = 10.72, df = 6, p = 0.10; CFI = 0.983; TLI = 0.900; RMSEA = 0.076.											

Note. * p< .10, ** p < .05.

Delinq = delinquency; Delpeer = delinquent peers; External = externalizing behaviors; Famabus = family abuse;

Famdis = family disruption; Impulsive = psychopathy impulsivity; Internal = internalizing behaviors;

Paratt = parental attachment; Poorpeer = peer strain; Sklcmt = school commitment.

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Table 17: (Continued)

	Exogenous Variable				*Endogenous Variable*						
Endogenous Variable	*Delinq (T1)*	*Internal*	*External*	*Impulsive*	*Famdis*	*Famabus*	*Poorpeer*	*Paratt*	*Sklcmt*	*Delpeer*	R^2
Model 21: With delinquency (T2), YPI impulsivity on strain, social control, & delinquent peers											
Famdis	0.482**			0.024							0.126
Famabus	0.079*			-0.002							0.021
Poorpeer	0.120			0.079*							0.039
Paratt	1.064**										0.187
Sklcmt	0.365**										0.057
Delpeer	0.475**										0.084
Delinq	0.208**			0.007	-0.112	0.520**	-0.032	0.133**	0.196**	0.185**	0.458
Goodness of Fit Measures: Chi-square = 10.85, df = 6, p = 0.09; CFI = 0.982; TLI = 0.893; RMSEA = 0.077.											

Note. * p< .10, ** p < .05.

Delinq = delinquency; Delpeer = delinquent peers; External = externalizing behaviors; Famabus = family abuse;

Famdis = family disruption; Impulsive = psychopathy impulsivity; Internal = internalizing behaviors;

Paratt = parental attachment; Poorpeer = peer strain; Sklcmt = school commitment.

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Table 17: (Continued)

	Exogenous Variable				*Endogenous Variable*						
Endogenous Variable	*Delinq (T1)*	*Internal*	*External*	*Impulsive*	*Famdis*	*Famabus*	*Poorpeer*	*Paratt*	*Sklcmt*	*Delpeer*	R^2
Model 22: With delinquency (T2), YPI irresponsibility on strain, social control, & delinquent peers											
Famdis	0.431**			0.061*							0.144
Famabus	0.074			0.000							0.021
Poorpeer	-0.022			0.190**							0.138
Paratt	1.064**										0.187
Sklcmt	0.358**										0.055
Delpeer	0.475**										0.084
Delinq	0.200**			0.021	-0.117	0.525**	-0.042	0.131**	0.192**	0.183**	0.461
Goodness of Fit Measures: Chi-square = 10.95, df = 6, p = 0.09; CFI = 0.982; TLI = 0.896; RMSEA = 0.078.											

Note. * p< .10, ** p < .05.

Delinq = delinquency; Delpeer = delinquent peers; External = externalizing behaviors; Famabus = family abuse;

Famdis = family disruption; Impulsive = psychopathy impulsivity; Internal = internalizing behaviors;

Paratt = parental attachment; Poorpeer = peer strain; Sklcmt = school commitment.

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Table 17: (Continued)

	Exogenous Variable				*Endogenous Variable*						
Endogenous Variable	*Delinq (T1)*	*Internal*	*External*	*Impulsive*	*Famdis*	*Famabus*	*Poorpeer*	*Paratt*	*Sklcmt*	*Delpeer*	R^2
Model 23: With delinquency (T2), YPI thrill-seeking on strain, social control, & delinquent peers											
Famdis	0.414**			0.056*							0.141
Famabus	0.066			0.005							0.022
Poorpeer	0.196			0.028							0.018
Paratt	1.064**										0.187
Sklcmt	0.361**										0.056
Delpeer	0.475**										0.084
Delinq	0.177**			0.030	-0.122*	0.524**	-0.029	0.129**	0.194**	0.180**	0.468
Goodness of Fit Measures: Chi-square = 11.67, df = 6, p = 0.07; CFI = 0.978; TLI = 0.873; RMSEA = 0.083.											

Note. * p< .10, ** p < .05.

Delinq = delinquency; Delpeer = delinquent peers; External = externalizing behaviors; Famabus = family abuse;

Famdis = family disruption; Impulsive = psychopathy impulsivity; Internal = internalizing behaviors;

Paratt = parental attachment; Poorpeer = peer strain; Sklcmt = school commitment.

An attempt was also made to complete path analyses for drug problems and drug use. Unfortunately, the data failed to satisfy goodness-of-fit standards in the model specifying that strain at Time 2 leading to drug problems/use at Time 2 (drug problems factor: chi-square = 4.98, df = 2, p = 0.081, CFI = 0.954, TLI = 0.769, RMSEA = 0.104; drug use level: chi-square = 5.25, df = 2, p = 0.071, CFI = 0.945, TLI = 0.754, RMSEA = 0.109).

The ad hoc path analyses suggested that "state dependence" may be a viable explanation for strain and criminality. Youths who reported higher delinquency at Time 1 were more likely to also report higher levels of both family disruption and delinquency at Time 2. Family disruption at Time 2, however, did not significantly lead to delinquency at Time 2. Implications of these finding are discussed in the next chapter.

Chapter 7

Discussion

General strain theory (Agnew, 1992) has received a respectable amount of attention over the past twenty years. In GST, Agnew has broadened the operationalization of strain, expanding the limited micro-social version of the Mertonian (Merton, 1968) or classic conceptualization of strain as the disjunction between monetary and/or status aspirations and expectations to include an assortment of strain-inducing stimuli and circumstances. The scope of strain has been expanded to include stress induced by perceptions of injustice, failures to achieve contemporaneous, as well as long-term, goals, negative life events, and noxious relationships with others. In addition, GST calls for the consideration of the magnitude, duration, frequency, chronicity, and subjectivity in the measurement of strain. The result is a general theory of crime that relies on social-psychological processes and is no longer bound by structural (Merton, 1968) and subcultural (Cloward & Ohlin, 1959, 1961; Cohen, 1955) conceptions of strain.

Since its conception, Agnew and others (e.g., Agnew, 1995, 1997, 1999, 2001; Agnew et al., 2002; Broidy & Agnew, 1997; Walsh, 2000) have continued to expand upon the generalizability of this theory. GST has been touted as a cogent explanation for gender, community, life-course, and personality differences in deviance, although the empirical support for such claims remains relatively weak or non-existent. With regard

to individual personality differences, in particular, Agnew, Brezina, Wright, and Cullen (2002) recently published a study incorporating personality traits in a GST framework for the etiology of crime. Specifically, certain features of personality (i.e., negative emotionality and low constraint) were determined to moderate the effect of strain on delinquency. This most recent theoretical elaboration of GST offers the opportunity to once again enhance the generalizability of the theory.

The present study attempted to replicate and expand Agnew et al.'s (2002) recent test of GST and personality characteristics. Using a prospective, two-year longitudinal sample of 137 justice-referred adolescents (mostly first-time misdemeanor offenders), this study examined the role of internalizing behaviors, externalizing behaviors, and psychopathy as maladaptive personality characteristics in conditioning the strain-delinquency and strain-drug use relationships. This study expanded on that of Agnew et al. by employing longitudinal, rather than cross-sectional, methodology. In addition, supplemental analyses examined the mediating role of strain between the personality-delinquency relationship.

The initial intention of this study was to test a structural equation model of Time 1 strain and personality on Time 2 delinquency and drug use. Social control and differential association measures were included as competing, yet correlated, measures in the models. The decision to correlate low social control and differential association with strain was based on Agnew's (1992, 2001) supposition that such measures are associated with and strengthen the criminogenic effects of strain. Six hypotheses were articulated for the SEM models for delinquency and drug use.

First, it was hypothesized that strain would be positively related to delinquency and drug use problems. Hypothesis #1 was not supported by the present study for Time 1 strain on Time 2 delinquency or drug use. Strain at Time 1 did not significantly lead to delinquency or drug use during Time 2. The remaining hypotheses (2-6) pertained to the nature of the relationship between strain and the personality measures. It was hypothesized that strain and personality characteristics at Time 1 would have reciprocal or feedback effects (Hypothesis #2). The two-wave data, however, could not properly address the issue of reciprocal effects, in part due to data limitations, but primarily due to model misspecification. Although positive significant bivariate correlations were observed between the strain measures and personality proxy measures (see Appendix B), the SEM models could not be properly estimated to examine the causal relationship between strain and personality (Hypothesis #4). Moreover, the SEM models experienced computational difficulties, despite efforts to recode the data into more manageable measures, thus preventing any empirically meaningful conclusions regarding the relationship between personality characteristics and strain, delinquency, or drug use.

This study proposed SEM models for strain and subsequent delinquency and strain and subsequent drug use problems. Due to the small sample size, the SEM models needed to be parsimonious, yet empirically meaningful. As Chapter 6 reported, the SEM models suffered from estimation difficulties as a consequence of the lack of parsimony in the predicted models. Time 1 latent variables for strain and social control experienced temporal multicollinearity issues, which in most cases prevented estimation. While the confirmatory factor analyses of Time 1 and Time 2 measures indicated good fit statistics for the models, the SEM results suggested that the latent measures for strain and social

control lacked appropriate cohesion. In most cases, one item loaded disproportionately higher than the others on the latent variables. It was possible these reductions in the loadings for Time 2 measures could have been due to program effects on the measures. However, ANOVA and Fisher's Exact Tests examining group differences between youths assigned to the AIW project and the control group did not reveal any significant differences in the strain, social control, differential association, personality, delinquency, or drug use problems (including a categorical measure of drug use level) measures. These findings suggested that the model needed to be revised and the latent variables needed to be partialled out into separate indicators. Consequently, supplemental analyses of the personality and strain models were conducted using path analysis.

Supplemental path analyses were conducted predicting that delinquency and drug use at Time 2 would be directly predicted by three indexes for strain: family disruption, family abuse/neglect, and poor peer relationships. The results indicated that none of the measures of strain at Time 1 predicted Time 2 delinquency or drug use problems. These findings supported the limited findings from the SEM analyses.

According to GST (Agnew, 1992), variation in the propensity to commit crime and other deviance (e.g., substance use) is mainly a function of individual differences in the level of frustration or strain and the ability to cope with such strain. This suggests that "population heterogeneity"—differences in individual background characteristics (i.e., strain) (Nagin & Farrington, 1992; Nagin & Paternoster, 1991)—provides the etiological foundation for explaining differences in crime. An alternative explanation for crime has been suggested by the "state dependence" approach (Nagin & Farrington, 1992; Nagin & Paternoster, 1991), which suggests that differences that emerge as a direct

consequence of committing the first criminal act/event (i.e., lowering the perceived costs and increasing the perceived rewards of deviance) explain variations in crime. A few GST studies have reported findings that may support a state dependence explanation of GST (see Aseltine et al., 2000; Kim et al., 2003). These longitudinal studies found that delinquency was a significant predictor of strain, which was a predictor of later delinquency.

A conservative test of the state dependence explanation for GST and personality was conducted in ad hoc path analyses. The results indicated that delinquency at Time 1 was a significant predictor of strain at Time 2, and strain at Time 2 was a significant predictor of delinquency at Time 2. However, the same form of strain did not mediate the delinquency-delinquency relationship. Youths who had higher levels of delinquency at Time 1 were significantly more likely to report circumstances of family disruption at Time 2. Family disruption at Time 2 was not significantly related to delinquency at Time 2. Strain as measured by family abuse/neglect at Time 2, however, was significantly and positively related to delinquency at Time 2. At best, it seems prior delinquency exacerbates both subsequent strain and delinquency. These findings support those of other longitudinal GST studies (Aseltine et al., 2000; Kim et al., 2003).

In addition to serving as a means to examine the state dependency approach for GST, the ad hoc path analyses provided an opportunity to examine the moderating effects of personality on strain. None of the models examining the effects of interactions terms between strain and personality fit the data well. In this sample, the effects of strain did not appear to be moderated by levels of personality characteristics or psychopathic impulsivity indexes.

The ad hoc path analyses were also used to examine the mediating role of strain on the personality-delinquency relationship. As discussed in Chapter 3, a substantial portion of the literature has linked maladaptive personality characteristics to antisocial behavior, in particular impulsivity (Farrington, Loeber, & Kammen, 1990; Gerbing, Ahadi, & Patton, 1987; Krueger et al., 1994; Luengo, et al., 1994; Royce & Wiehe, 1988; White et al., 1994). Further, studies have indicated that personality characteristics may be somewhat inherent and stable over the life-course (for a review see Roberts & DelVecchio, 2000). Therefore, personality traits were conceived of as predictors of strain and direct and indirect predictors of delinquency. This conception is consistent with Agnew's (1992, 2001) claim that conditioning factors (e.g., personality traits/temperament) may lead directly to strain as well as moderate the strain-delinquency relationship.

The ad hoc results found that internalizing and impulsivity (measured as dimensions of psychopathy in the YPI) were significant predictors of strain. Youths who reported higher levels of internalizing behaviors at Time 1 were significantly more likely to experience higher levels of family disruption at Time 2 than those with less internalizing behaviors. Youths who reported higher levels of impulsivity-irresponsibility and irresponsibility on the YPI assessment were significantly more likely to experience higher levels of poor peer relations than those with lower psychopathic features.

When the direct effects of the personality characteristics were tested on delinquency at Time 2, internalizing and externalizing behaviors were not significant predictors of delinquency. All of the impulsivity psychopathy indexes were significant

positive predictors of subsequent delinquency. After strain measures were added to the personality-delinquency models, the relationships between personality characteristics and delinquency remained much the same. When social control and differential association measures were added to the models, the effects of personality on delinquency were reduced to non-significance. Path analyses revealed that strain did not serve as a significant mediator for the personality-delinquency relationship.

Although not examined in this study, it seems likely the indirect effects of personality on delinquency were mediated by the social control and differential association measures. Such findings may provide further validation for self-control theory (Gottfredson & Hirschi, 1990), given the impulsivity slant of the personality measures in this study. Future studies of this sample should examine the role of low social control in the effect of low self-control on delinquency.

This study also examined path analyses mimicking the delinquency analyses for drug problems and drug use. The drug problems and drug use path models did not fit the data well. Therefore, among these youths, strain does not significantly predict drug use or drug problems.

Overall, this study found little support for a general strain theory explanation of delinquency. A latent construct of strain did not predict delinquency. Moreover, observed measures of strain as negative relationships with peers and family disruption (e.g., fighting/disputes, criticizing) did not predict delinquency. The only strain measure that significantly led to delinquency was family abuse/neglect. Arguably, a case can be made that this measure is also a measure of low social control. Since the data examined

in this study did not include measures of negative affect, there was no way to know whether or not family abuse/neglect motivated delinquency as GST would hypothesize.

This study does suggest that delinquency exacerbates strain. Given the nature of the sample, however, the relationship between self-reported delinquency and subsequent strain may be spurious. Since the youths in this study were all justice-referred, mainly first-time offenders, one can not rule out the possibility that strain arose from the "official" attention the youth received as a result of being arrested/charged by the State Attorney's Office and referred to attend the Juvenile Arbitration diversion program. It is conceivable that the disruption caused by the youth's official act of deviance increased strain between the youth and his/her family. Unfortunately, these data lack measures from the youths and their parents that might capture such effects.

So what does this mean for the future of GST? Conceptually, the case that made in this study and by Agnew et al. (2002) that certain personality traits should condition the effects of strain on delinquency seems valid. Empirically, this hypothesis remained to be fully examined. Future studies are needed to examine the role of personality on strain.

Limitations

The models presented in this manuscript presented a number of limitations. The most crucial limitation was the sample size used in this study. If one follows the rule of thumb that there should be at least 10 cases per variable to maintain predictive power in the analyses, it becomes evident that a sample size of 137 adolescents requires the use of very parsimonious statistical models. This limitation was further compounded by desire to examine two-wave longitudinal effects, which essentially doubles the number of variables included in the model.

In an effort to overcome the sample size limitation, structural equation models were used. By creating latent measures, rather than strictly observed measures, degrees of freedom are preserved and more observed measures can be included in the model. Further, exploratory and confirmatory factor analyses were used as a guide to create observed measures using multiple items.

Latent measures and factor analyses provide a sound solution to measurement reduction, assuming the measures are conceptually cohesive. In this study, the factor analyses provided factors that contained moderately strong loadings for most of the included items. When the SEM analyses were conducted combining the three strain measures (family disruption, family abuse/neglect, and poor peer relations) into one overall latent variable of strain for Time 1 and Time 2, however, the results suggested relatively weak conceptual cohesion among observed items. The latent measures were dominated, especially at Time 2, by the family disruption item.

Another limitation of the SEM models was that the model was too complex to be estimated. This was also a direct function of the sample size. The moderating effects of personality on strain in the SEM models could not be successfully run due to the complexity of the models. When simple models were examined, they performed better than the more complex models. Yet, estimation problems remained.

This study was also limited by the fact that it was restricted to examining measures across two periods of time. Kessler and Greenberg (1981) have emphasized that two waves of data may not be sufficient to provide information about how two or more variables interrelate over time. Therefore, any findings discussed in this study, as well as those in the GST literature using limited longitudinal and/or cross-sectional

analyses, should be examined critically and applied conservatively. In particular, caution should be used when interpreting the ad hoc path analyses of the Time 2 strain effects on Time 2 delinquency. Although Agnew (1992) argues that strain has a rather immediate effect on delinquency, cross-sectional applications of strain should be interpreted with prudence. Without the certainty of temporal order, where X occurs before Y, causality is questionable. Future studies of GST should examine the effects of personality characteristics on strain and delinquency utilizing longitudinal data with three or more waves of data.

Even though GST asserts that the effects of strain on delinquency will be rather contemporaneous (Agnew, 1992, 2001), this does not mean that longitudinal studies are not necessary to support the empirical validity of the theory. Without a temporal order, such that strain occurs *before* delinquency, studies of GST can not rule out the possibility that (a) delinquency causes strain and (b) the measures may simply be correlated, but not causal. While a few studies of GST have examined longitudinal data with three or more waves of data and found support for the assumption of GST that strain leads to crime/delinquency (Aseltine et al., 2000; Hoffman & Cerbone, 1999; Hoffmann & Miller, 1998; Kim et al., 2003), most studies have examined either cross-sectional of two-wave longitudinal data. In the majority, if not almost all, of the longitudinal studies of GST the lag between waves is approximately 12 months. With such a large time span between data points, an argument can be made that the contemporaneous effects of strain on delinquency may not be detectable. Therefore, future research on GST should attempt to collect multiple-wave longitudinal data that utilizes a smaller temporal lag between data collection points.

Finally, this study lacked appropriate control variable (e.g., age, gender, SES, parental education, etc.) in the models. Controlling for the effects of certain sociodemographic measures, such as age and gender, may provide strikingly different results when examining delinquency and impulsivity. It is possible that such differences may have emerged if the path models had examined the influence of key covariates (e.g., gender, race/ethnicity, age) in MIMIC analyses (see Muthén & Muthén, 2004), especially gender given that almost half of the sample was female. However, MIMIC analyses were not examined in this study. Future studies of GST and personality should control for sociodemographic characteristics that are theoretically and empirically associated with the key endogenous and exogenous measures.

Implications

Methodologically, this study emphasizes the importance of sample size when conducting research. Complex SEM models require the estimation of a large number of parameters in the structural and measurement models. Small samples can make estimating fairly complex models very difficult, if not impossible, as was the case in the SEM models in this study. It is possible that the estimation problems experienced with the models in this study could have been predicted given the small sample size. Since a stepwise approach, examining a simple model of the main predictors then adding the personality measures if significant strain effects were observed, was taken in the analysis of the SEM models, however, the simple models should not have experienced estimation problems based solely on sample size.

However, statistical packages that are sensitive to scale differences and large variances (e.g., greater than 10) (see Muthén & Muthén, 2004) may experience

difficulties estimating even simpler SEM models that include measures with scaling issues. In this study, the analyses began with factor scores of the strain, social control, and differential association measures. These factor scores were very precise, measuring constructs down to 5 decimal places. When the variables were respecified as additive summary scores, estimate was improved. Therefore, proper specification of not only the model but also the variables is essential.

In addition to methodological implications, there are theoretical implications for this study. First, the data examined in this sample suggested that internalizing behaviors, externalizing behaviors, and behavioral dimensions of psychopathy were poor moderators for the strain-delinquency relationships. While interaction terms of the moderating path analyses were significant, the goodness-of-fit indexes indicated that the moderating models did not fit the data well.

Agnew et al. (2002) examined the moderating effects of a composite scale of negative emotionality and low constraint on a composite measure of strain and found significant effects for the interaction term on delinquency. Although the interaction term was significant, the addition of this variable to the model did not reduce the coefficient sizes or effects of either strain (without interaction: b = 0.16, B = 0.11; with interaction: b = 0.16, B = *not reported*) or negative emotionality/low constraint (without interaction: b = 0.07, B = 0.05; with interaction: b = 0.07, B = *not reported*). Moreover, the interaction regression model increased the explained variance of the model for delinquency by only 1%. Agnew and colleagues state that "the data reveal that the key personality traits of negative emotionality/low constraint condition the effect of strain on delinquency, such that strain is much more likely to lead to delinquency among those high in negative

emotionality/low constraint." (p. 63). Yet, they provide (a) no discussion of the significance of the slope differences for the simple regression of the interaction term (see Aiken & West, 1991) and (b) no standard errors for the interaction and non-interaction models. This causes one to question the above conclusion drawn by Agnew and his colleagues. Clearly, additional research is needed on the relationship between personality characteristics and strain.

The present study expanded on the Agnew et al. (2002) study by examining the effects of personality on subsequent strain, and the mediating role of strain between personality and delinquency. Maladaptive personality at Time 1 has significant effects on certain measures of strain at Time 2. Yet, strain was not found to significantly mediate the relationship between personality and delinquency. While personality characteristics may play an important role in conditioning the strain-delinquency relationship, the data examined here do not support such claims. The findings in this study stress the need for future research regarding the influence of personality on strain and negative affect.

Perhaps the lack of support for the hypotheses in this study, and the *weak* support provided by Agnew et al., is due to the operationalization of the strain measures. In this study and in the Agnew et al. study, strain was defined strictly as *negative relationships* between parents, family, peers, school, and others. The question arises: do these operands of strain validly reflect the conceptualization of strain?

In GST, strain is intended to reflect the *motivational* aspects of frustration that typically result from negative relations with others. Yet, the SEM analyses presented here suggested that for these particular data and questionnaire items, there existed much

overlap between the strain and social control measures. The measures used in this study were based on those used by Agnew et al. (2002) in their study of GST and personality. In both cases, an argument can be made that the strain measures are actually measures of social control. Certainly, family disruption may also be labeled low parental commitment; family abuse may also be called low parental attachment; and poor peer relations or peer strain may be referred to as low peer attachment. Neither this study nor Agnew et al's (2002) possessed measures of strain as (a) the failure to achieve positive goals and/or (b) the removal of positive stimuli. Moreover, both studies lacked measures of negative affect. As discussed in Chapter 2, a model of a critical test of GST, which may definitively permit the researcher to claim that the measures of strain and social control represent distinct predictors of delinquency, must include intervening mechanisms. If the strain and social control measures lead to delinquency through negative affect, GST is supported and the issue of conceptual overlap becomes mute. Future studies should make better efforts to capture all three types of strain and negative affect when including social control measures in models.

Finally, the findings presented here have significant policy implications for justice-involved youth. The ad hoc path analyses illustrated that delinquency begets delinquency and exacerbates other negative conditions. Psychopathic behavioral characteristics significantly predict future delinquency as well, and influence certain other family and peer risk factors. Therefore, it is essential that early intervention programs for youths involved in the juvenile justice system focus on effective strategies to improve conditions for youths and their families in a holistic fashion (Arcia, Keyes, Gallagher & Herrick, 1993; Sirles, 1990; Tolan, Ryan & Jaffe, 1998).

In particular, interventions that focus on family empowerment and behavioral improvements in parental interactions with their children have demonstrated substantial success in preventing recidivism and future antisocial behavior. In a meta-analysis of family-based intervention programs, Farrington and Welsh (2003) reported that family-based intervention programs effectively reduced delinquency and antisocial behavior by 34 to 50 percent, with long-term effects remaining for many family interventions. In particular, they found the most effective interventions were those that employed techniques to change the behavior of the parent toward the child. Along these lines, Multisystemic Treatment (MST) (Henggeler, Schoenwald, Borduin, Rowland, & Cunningham, 1998), a family-based and home-based clinical approach to antisocial behavior prevention, has been shown to be effective in treating antisocial youths, including those with emotional/psychological functioning problems (for a recent review see Curtis, Ronan, & Borduin, 2004). In addition, the Family Empowerment Intervention (Dembo & Schmeidler, 2002) has shown effective prevention of delinquency, which is also more cost-effective than clinical interventions. As this study intimates, family-based interventions for first-time offenders especially are need to reduce recidivism and potential negative family consequences (e.g., increased family disruption and abuse/neglect) of delinquent behavior.

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Appendices

Appendix A: Varimax Rotated Exploratory Factor Analyses Results for Family, Peer, and School Items during Twelve Months Prior to Baseline Interview (N = 137)

Family Items	*Factor 1*	*Factor 2*	*Factor 3*
1. Repeatedly insulted/criticized	**.72**	.34	.37
2. Other member insulted criticized	**.70**	-.18	.54
3. Other member threw object, punched walls	.02	.20	**.68**
4. Hit hard (physically abused)	-.01	-.03	**.98**
5. Couldn't get along/fighting with family member	.10	**.50**	.26
6. Ignored or given "silent treatment"	**.79**	.39	.18
7. Other member ignored or "silent treatment"	.11	.33	**.63**
8. Family contacted about domestic disputes	**.31**	.27	.18
9. Parents disagree on limits/punishment	.29	**.67**	.15
10. Home felt like safe place [reversed]	**.52**	.32	-.24
11. Family works out problems non-violently [reversed]	**.61**	.28	.05
12. Hard to talk to/confide in parents	.21	**.76**	.13
13. Ran away from home	**.46**	.42	-.17
14. Parents don't listen to you	.26	**.78**	.17
15. Parents unavailable to you	.44	**.61**	-.09
16. Parents covered/made excuses for you	.21	**.37**	.09
17. Rules not consistently enforced	.08	**.62**	-.04
18. Felt loved by someone in home [reversed]	**.76**	.22	-.43
19. Given praise for good behavior [reversed]	.41	**.53**	-.09
20. Parents really know what/where you go/do [reversed]	.16	**.37**	-.40
Eigenvalue =	3.81	4.12	2.86
Variance =	19.1	20.6	14.3

Promax factor correlations: 1 with 2 = .525; 1 with 3 = -.007; 2 with 3 = .017

Chi-square = 38.86, df = 29, p = 0.10; RMSEA = 0.050

Appendix A: (Continued)

Peer Items	*Factor 1*	*Factor 2*
1. Difficulty making/keeping friends	**.90**	.03
2. Had no friends	**.58**	.05
3. Preferred to be alone	**.57**	.33
4. Felt friends were not loyal	**.74**	.17
5. Hard to talk to friends	**.82**	.27
6. Dissatisfied with quality of friendships	**.80**	.18
7. Consistently teased/bullied	**.55**	-.06
8. Hung out with people who use drugs/drink	.06	**.93**
9. Hung out with people who commit illegal acts	.00	**.78**
10. Hung out with gang members	.19	**.76**
11. Hung out with people who skipped/dropped school	.17	**.66**
Eigenvalue =	3.68	2.71
Variance =	33.4	24.6
Promax factor correlations: 1 with 2 = .296		
Chi-square = 22.08, df = 17, p = 0.18; RMSEA = 0.047		

Appendix A: (Continued)

School Items	*Factor 1*	*Factor 2*
1. Had failing grades/difficulty learning	**.74**	.16
2. Skipped class/arrived late consistently	**.56**	.19
3. Went to school prepared [reversed]	.36	**.62**
4. Felt you belonged in school [reversed]	.03	**.97**
5. Were suspended, expelled, had detention	**.44**	.08
6. Had little or no interest in school	**.86**	.34
7. Felt safe at school [reversed]	.24	**.49**
Eigenvalue =	1.98	1.73
Variance =	28.3	24.8
Promax factor correlations: 1 with 2 = .461		
Chi-square = 4.02, df = 6, p = 0.67; RMSEA = 0.000		

Appendix B: Zero-Order Correlation Matrix for Final Measures

Variable	*1.*	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*	*8.*	*9.*	*10.*	*11.*
1. Family Disruption T1											
2. Family Abuse T1	.566**										
3. Poor Peer Relations T1	.328**	.131									
4. Low Parent Attachment T1	.860**	.582**	.315**								
5. Low School Attachment T1	-.003	-.036	-.192*	.014							
6. Low School Commitment T1	.060	.104	-.111	.077	.729**						
7. Delinquent Peers T1	.514**	.319**	.369**	.534**	-.133	-.056					
8. Family Disruption T2	.487**	.326**	.222**	.371**	.031	.124	.317**				
9. Family Abuse T2	.038	.186*	-.128	.047	.042	.120	.073	.171*			
10. Poor Peer Relations T2	.275**	.159	.455**	.313**	-.156	-.132	.333**	.178*	-.024		
11. Low Parent Attachment T2	.434**	.346**	.251**	.408**	-.087	.058	.374**	.536**	.309**	.421**	
12. Low School Attachment T2	-.018	-.059	-.050	-.059	.161	.195*	-.107	.046	.066	-.068	.053
13. Low School Commitment T2	-.042	-.040	-.113	-.064	.148	.219*	-.120	.004	.100	-.111	.084
14. Delinquent Peers T2	.327**	.187*	.334**	.382**	-.205*	-.120	.550**	.277**	.076	.592**	.460**

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

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Appendix B: (Continued)

Variable	*1.*	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*	*8.*	*9.*	*10.*	*11.*
15. Delinquency (log) T1	.298**	.180*	.264**	.379**	-.074	.034	.433**	.340**	.165	.151	.409**
16. Delinquency (log) T2	.125	.160	.135	.147	-.023	.094	.347**	.242**	.349**	.204*	.414**
17. Drug Problems T1	.318**	.188*	.067	.364**	-.100	-.025	.447**	.157	.133	.183*	.309**
18. Drug Problems T2	.283**	.224**	.076	.312**	-.011	.013	.394**	.303**	.190*	.254**	.414**
19. Externalizing T1	.534**	.326**	.294**	.500**	-.032	.043	.534**	.391**	.099	.304**	.496**
20. Internalizing T1	.398**	.313**	.463**	.441**	-.184*	-.130	.292**	.284**	-.063	.367**	.381**
21. Externalizing T2	.257**	.201*	.289**	.276**	-.109	-.033	.374**	.272**	.190*	.378**	.527**
22. Internalizing T2	.222**	.112	.335**	.238**	-.134	-.053	.275**	.275**	.127	.518**	.559**
23. APSD Impulsivity T1	.345**	.192*	.206*	.370**	.038	.107	.466**	.187*	.143	.160	.401**
24. YPI Impulsivity-Irresponsibility T1	.470**	.291**	.242**	.472**	.012	.140	.544**	.300**	.082	.300**	.440**
25. YPI Impulsivity T1	.378**	.204*	.204*	.368**	.027	.117	.412**	.234**	.017	.230**	.348**
26. YPI Irresponsibility T1	.323**	.209*	.272**	.307**	.007	.115	.457**	.262**	.093	.388**	.379**
27. YPI Thrill-Seeking T1	.458**	.306**	.127	.488**	-.003	.115	.478**	.248**	.093	.133	.361**

Note. * $p < .05$. ** $p < .01$.

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Appendix B: (Continued)

Variable	*12.*	*13.*	*14.*	*15.*	*16.*	*17.*	*18.*	*19.*	*20.*	*21.*	*22.*
1. Family Disruption T1											
2. Family Abuse T1											
3. Poor Peer Relations T1											
4. Low Parent Attachment T1											
5. Low School Attachment T1											
6. Low School Commitment T1											
7. Delinquent Peers T1											
8. Family Disruption T2											
9. Family Abuse T2											
10. Poor Peer Relations T2											
11. Low Parent Attachment T2											
12. Low School Attachment T2											
13. Low School Commitment T2	.919**										
14. Delinquent Peers T2	-.122	-.117									

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

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Appendix B: (Continued)

Variable	*12.*	*13.*	*14.*	*15.*	*16.*	*17.*	*18.*	*19.*	*20.*	*21.*	*22.*
15. Delinquency (log) T1	.046	.010	.291**								
16. Delinquency (log) T2	-.111	-.144	.405**	.403**							
17. Drug Problems T1	-.081	-.085	.338**	.271**	.226**						
18. Drug Problems T2	.037	-.011	.383**	.296**	.411**	.486**					
19. Externalizing T1	-.007	-.075	.428**	.456**	.332**	.325**	.294**				
20. Internalizing T1	-.060	-.074	.400**	.205*	.009	.273**	.147	.453**			
21. Externalizing T2	-.162	-.209*	.494**	.419**	.621**	.325**	.481**	.545**	.256**		
22. Internalizing T2	-.099	-.124	.476**	.134	.296**	.288**	.356**	.301**	.457**	.550**	
23. APSD Impulsivity T1	-.101	-.097	.383**	.422**	.312**	.367**	.250**	.546**	.308**	.445**	.220**
24. YPI Impulsivity-Irresponsibility T1	.023	-.074	.404**	.483**	.404**	.397**	.338**	.646**	.323**	.498**	.307**
25. YPI Impulsivity T1	.046	-.051	.352**	.388**	.314**	.260**	.229**	.540**	.258**	.396**	.223**
26. YPI Irresponsibility T1	-.006	-.097	.373**	.362**	.332**	.431**	.372**	.476**	.273**	.425**	.357**
27. YPI Thrill-Seeking T1	.016	-.037	.278**	.442**	.352**	.290**	.241**	.580**	.270**	.412**	.186*

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

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Appendix B: (Continued)

Variable	*23.*	*24.*	*25.*	*26.*	*27.*
1. Family Disruption T1					
2. Family Abuse T1					
3. Poor Peer Relations T1					
4. Low Parent Attachment T1					
5. Low School Attachment T1					
6. Low School Commitment T1					
7. Delinquent Peers T1					
8. Family Disruption T2					
9. Family Abuse T2					
10. Poor Peer Relations T2					
11. Low Parent Attachment T2					
12. Low School Attachment T2					
13. Low School Commitment T2					
14. Delinquent Peers T2					

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

(Continued on the next page)

Variable	*23.*	*24.*	*25.*	*26.*	*27.*
15. Delinquency (log) T1					
16. Delinquency (log) T2					
17. Drug Problems T1					
18. Drug Problems T2					
19. Externalizing T1					
20. Internalizing T1					
21. Externalizing T2					
22. Internalizing T2					
23. APSD Impulsivity T1					
24. YPI Impulsivity-Irresponsibility T1	.668**				
25. YPI Impulsivity T1	.598**	.849**			
26. YPI Irresponsibility T1	.413**	.784**	.494**		
27. YPI Thrill-Seeking T1	.634**	.840**	.599**	.466**	

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

About the Author

Jennifer Wareham received both a Bachelor of Arts Degree and a Master's Degree in Criminology from the University of South Florida in 1998 and 2001, respectively. She entered the Doctoral Program in Criminology at the University of South Florida in 2001, and earned a Graduate Certificate in Geographic Information Systems in 2003.

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