

2007

The conditional influence of criminological constructs on juvenile delinquency: An examination of the moderating effects of self-control

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The Conditional Influence of Criminological Constructs on Juvenile Delinquency:
An Examination of the Moderating Effects of Self-Control

by

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A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Arts
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Date of Approval:
April 4, 2007

Keywords: social learning, control, deterrence, strain, general theory of crime, interactive effects

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Acknowledgements

I wish to thank several people for their invaluable assistance throughout my short time here at USF. First and foremost, I wish to thank my committee members. Dr. Shayne Jones, my major professor, I admire and respect you beyond what words could describe. As my mentor, you have helped me grow in many ways. Your expansive knowledge of criminology, psychology, and, most notably, life has forced me to see from perspectives other than my own. For that, I am forever indebted. Without your guidance and generous patience, this thesis would not have been completed. You accept nothing but the best and while my creativity is often lacking, I hope I have provided that. On a less serious note, I will be contacting you on April 2, 2012 as this is one wager I will not lose. Additionally, Drs. Christine Sellers and John Cochran, you both have graciously provided me with an endless amount of knowledge. The confidence and intelligence that you exude can be quite intimidating, but ultimately has been a great resource for me these past two years. Thank you both for your time and attention. Lastly, my family has always been there to push me forward. Mom, Daddy, Melanie and William, I appreciate the continuous support you all have provided me up to this point. God knows I've had my moments and so I am very grateful for everything that you all have done for me.

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ABSTRACT

Self-control and various elements comprising this construct have received much credit over the years as it has been able to account for a large amount of variance in delinquency rates. Some research has suggested that individual difference factors (e.g., self-control) can overwhelm external factors (e.g., neighborhoods; see Loeber & Wikström, 2000). Others have found that social influences (e.g., employment; see Wright, et al, 2001) have more pronounced effects for those most at-risk. Because of the equivocal nature of the empirical findings, this study seeks to replicate and extend previous efforts. Specifically, the influence of constructs derived from social learning, control, deterrence, and strain are examined to see if any vary in their influence on adolescent offending as a function of self-control. Results indicate that all of these theoretical constructs (with the exception of paternal attachment) played a more important role among those who evinced the highest levels of self-control. Implications for criminological theory and criminal justice policy are discussed.

Chapter One

Introduction

While criminological theories have been heavily influenced by sociology, other disciplines, most notably psychology, have made significant impacts. Regardless of whether a criminological theory uses group phenomena or individual characteristics to account for crime, all criminological theories are attempting to explain why people commit criminal or deviant acts. One of the more recent criminological theories, the general theory of crime (GTC; Gottfredson & Hirschi, 1990), posits that the concept of self-control is the single best predictor of crime. Self-control refers to one's ability to consider the long-term negative consequences of antisocial behavior (Hirschi, 2004). Considerable attention to this theory has resulted in impressive empirical support for its direct effects on delinquency, yet various external factors (e.g., peers) still appear to have significant additive effects (see Pratt and Cullen for meta-analysis, 2000).

In contrast to relying upon singular perspectives, such as that employed in the GTC, others suggest incorporating multiple theories simultaneously (Messner, Krohn, and Liska, 1989). This approach has led to more recent integrated theories that include self-control. Specifically, researchers are investigating the extent to which self-control (or similar constructs, such as impulsivity) moderates the relationship between various external factors and delinquency. While it is only recently that criminologists have begun to examine how criminal behavior is the result of this interaction (Lynam, Wikström, Caspi, Moffitt, Loeber, & Novak, 2000; Wikström & Loeber, 2000; Wright, Caspi, Moffitt, & Silva, 2001; Wikström & Sampson, 2003), disciplines outside of criminology

have long recognized the interaction between the person and the environment (see Lewin, 1935; Magnusson, 1988). The few studies examining the moderating effects of self-control have found divergent results. Some studies have found that external factors, such as neighborhood context, will be more influential for those with higher levels of self-control (Wikström & Loeber, 2000). In other words, some have suggested that external influences are simply inconsequential for those with low self-control (see also Gottfredson & Hirschi, 1990); therefore, those with *some* level of self-control will be more influenced by external factors. In contrast, others have found that social influences (e.g., delinquent peers) have pronounced effects for those most at-risk. For instance, Wright and colleagues (2001) propose that individuals with low self-control have an elevated tendency towards deviant behavior and thus negative social influences serve only to exacerbate that tendency. In comparison, those with high self-control are able to resist the temptation of these negative social influences.

Overall, classic criminological theories (e.g., social learning theory, general strain theory) have attained impressive empirical support (with the exception of deterrence theory, see Cullen, Wright, and Blevins, 2006 for review of the literature). Yet, some have argued that taking the most empirically supported components of classic theories and integrating them may yield theories with greater explanatory power (see Messner et al., 1989 for overview). Some of the most recent research in this area has focused on the interactive nature of criminological constructs instead of simply viewing the theories in an additive fashion (e.g., Evans, Cullen, Burton, Dunaway, & Benson, 1997; Agnew, 2006; Pratt, Cullen, Blevins, Daigle, & Madensen, 2006). Specifically, it has been

suggested that certain individual characteristics could potentially moderate the effects of factors such as those found in strain, control, and social learning (see Agnew, 2006).

The proposed interactive relationships could have dramatic implications for criminological theory and just as importantly, the criminal justice system. In light of the recent research that has suggested that some individuals may not be as influenced as others by factors outside themselves, current criminological theories may need to reevaluate the predictive power of their constructs. More practically, changes to the criminal justice system may need to be implemented to accommodate individual differences in offenders. As such, policies targeted towards those offenders who lack self-control may need to focus efforts on social factors that may not be as influential for those offenders exhibiting higher levels of self-control and vice-versa. Yet, as alluded to above, it remains unclear (1) how robust the interactions are and (2) in what direction they exert their effects. The purpose of this study is to provide further empirical guidance on both of these issues.

The current analysis uses a sample of middle and high school students from Largo, Florida in an effort to replicate and extend previous findings that have investigated the interaction between self-control and several criminological constructs. Specifically, constructs derived from social learning, strain, deterrence, and control are examined to determine how, if at all, each varies in its influence on delinquency as a function of self-control. Few studies to date have used a single sample to simultaneously examine interactions between such a full array of theoretical constructs (see Wright et al., 2001 for example). This is important in the sense that the discrepancies that exist may be due to methodological factors (e.g., different measurement of self-control, sample

idiosyncrasies). Thus, this study can supplement a relatively small literature that has investigated the interactive effects described above and provide direction for future research.

Chapter Two

Literature Review

Criminologists have long sought to find the most parsimonious way to explain a broad range of criminal behavior. This has led to the development of numerous theories with distinct and often incompatible assumptions to explain this type of behavior. These theoretical explanations range from solely sociological factors to individual characteristics, to the more recent interactive effects between the two. Before describing these potential interactive relationships, several theories will be discussed to show the important contribution each has made on its own.

Social Learning Theory

Akers' social learning theory is one of the best known criminological theories and has received substantial support over the years (Akers, Krohn, Lanza-Kaduce, & Radosevich, 1979; Akers & Cochran, 1985; Akers, Greca, Cochran, & Sellers, 1989; Winfree, Backstrom, & Mays, 1994; Lee, Akers, & Borg, 2004). Burgess and Akers (1966; Akers, 1973) reformulated Sutherland's theory of differential association, renaming theirs social learning theory, in an attempt to explain criminal behavior by focusing on the concepts of differential associations, definitions, differential reinforcements, and imitation. The balance of these factors will determine whether behavior is conforming or nonconforming (Akers, 1998).

Perhaps the most important component of social learning theory, differential associations refer to interactions with different groups, focusing specifically on how antisocial individuals associate with one another more so than with prosocial individuals

(Akers, 1985). Differential associations occur first and provide the context for the formulation of definitions, exposure to reinforcements, and models to imitate (Akers et al., 1979). The rewards and/or punishments of established associations will influence the ability to create new associations and maintain old ones (Akers, 1998). The groups with whom one differentially associates include, but are not limited to, peers, family, neighbors, church, schools, and teachers (Akers, 1985). The frequency, duration, priority, and intensity of each association determine its strength (Akers, 1998). That is, those associations that happen most often, last the longest, begin earlier, and involve those with whom one is closest will have the strongest influence on behavior. It has been suggested that the number of delinquent friends with whom one associates is the best predictor of delinquency (Akers et al., 1979; Warr, 2002; Akers & Jensen, 2006). Additionally, Warr (2002) concluded, based on evidence from empirical studies examining peers and delinquency, every study to date has found a significant relationship between the two.

As mentioned above, differential associations provide the context for imitation. That is, the actions of those with whom one differentially associates are often mimicked. Akers (2001) posits that behavior is shaped by principles of modeling similar to those discussed by Bandura (1969). However, while imitation is potentially important for explaining the initiation or onset of delinquent behavior, its significance in maintaining or discontinuing a behavior is much less (Akers et al., 1979; Akers & Jensen, 2006). Akers and colleagues (1979) found that the imitation variables explained the least amount of variance in adolescent drinking and drug use. Additionally, Krohn and colleagues (1985) found no explanatory value of imitation variables with longitudinal data. Given the less

influential role of imitation, several recent studies have not even included it in tests of social learning theory (see Akers & Jensen, 2006 for overview).

In contrast to imitation, the concept of definitions has found strong empirical support. Definitions consist of norms, attitudes, or orientations that are learned through imitation and reinforced through rewards and punishments by those with whom one differentially associates (Akers et al., 1979). Exposure to and reinforcement by others' shared definitions generally lead one to accept those definitions as their own (Akers, 1998). Behavior is viewed as right or wrong, good or bad, and reasonable or unreasonable based on these norms, attitudes, or orientations (Akers, 1998). Definitions such as moral, religious, or conventional values can lead one to conform to the law and/or oppose delinquent acts. These negative definitions of crime decrease the likelihood of delinquency, while positive or neutral definitions toward crime increase the likelihood of delinquent behavior (Akers & Jensen, 2006).

As previously discussed, it is through rewards and punishments that definitions are fully formed and acceptable behavior is determined (Akers, 1998). In other words, the consequences of current behavior (either by oneself or by witnessing another's) mold future behavior. Unlike Sutherland's theory of differential association, Akers' social learning theory applies Skinner's (1953) idea of operant conditioning (herein referred to as reinforcements) to criminal behavior. These reinforcements might be positive, that is the consequence of the behavior is rewarding or pleasurable, or the reinforcements could be negative, or in other words avoids punishment or pain (Akers, 1985). Both negative and positive reinforcements help maintain or increase a behavior (Akers et al., 1979). On the other hand, behavior can be reduced through punishments, which can be either

negative (e.g. removal of pleasure) or positive (e.g. presence of pain; Akers, 1998). Although the most important reinforcements are social (e.g. peers), nonsocial reinforcements such as the intrinsic pleasures derived from drugs and alcohol and can also contribute to delinquent behavior if socially reinforced as pleasurable (Brezina & Piquero, 2003). Ultimately, it is the balance of these rewards and punishments that serve to strengthen or extinguish behavior.

Several comparative tests have supported social learning over other prominent theories (Akers & Cochran, 1985; White, Pandina, & LaGrange, 1987; Matsueda & Heimer, 1987; Akers & Lee, 1999). Social learning variables have also been found to mediate the relationships between constructs of its closest competitor, social control, and delinquency (see Agnew, 1993). Overall, substantial empirical evidence tends to support social learning theory (see Akers & Jensen, 2003; Akers & Sellers, 2004; Akers & Jensen, 2006) and especially the effect that delinquent peer associations have on crime and delinquency (see Simons Wu, Conger, & Lorenz, 1994; Akers, 2001; Warr, 2002).

Control Theory

The major rival to social learning theory is social control theory. Hirschi's (1969) *Causes of Delinquency* is one of the most often cited books on control theory to date. More importantly, control theory is the most empirically tested of all major criminological theories (Cohn, Farrington, & Wright, 1998). The question to be answered for Hirschi is not why people commit crime, but rather why they do not. People are deterred from crime if they are properly socialized. Without proper socialization, people will only seek to satisfy their own desires (Hirschi, 1969). Proper socialization results from a youth's bond to society through four important elements: belief, attachment,

involvement and commitment (Hirschi, 2002). If any of these elements are weak or broken, then delinquency is likely (Hirschi, 1969). However, the presence of strong bonds to society will create a buffer to deviance and act as a control over one's behavior (Hirschi, 2004).

One important element of the bond is belief. Belief shares considerable overlap with the previously discussed concept of definitions from social learning theory. Belief can be thought of as what one can rationalize as acceptable behavior generally influenced by social situations and support (or lack thereof; Hirschi, 1969). However, personal beliefs can fly in the face of traditional values or what society universally accepts as the norm. And while one can hold beliefs that preclude criminal behavior, they may, if just for a moment, be neutralized by beliefs that support criminal behavior in order to justify it (Hirschi, 2004). What differentiates belief from definition is that an absence of preclusive beliefs rather than the presence of endorsing beliefs is what increases the likelihood of delinquency (Hirschi, 2002).

Basic beliefs are formed from the attachments that one has with significant others. These attachments are perhaps the most important element of the bond and refer to feelings of fondness and positive emotion toward others of importance such as parents (Hirschi, 1969). Attachment to anything outside one's self reduces the likelihood of delinquent behavior, but most studies typically focus on family and school (Krohn, Massey, Skinner, & Laur, 1983; Krohn, Lanza-Kaduce, & Akers, 1984; Agnew, 1993; Longshore, Chang, & Messina, 2005). Hirschi (1969) posits that youth who have strong attachments to others have more to lose than those with weak or no attachments. Therefore youth will be less likely to risk jeopardizing those relationships by committing

delinquent acts as these acts are typically seen as incompatible with the conventional expectations of those attachments (Hirschi, 2004).

Strong attachment between child and parent creates an atmosphere of closeness through which parental values and expectations are passed (Hirschi, 2002). Magnusson (1988) suggests that the most important part of the environment is other people, especially those responsible for one's care. These significant people are responsible for shaping our world, creating our values, norms, and rules and how it is interpreted (Magnusson, 1988). The strength of important attachments is determined, in part, by supervision, intimacy of communication, and affectional identification (Hirschi, 2004). Direct parental supervision involves parents and youth physically spending time together, while indirect parental supervision is the perception by youth that parents know of their whereabouts. This indirect supervision means that youth take into account how their parents would react to their behavior if they were physically present even though they are not (Hirschi, 2002). Hirschi (1969) suggests that since crimes require little time and opportunities are nearly limitless, indirect or virtual parental supervision is most important. Yet, indirect parental supervision can only be as good as the intimacy of communication that is shared between parents and youth. The intimacy of communication needs to be communication flowing from child to parent and vice versa (Hirschi, 1969). As important as supervision and communication are, if a youth does not care about one's parents, then deterrence from delinquency is unlikely. This affectional identification is an important element of attachment as those youth who show care and concern towards their parents will be more likely to take that into consideration when presented with opportunities for delinquency (Hirschi, 1969). Therefore, those youth who

are not supervised (directly or indirectly), do not communicate well, and show little concern for their parents will be weakly attached to their parents and thus more likely to be delinquent. A meta-analysis of family related factors and delinquency confirmed this, as Loeber and Stouthamer-Loeber (1986) found that both intimacy of communication and affectional identification, termed parental involvement, in addition to parental supervision, were the most robust family-related predictors of delinquency (see also Dornbusch, Erickson, Laird, & Wong, 2001; Wright & Cullen, 2001). Moreover, De Kemp, Scholte, Overbeek, and Engels (2006) found similar results using longitudinal data.

The last two elements of the bond are commitment and involvement, which are often combined when examined in empirical studies (Krohn & Massey, 1980; Krohn et al., 1983; Akers & Lee, 1999). Involvement is typically operationalized as the temporal dimension of commitment or in other words, as the actual amount of time spent on commitments. Hirschi (2002) states that the element of commitment suggests devotion to a conventional activity of importance (e.g. education, work or business) such that one builds an investment or stake in conformity. Commitment to conventional lines of action should decrease the likelihood of delinquent behavior with the greater the number of commitments, the more one risks losing (Hirschi, 1969). This refers to the rational component in the decision to commit crime (Hirschi, 2002). Involvement consists of following through with one's commitments and requires time and energy (Paternoster & Bachman, 2001). When one is involved in their commitments and other conventional activities, they simply have less time or are too consumed to commit deviant acts (Hirschi, 1969).

Hirschi (1969) contends that the likelihood of delinquency is based considerably on one's attachments and commitments, particularly family and school, to the extent that if either is weak one believes they have little to lose. Hirschi (1969) found empirical support for his theory as a whole, showing that the stronger the overall social bond, the less likely one is to be delinquent. Other studies have found weak to modest support for these elements, especially commitment/involvement (see Krohn et al., 1983; Agnew, 1991; Rankin & Kern, 1994). Gottfredson (2006: 80) recently concluded, however, that the "foundational facts" of control theory are still supported by recent research. Moreover, Wright and Cullen (2001) affirmed that any model that doesn't include measures of control risk being misspecified.

Deterrence Theory

The rational thought process found in the elements of involvement and commitment in control theory shares overlap with rational choice theories such as deterrence. This process generally refers to weighing the costs and benefits of crime, suggesting that all people want to maximize the benefits and minimize the costs (i.e., use a "hedonistic calculus"; Cullen & Agnew, 2003). Deterrence itself suggests that one avoids committing a criminal act in order to avoid punishment (Gibbs, 1975). This punishment could be formal, such as being apprehended by the police and becoming involved in the legal system, or informal, such as getting caught by parents (Akers, 1990). Deterrence theory focuses on the costs of crime, specifically increasing the costs (i.e., legal punishments) in order to decrease crime (Bentham, 1948; Beccaria, 1963). Additionally, like control and social learning theories, deterrence theory does not differentiate between offender and non-offender individual characteristics (Nagin &

Paternoster, 1993). Rather, the theory suggests differences are due to the social context and circumstances external to the individual (Pogarsky, 2007). Punishments must therefore be applied equally and the individual characteristics of the offender should not be taken into consideration (Liska & Messner, 1999).

Most importantly, punishment must have certainty, severity, and celerity in order to effectively sway a potential offender from committing a crime. Certainty of punishment is the likelihood that one will be caught and punished for a crime (Paternoster & Bachman, 2001). The deterrent effect of certainty increases when the punishment is thought to be quite severe (see Klepper & Nagin, 1989) and thus should effectively discourage would be offenders (Liska & Messner, 1999). The severity of punishment refers to the extent of the personal cost of the possible punishment and is typically operationalized by asking how big of a problem that punishment would be (see Grasmick & Green, 1980). Lastly, celerity implies swiftness of punishment after a crime occurs (Beccaria, 1963). It is derived from the psychological notion that immediate punishments are more effective in suppressing behavior than delayed punishments (Nagin & Pogarsky, 2001).

Certainty of punishment has consistently predicted deterrence of criminal behavior better than severity or celerity of punishment (Paternoster, Saltzman, Waldo, & Chiricos, 1985; Paternoster, 1987; Klepper & Nagin, 1989; Nagin & Pogarsky, 2001). This may be partially due to the idea that if the likelihood of being caught is very low, then the severity or swiftness of punishment simply matters less, if at all. Overall, previous studies have been inconsistent in predicting the contributions of severity of punishment (see Cullen & Agnew, 2003 for overview), while celerity has been given

relatively little importance in the literature because of its lack of empirical support. This has led most researchers to exclude it altogether (Gibbs, 1975; Piquero & Rengert, 1999; Nagin & Pogarsky, 2001).

While examining these important aspects of punishment, research has looked at both the specific offender and the general population, with the bulk of research on the latter. Specific deterrence refers to the effect that punishment has on the one being punished (Gibbs, 1975), particularly discouraging the offender from future crime (Cullen & Agnew, 2003). The direct experience with punishment and punishment avoidance serve as the deterrent effect (Stafford & Warr, 1993). In contrast, general deterrence refers to the idea that those who have been caught and punished for a crime will serve as examples to the general public and anyone considering crime (Paternoster & Bachman, 2001). The indirect experience with punishment (Meier and Johnson, 1977) and punishment avoidance (Stafford & Warr, 1993) should be sufficient to deter the general public from crime.

The general public can only be deterred from crimes when they are aware of their consequences. Herein lies the importance of the distinction between objective and subjective deterrence. Subjective or perceptual deterrence tends to be better supported than objective deterrence. Objective measures of severity and certainty (generally ignoring celerity) were the focus when the theory was revived in the 1960s (Paternoster & Bachman, 2001). Objective measures of deterrence for severity include the maximum prison sentence or the average length of prison sentence served for a particular crime, while the objective measures for certainty include the official arrest rate (Cullen &

Agnew, 2003). Use of these measures has been on the decline since the 1970s as perceptual measures have gained prominence.

With the works of Jensen (1969; Jensen, Erickson, & Gibbs, 1978) and Tittle (1977), perceptual or subjective measures have mostly replaced objective measures of deterrence. Data have suggested that few people are truly aware of the actual likelihood of being caught and punished for a crime (Cullen & Agnew, 2003). This of course can affect one's decision to commit crime as objective threats of punishment are irrelevant if one does not perceive any risk. Subjective or perceptual measures typically focus on asking participants if they believe or think they will be caught and punished for a crime and how much of a problem that would be. Nagin and Paternoster (1993) found that perceptions of the certainty of informal and formal punishment and anticipated shame effectively controlled respondents' intentions to offend. Moreover, in a recent meta-analysis, non-legal sanctions were found to be overall better predictors of crime than legal sanctions (Pratt et al., 2006). This indicates that factors such as anticipated shame from family, friends, and/or the community may play a bigger role than the threat of legal punishment in the decision to commit a crime when one calculates their costs/benefits ratio.

Today deterrence theory often focuses on the perceptions that people have about the certainty and severity of punishment in their decision to conform or commit crime, regardless of whether the punishment is legal or non-legal and also whether the risk is true or misperceived. Despite the influx of less than impressive support for deterrence theory, its commonsensical approach to crime has established deterrence as the basis for

criminal law and policy which continues to exert much influence even to this day (see Pratt et al., 2006).

General Strain Theory

Agnew (1992) differentiates strain theory from social control and social learning by focusing specifically on negative relationships, while social control focuses on the absence of important relationships and social learning focuses on positive relationships with deviant others. Agnew (1993) suggests that strain theory differs in explaining the intervening mechanisms that lead to delinquency. That is, independent variables such as low social control will create the freedom to deviate for control theory and will increase deviant associations and learning of deviant definitions for social learning theory, but strain suggests that these independent variables will lead to delinquency because of the negative emotions, specifically the anger that it triggers (see Agnew, 1992).

Agnew's (1992) General Strain Theory is a reformulation of classic strain theories articulated by Merton (1938), Cohen (1955), and Cloward and Ohlin (1960), proposing that it is an individual's affective response to negative events or strains that can foster delinquency. While these theorists proposed a social structural perspective, Agnew's General Strain Theory focuses on a social psychological perspective (Broidy, 2001). Delinquency is just one way of coping with any of several negative emotions, especially anger that one may feel when experiencing stressors or strains (Thaxton & Agnew, 2004). Agnew (1992) suggests that the three major types of strain are the inability to achieve positively valued goals, the loss of positively valued stimuli, and the presentation of negatively valued stimuli.

The first major type of strain is the inability to achieve positively valued goals and consists of three subtypes: (1) the traditional concept of the disjunction between aspirations and expectations, (2) the disjunction between expectations and actual achievements, and (3) the disjunction between just/fair outcomes and actual outcomes (Agnew, 1992). The first concept, the disjunction between aspirations and expectations, refers to the inability to attain those goals that are emphasized by society (Agnew, 1992). Originally, the focus of strain theories was on lower class individuals who were prevented from achieving purported universal goals, but Agnew (2001) has since expanded the theory to include a variety of aspirations and goals that vary according to the individual. In contrast to the minor role that the disjunction between aspirations and expectations plays, the disjunction between expectations and actual achievements may be more pivotal as it is often considered more “emotionally distressing” (Agnew, 1992: 52). That is, expectations are more closely seeded in reality in comparison to aspirations; therefore the disappointment may be more severe when these expectations are not met than when aspirations are not. These expectations may be formed from past personal and vicarious experiences and the inability to achieve them may lead one to various negative emotions such as anger, resentment, and rage (Agnew, 1992). Expectations also lead one to assume that a just or fair outcome will occur. However, this may not always be the actual outcome. The disjunction between just/fair outcomes and actual outcomes stems from the justice literature that focuses on equitable relationships (Agnew, 1992). That is, a relationship is considered just or equitable when one receives what one puts in. If a relationship is not fair or just, then one may feel distress which may be alleviated through crime (Agnew, 2001). The strain is typically seen as most unjust when it is inflicted

intentionally by the actions of others close to the victim (Agnew, 2001). Research has linked unjust outcomes to anger, which Agnew (1992) suggests mediates the relationship between strain and delinquency (see Averill, 1993; Berkowitz, 1993). Furthermore, other studies have found that anger increased the likelihood of crime (Aseltine, Gore, & Gordon, 2000; Mazerolle, Burton, Cullen, Evans, & Payne, 2000).

While the inability to achieve positively valued goals can create strain, the loss of positively valued stimuli involving serious life events (e.g., the loss of a boyfriend, girlfriend, or a family member; moving to a new town) can be detrimental to one's life (Akers, 1985). Losing something or someone that is positively valued causes disruptions to one's life which may result in criminal coping methods. Agnew (1992) suggests that delinquency could occur because one attempts to prevent, regain, substitute, avenge, and/or negatively manage (e.g. through the use of drugs or alcohol) the loss of positively valued stimuli.

Similar to losing something/someone of importance, exposure to something negative (i.e., the presentation of negatively valued stimuli) can be equally unpleasant (Agnew, 1992). This is typically measured by such indicators as child abuse, criminal victimization, and negative school experiences among others (Agnew, 1992, 2003). Family and school indicators are typically used to measure this element as a predictor of delinquency because youth are often unable to avoid or escape the negatively valued stimuli that may occur within the household or school setting.

Each of these strains refers to different types of negative relationships, where one is unhappy with how they are being treated (Agnew, 1992). Agnew and colleagues (2002) state that family, school, and peer groups are the most important sources of these

strains. To the extent these relationships are negative, they increase the likelihood that one will experience anger or frustration resulting in either criminal or noncriminal coping methods (Cullen & Agnew, 2003). The more strain, the more likely delinquency. Yet, the likelihood still depends on other factors (e.g. social supports, criminal propensities; Agnew, 2001; Agnew, Brezina, Wright, & Cullen, 2002). Additionally, it has been suggested that strains that cause anger are better at predicting violent crime than any other (see Mazerolle & Piquero, 1998; Piquero & Sealock, 2000).

Recently, Agnew (2001) revised the meaning of strain by dividing it between objective and subjective measures. Objective strains are generally disliked by the majority of members in a given group, while on the other hand, subjective strains only have to be disliked by the person experiencing them (Agnew, 2001). Like subjective deterrence, subjective strains are more important in one's decision to commit crime (Agnew, 2006) and may be measured by asking individuals simply whether they are being treated the way they wish to be (Agnew, 2003).

As stated before, there has been limited empirical support for the failure to achieve positively valued stimuli (see Agnew, 2003). Additionally, the mediating effects of anger have been limited in scope, and have not been especially useful in predicting drug use (see Mazerolle, Burton, Cullen, Evans, & Payne, 2000). However, many studies have found support for both the loss of positive stimuli and the presentation of negative stimuli, and their ability to explain delinquency with such predictors as child abuse and neglect, criminal victimization, and divorce of parents, among others (for example Agnew, 1985, 1992; Agnew & Brezina, 1997; Baron & Hartnagel 1997; Piquero & Sealock, 2000; see Agnew, 2003 for complete listing).

The General Theory of Crime

Unlike previous theories, the General Theory of Crime (GTC) seeks to explain crime as the result of a single individual characteristic (Gottfredson & Hirschi, 1990). This single characteristic, namely self-control, refers to one's ability to consider the long-term, negative consequences of antisocial behavior and more recently, *all* of the potential consequences of one's actions (see Hirschi, 2004). Considering that pain is differentially experienced while pleasure is equally enjoyed among all people, how much one calculates these consequences will translate to one's level of self-control. Thus, the less one considers future consequences, the more likely they are to commit criminal acts when presented with opportunities to do so (Gottfredson & Hirschi, 1990). Additionally, Hirschi and Gottfredson (1994) emphasize that their theory explains not only criminal acts, but a variety of behaviors involving immediate pleasure at the risk of long term pain (i.e., analogous behaviors).

Those who lack self-control are often described as impulsive, risk-seeking, selfish, short-tempered, and insensitive (Gottfredson & Hirschi, 1990). Criminal acts are committed in the pursuit of self-interest and immediate pleasure, and for those low in self-control these acts tend to satisfy their impulsive desires, are risky yet easy to accomplish, and often harm others (Gottfredson & Hirschi, 1990). Since those low in self-control tend to seek out acts that provide immediate pleasure at the risk of long term pain, it easily follows that these individuals will commit a variety of criminal and analogous behaviors (e.g., accidents, smoking, drinking, and drug use) with no particular specializations (see Paternoster & Brame, 1998 for an exception). Additionally, because specialization is unnecessary, those engaging in one type of crime are more likely to

engage in any and all types of crime, thereby making past criminal behavior the best predictor of future crime (see Hirschi, 2004). In addition to variety, criminal and analogous behaviors will be committed at relatively high frequencies by those with low self-control (Gottfredson & Hirschi, 1990).

Gottfredson and Hirschi (1990) explicitly deny that low self-control is the result of a biological predisposition toward crime or the result of ineffective child rearing. Rather, low self-control becomes apparent with the absence of *any* child rearing (Gottfredson & Hirschi, 1990). In other words, everyone is initially prone to deviate, but through effective child-rearing consisting of supervision, and identifying and correcting deviant behavior, self-control is acquired (Hirschi and Gottfredson, 2001). More importantly, this characteristic will remain relatively stable throughout the life-course (Gottfredson & Hirschi, 1990; see Mitchell & MacKenzie, 2006 for an exception).

Although Gottfredson and Hirschi (1990) have stated that opportunity is a required component in addition to self-control, it has mostly been neglected in the literature (see Grasmick, Tittle, Bursik, & Arneklev, 1993; Piquero & Tibbetts, 1996; Cochran, Wood, Sellers, Wilkerson, & Chamlin, 1998 for a few exceptions). Hirschi and Gottfredson (1993: 50) later admitted, however, that opportunities to commit crime are “limitless,” thus minimizing the role they play. Several studies have tested propositions set forth by Gottfredson and Hirschi and found substantial support (see Pratt & Cullen, 2000 for meta-analysis). Although Hirschi and Gottfredson (1993; see also Gottfredson, 2006) prefer behavioral measures, these findings hold across both attitudinal and behavioral measures of self-control (see Grasmick et al., 1993; Keane, Maxim, & Teevan, 1993; Evans, Cullen, Burton, Dunaway, & Benson, 1997). Although most

researchers agree that the claim of this theory as a general theory of crime is overstated, Pratt and Cullen (2000) emphasized that a study would risk misspecification if measures of self-control were excluded.

Summary

As indicated in the above review, research has shown that key constructs derived from social learning (i.e. associations, definitions, and reinforcements), control (i.e. parental attachment and supervision), deterrence (i.e. perceptual deterrence), strain (i.e. the loss of positively valued stimuli), and the general theory of crime (i.e. self-control) are related to antisocial behavior. That is, constructs from each of these theories has demonstrated a main effect on delinquent and criminal behavior. Yet, as mentioned in Chapter 1, there is emerging evidence to indicate that there are interactive effects as well. More specifically, research has indicated that self-control moderates some (if not all) of the relationships the other theories have with delinquency. These integrated perspectives, however, have failed to reach consensus on the precise direction of the interaction. The following section reviews this novel approach and the equivocal findings stemming from it.

Integrated Perspectives

The previously discussed theories attempt to explain why an individual commits crime through direct, independent measures. These explanations can be characterized as either a social causation or social selection model. Social causation suggests crime is the result of deviant social relationships. More broadly stated, behavior is solely the result of one's social context. Theories such as social learning, strain, deterrence, and control fall under this classification as each proffers that factors external to the individual lead to

antisocial behavior. In contrast, social selection implies crime is the result of personal characteristics. The GTC is a good example of social selection as it suggests that self-control predicts one's involvement with deviant peers or weak attachments to prosocial others. That is, these external influences do not cause antisocial behavior as social causation would predict, but rather are a result of individual difference factors.

Focusing on a purely social causation or social selection model has led to an incomplete explanation of crime (see Wright et al., 1999). This has clearly been demonstrated by several studies that have found the effects of external factors remained significant when individual-level measures (i.e., self-control) were included (Nagin & Paternoster, 1993; Evans et al., 1997; Wright, Caspi, Moffitt, & Silva, 1999; see also Kochanska, 1993; Carlo, Roesch, & Melby, 1998 on integration). Therefore, a theoretical model that incorporates both social selection and social causation processes offers a more defensible perspective (Wright et al., 1999).

Recently, some studies have attempted to go beyond relying exclusively on either a social selection or social causation model by using this proposed mixed theoretical model. One of the most prominent perspectives in this regard is Moffitt's (1993) developmental taxonomy. This taxonomy suggests that social selection and social causation models may both be accurate explanations but for two distinct types of offenders. Moffitt (1993) calls the first group of individuals life-course persistent offenders, as attempts to change their behavior are rarely successful. These offenders have relatively stable individual characteristics conducive to antisocial behavior. Life-course persistent offenders suffer from cumulative continuity, which refers to the failure to learn traditional prosocial alternatives to deviant behavior and continuing to carry

those destructive characteristics throughout the life-course (Moffitt, 1993). For the life-course persistent offender, social selection is a better explanation of antisocial behavior. On the other hand, adolescence-limited offenders are typically led to deviate because they are influenced by deviant peer associations, poor school performance, and elevated strain, among others. At the same time, these offenders are also more easily apt to conform when presented with prosocial factors. Thus, for this type of offender, social causation appears to predominate as these offenders typically lack the individual characteristics that account for deviance among life-course persistent offenders.

In opposition to Moffitt's (1993) dual taxonomy argument, Lahey and Waldman (2003) suggest that underlying criminal propensities exist along a continuum. Lahey and Waldman (2003) propose that differential explanations are not required as distinct typologies of offenders do not exist. Additionally, several researchers have suggested that external influences may play a more important role for those either much higher (e.g. Wright et al., 1999; Lynam et al., 2000; Wright et al., 2001) or much lower (e.g. Wikström & Loeber, 2000; Wikström & Sampson, 2003) on the continuum of criminal propensity. This suggested interactive model draws from Lewin (1935), who proposed many years ago that behavior is a function of the person and the environment. That is, one must consider the individual, their environment, and how those two forces act independently and interactively to shape behavior. Of particular interest in the present study is the interaction between the two. For instance, similar environments can have a differential impact on two individuals as a result of their individual characteristics (Lewin, 1935; Magnusson, 1988). It is this interaction that underlies the relationship between an individual and the environment (Magnusson, 1988). Yet, currently most

criminological theories do not address how criminal behavior is the result of the interaction between the individual *and* the environment.

The modest amount of research that has been performed on the person-environment interaction has brought to light two opposing arguments. Both propose that one's individual characteristics will determine the level of influence by external factors in predicting deviant behavior, but in opposite directions. The first approach proposes that the effects of external factors on crime are amplified for those low in self-control (see Wright et al., 1999; Lynam et al., 2000; Wright et al., 2004). That is, those *lower* in self-control are more induced to deviate when exposed to criminogenic environments than those with higher self-control. These individuals are more easily influenced because they are at an increased likelihood of deviant behavior to begin with (Wright et al., 2001). This inclination to deviate will be exacerbated by factors such as criminal associations, who will expose one to criminal opportunities and define them as gratifying and worthwhile (Evans et al., 1997). Youth with self control, however, tend to be socially protected from crime throughout the life course and thus less likely to be affected by such factors (see Lahey & Waldman, 2003).

Using individual characteristics conceptually overlapping with self-control (i.e., high negative emotionality and low constraint), Agnew and colleagues (2002) found that these personality traits did, in fact, condition the relationship between strain and delinquency. Youth who were high in negative emotionality and low in constraint (i.e., low in self-control) were more influenced by strain, and therefore more likely to react to strain with delinquency, than those youth who were not high in negative emotionality and low in constraint (Agnew et al., 2002). Additionally, neighborhood context appears to

have similar amplified effects for those who are most impulsive (see Lynam et al., 2000). With both cross-sectional and longitudinal data, Lynam and colleagues were able to show that impulsive adolescent males (an important component of low self-control) were more likely to be delinquent when exposed to criminogenic neighborhoods than nonimpulsive adolescent males. These impulsive males were more likely to take advantage of these criminogenic neighborhoods as they represented weak situations that generally failed to provide effective social control. Within the home, high levels of impulsivity have also been found to increase the influence of parental support in reducing antisocial behavior (Jones, Cauffman, & Piquero, 2007). That is, this study found that increased parental support is more influential in reducing antisocial behavior among impulsive youth as opposed to nonimpulsive youth. Wright and colleagues (2004) similarly concluded that the most criminally prone (i.e. lowest in self-control) were also the most influenced by deterrent effects in comparison to those lacking (or with less of) a criminal tendency. These findings coincide with the proposed interdependence model by Wright and colleagues (2001). These researchers suggest that all social ties (prosocial or antisocial) are more influential for those lowest in self-control. In other words, positive social ties will socially protect an individual with low self-control from engaging in deviant behavior, despite possessing an elevated propensity to do so (Wright et al., 2001), while negative social ties will amplify this inclination. Since those with self-control lack the proclivity to engage in antisocial behavior, they remain unaffected by social influences.

In opposition to the previous argument, other researchers have proposed that the effects of external factors on crime are more salient for those with more (as opposed to less) self-control (see Wikström & Loeber, 2000; Piquero & Pogarsky, 2002). That is,

this conceptual model actually predicts that those youth scoring *higher* on self-control are more induced to deviate based on external factors compared to their low self-control counterparts. This perspective suggests that those low in self-control will offend regardless of external factors (Gottfredson & Hirschi, 1990). Those higher in self-control, on the other hand, are less likely to discount future consequences and thereby take into account external factors.

Support for this position has been found with several different independent variables. For example, Wootton, Frick, Shelton, and Silverthorn (1997) examined the interaction between parenting and the individual characteristics of callousness and low emotionality (sharing overlap with self-control) for predicting childhood conduct problems. They concluded that ineffective parenting was influential for those without significant levels of callous and unemotional characteristics in predicting conduct problems. Meanwhile those exhibiting high levels of these characteristics had significant conduct problems regardless.

Piquero and Pogarsky (2002) examined how deterrent effects differed in influence depending on one's level of impulsivity. They concluded that the effect of deterrence was significantly less for impulsive youth. That is, impulsive youth are typically harder to deter because they do not consider future consequences (Gottfredson & Hirschi, 1990; Nagin & Pogarsky, 2001).

Additional support was found by Wikström and Loeber (2000), who examined neighborhood context, sets of protective and risk factors, and delinquency. The factors making up this risk-protective profile run on a continuum and share some overlap with the concept of self-control (e.g. range from impulsive to nonimpulsive). The researchers

concluded that male juveniles exhibiting mostly protective factors, as well as a balance of risk and protective factors (or what could be considered those with high and average self-control), were most influenced by neighborhood context in predicting late onset of offending (Wikström & Loeber, 2000). In other words, those with low self-control offended regardless of their neighborhood context, while those youth who had average or high self-control were more affected by their environment and therefore more easily inclined to deviate if the neighborhood is highly disadvantaged (e.g. below the poverty level, high levels of public assistance; Wikström & Loeber, 2000).

The models previously discussed may have prematurely articulated that person-environment interactions exist in a particular direction. This is evinced by several studies that have used various individual difference factors resulting in divergent findings regarding these interactions. For example, parenting behaviors seem to exert the strongest influence among impulsive children. Yet this punctuated effect of parenting disappears when considering empathy (see Jones, Cauffman, & Piquero, 2007). But as stated before, Wootton et al. (1997) found that parenting behaviors were most influential for those without significant levels of callous and unemotional traits. This suggests that external influences (e.g. parenting) may exert stronger effects in some instances (e.g., when the child is impulsive), or weaker effects in other instances (e.g., a child who lacks empathy). Thus, the specific individual difference factor being examined can affect what, if any, interactive effect is found.

Regardless of who is more influenced, this social/psychological model (i.e. the interaction between the person and the environment) has the capability of expanding our understanding of why crime is committed. Thus far, there is reasonably strong support for

the notion that external factors of offending behavior (peers, parenting, neighborhoods, etc) vary in their influence depending on individual difference factors. However, it may be too soon to draw any conclusions about the effects that the same environments have on individuals with varying characteristics (see Bronfenbrenner, 1988). In other words, while most studies to date have suggested specific directions, the equivocal and contradictory findings call for continued efforts to investigate the interactive effects. It is important to assess this question within one sample because prior findings may be due to different operationalizations and use of individual risk factors (self-control versus impulsivity versus risk index). These differences may also be the result of idiosyncratic features of the sample. The current study, therefore, utilizes one sample to examine a wide array of criminological constructs external to the individual and a comprehensive scale measuring self-control similar to that described by Gottfredson and Hirschi (1990). Specifically, this study seeks to examine multiple external constructs representing social learning, control, strain, and deterrence theories to determine how, if at all, each varies as a function of self-control. Although most evidence to date agrees that the characteristics individuals bring to their environment do in fact affect the amount of influence by that environment (see Lahey & Waldman, 2003), these influences cannot at once be greater for both those with low and high self-control. That is, either external factors are more influential for those low in self-control or for those high in self-control. This study seeks to solve this dilemma.

Chapter Three

Methodology

Sample

The analyses were based on information collected from students in Largo, Florida in 1998. This cross sectional study was designed to examine crime and delinquency in middle and high schools. Participation was voluntary and conditional upon passive parental consent. All types of students were allowed to participate including mainstream, emotionally handicapped, dropout prevention, and a 21st Century Learning Community.

In middle school, the survey was administered to all social studies classes. Since all middle school students are required to take this course, this was the most logical way to reach the greatest number of students. Two researchers remained in the room to which one researcher read aloud the questions in the survey, while the other assisted students as needed. This took approximately 50 minutes for all surveys to be completed. The response rate for the middle school sample was 81%.

In high school, the survey was distributed among a random sample of third period classes. One researcher stayed in the room to give instructions and answer questions while students completed the survey. All surveys were completed in approximately 25 minutes. The response rate for this part of the sample was 79%.

The total sample size was 1,674 students, with 621 from the high school (37.3%) and 1,043 from the middle school (67.7%). The sample was evenly split between males (49.9%) and females. The age distribution of Largo students was slightly positively skewed, reflecting the majority of students that were in middle school. The mean age was

13.8 years, while the range was 11-19. Seventy-four percent of respondents were white, 11.2% black, 3.9% Hispanic, 3.1% Asian, and 3.8% other. Descriptions of the remainder of the variables used in the analyses can be found in Table 1. In the following sections, the variables are described in greater detail.

Table 1: Descriptive Statistics of Demographics and Theoretical Constructs

	N	<i>X</i>	<i>SD</i>	Minimum	Maximum
<u>Demographics:</u>					
Age	1652	13.79	1.99	11	19
Sex (1=male)	1662	1.50	.50	1	2
<u>Delinquency</u> (before log)	1657	5.29	4.59	0	22
<u>Social Learning</u>					
Definitions	1661	.00	3.01	-4.16	8.76
Peer Associations	1649	.00	3.17	-3.27	10.99
Reinforcements	1605	-.02	3.07	-5.63	6.55
<u>Subjective Strain</u>	1675	.00	5.40	-6.91	25.47
<u>Perceptual Deterrence</u>	1643	.01	3.08	-13.10	2.42
<u>Control</u>					
Parental Control	1514	-.02	3.22	-8.21	5.06
Paternal Attach	1503	.01	4.04	-9.43	5.25
Maternal Attach	1615	.01	3.90	-10.83	4.97
<u>Self Control</u>	1557	.04	5.70	-21.09	12.60

Dependent Variable

The dependent variable, delinquency, indicated the variety of delinquent behaviors the participant self-reported. Variety scales are preferred to frequency scores because they are less skewed (Caspi, Moffitt, Silva, Stouthamer-Loeber, Krueger, & Schmutte, 1994), give equal weight to all delinquent acts (Caspi et al, 1994), and it has been shown that adolescents often do not specialize in only one type of offending (Piquero et al., 1999). Delinquency was measured by asking the students how many different crimes they have ever committed. The mean number of acts committed was 5.29

with a standard deviation of 4.59 (see Table 1). However, since the variable was censored at the upper limit, the natural log (plus one) was used in the bivariate and multivariate analyses to correct for this. Respondents could endorse up to 22 different types of delinquent behaviors.

The 22 items were entered into a principal components factor analysis using promax rotation where four factors were found with eigenvalues that exceeded one. However, a Scree plot suggested a single factor solution with the biggest break between the first and second eigenvalues (Eigenvalue=6.70). Therefore, the 22 items were reentered into a principal components factor analysis, extracting a one-factor solution. Loadings on this single factor ranged from .42 to .68. The Cronbach's alpha was .88 for this 22-item scale (see Table 2 for complete listing of items and factor loadings).

Table 2: Items and Factor Loadings for Measures of Self-Reported Delinquency

Have you ever:	Factor Loadings: Factor One
1. bought illegal drugs?	.68
2. used marijuana?	.65
3. sold illegal drugs such as cocaine, crack, ecstasy, LSD, or heroin?	.65
4. stolen things worth \$50 or less?	.63
5. stolen something worth more than \$50?	.61
6. skipped class without an excuse?	.59
7. purposely damaged or destroyed property that did not belong to you?	.58
8. used alcohol?	.58
9. used tobacco products?	.58
10. used other illegal drugs such as cocaine, crack, ecstasy, LSD, or heroin?	.57
11. stolen another student's backpack, lunch money, or other personal things worth \$50 or less?	.56
12. gone or tried to go into a house to steal something?	.55
13. attacked someone with a weapon?	.54
14. lied about your age to get into some place or to buy something?	.54
15. gone or tried to go into a building to steal something?	.53
16. carried a weapon for protection?	.49
17. stolen or tried to steal a car or motorcycle?	.48
18. hit someone with the idea of hurting them?	.47

Table 2: (continued)

Have you ever:	Factor Loadings: Factor One
19. used a weapon or force to get money or things from people?	.47
20. stayed out longer than you're allowed?	.46
21. run away from home?	.46
22. used paint, glue, or other things to get high?	.42
Cronbach's Alpha: .88	
Eigenvalue: 6.70	

Independent Variables

Social Learning Theory.

Three components derived from the social learning perspective were examined: definitions, peer associations, and reinforcements. Definitions were characterized here as attitudes one takes towards a behavior that they identify as positive, neutral, or negative (Akers et al., 1979). The more one considers a behavior positive, the more likely one is to engage in it. In the present analysis, definitions were operationalized as one's positive evaluation towards four types of delinquency¹. These items were entered into a principal components factor analysis, which yielded a one-factor solution (Eigenvalue=2.30). Loadings on this single factor ranged from .63 to .81. The four items were summed to create a scale which had a mean of 8.01 and a standard deviation of 2.84 with values ranging from 3 to 16. However, the scale was standardized (i.e. centered) thereby changing the mean to .00 and the standard deviation to 3.01 (see Table 1). This standardized scale had a reported Cronbach's alpha of .75 (see Table 3 for complete listing of items and factor loadings). The values for the standardized scale ranged from -4.16 to 8.76 with higher numbers indicative of pro-criminal definitions.

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¹ For the scales measuring social learning and deterrence variables, the focus is on four types of delinquency as this could be considered a conservative way to explain the extent of involvement in deviant activities. That is, if some youth are involved in more serious types of criminal behavior, they would be more likely to commit, or at least approve of, these more minor forms of crime.

Table 3: Items and Factor Loadings for Social Learning Measures of Definitions

It's okay to:	Factor Loadings: Factor One
1. skip school if nothing important is going on in class.	.81
2. steal little things from a store since they make so much money that it won't hurt them.	.79
3. get into a physical fight with someone if they insult you or hit you first.	.63
4. use marijuana since it's not really harmful.	.79

Cronbach's Alpha: .75
Eigenvalue: 2.30

The second component of social learning theory assessed in this analysis was peer associations, which was measured by asking how many of the participant's friends committed any of four types of delinquency. The four items were entered into a principal components factor analysis. One factor was found with an eigenvalue over one (Eigenvalue=2.53). Loadings on this single factor ranged from .74 to .83. The original scale had a mean of 7.79 and a standard deviation of 3.64 with values ranging from 3 to 20. Once the scale was centered, the mean was adjusted to .00 with a standard deviation of 3.17 (see Table 1). The Cronbach's alpha was .80 for this standardized four-item scale (see Table 4 for complete listing of items and factor loadings) with values ranging from -3.27 to 10.99. Higher values were indicative of more deviant associations.

Table 4: Items and Factor Loadings for Social Learning Measures of Differential Associations

During the past 12 months, how many of your current friends have:	Factor Loadings: Factor One
1. skipped school?	.83
2. stolen something worth \$50 or less?	.81
3. hit someone with the idea of hurting them?	.74
4. used marijuana?	.80

Cronbach's Alpha: .80
Eigenvalue: 2.53

Lastly, differential reinforcements refer to the balance of rewards and punishments that strengthen or extinguish behavior. Reinforcements were measured by

asking if friends respected the participant getting away with any of four types of delinquency, with responses ranging from definitely would to definitely would not. Four items were entered into a principal components factor analysis, where one factor was found with an eigenvalue over one (Eigenvalue=2.41). Loadings on this single factor ranged from .76 to .83. Originally, the mean for the scale was 9.41 and the standard deviation was 3.07 with values ranging from 3 to 16. However, the scale was centered which changed the mean to -.02 (SD= 3.07) with values for the standardized scale ranging from -5.63 to 6.55 (see Table 1). The Cronbach's alpha was .78 for this standardized four-item scale (see Table 5 for complete listing of items and factor loadings). Higher values were indicative of more differential reinforcements of crime.

Table 5: Items and Factor Loadings for Social Learning Measures of Differential Reinforcements

Would your friends respect you if you got away with:	Factor Loadings: Factor One
1. skipping school?	.76
2. stealing something worth \$50 or less?	.83
3. hitting someone with the idea of hurting them?	.76
4. using marijuana?	.75

Cronbach's Alpha: .78
Eigenvalue: 2.41

Control Theory.

One important aspect of control theory that was examined here was the effect of parenting. Hirschi (1969) stressed the value of several elements of the social bond, but most importantly the attachment to others, especially parents. Additionally, Loeber and Stouthamer-Loeber (1986) demonstrated in their meta-analysis of the relationships between family factors and delinquency that lack of parental supervision and involvement are two of the strongest predictors of delinquency among parenting

behaviors. Therefore, three scales of parenting were used in this study: parental control, maternal attachment, and paternal attachment.

Parental control measured the extent to which the parents monitor the participant's whereabouts. Four items assessing this construct were entered into a principal components factor analysis, yielding one factor with an eigenvalue over one (Eigenvalue=2.59). Loadings on this single factor ranged from .77 to .83. The mean for the unstandardized scale was 11.31 and the standard deviation was 2.96 with values ranging from 4 to 16. The standardized scale, however, had a mean of -.02, standard deviation of 3.22, and values ranging from -8.21 to 5.06 (see Table 1). The Cronbach's alpha was .82 for this standardized four-item scale (see Table 6 for complete listing of items and factor loadings). Higher scores were indicative of more parental control.

Table 6: Items and Factor Loadings for Control Measures of Parental Control

	Factor Loadings: Factor One
1. My mother knows where I am when I am not at home or at school.	.78
2. My father knows where I am when I am not at home or at school.	.83
3. My mother knows who I am with when I am not at home.	.77
4. My father knows who I am with when I am not at home.	.83
Cronbach's Alpha: .82	
Eigenvalue: 2.59	

Maternal and paternal attachment measured the extent to which the participant talks, trusts, admires, and identifies with their respective mother and father figure. The maternal attachment scale was based on five items which were entered into a principal components factor analysis. One factor was found with an eigenvalue over one (Eigenvalue=3.10). Loadings on this single factor ranged from .75 to .85. The mean for this scale was 21.95, having standard deviation of 6.25 and values ranging from 5 to 30.

Once the scale was centered, the mean changed to .01 with a standard deviation of 3.90. Values ranged from -10.83 to 4.97 (see Table 1). The Cronbach's alpha was .85 for this standardized five-item scale (see Table 7 for complete listing of items and factor loadings). Items were coded so that higher numbers were indicative of more attachment.

Table 7: Items and Factor Loadings for Control Measures of Maternal Attachment

Think about your mother or mother-figure:	Factor Loadings: Factor One
1. I can always ask her for advice vs. I can never ask her for advice.	.85
2. I can talk to her about anything vs. I can't talk to her about anything.	.83
3. I want to be the kind of person she is vs. I don't want to be the kind of person she is.	.76
4. She always trusts me vs. she never trusts me.	.75
5. She always praises me when I do well vs. she never praises me when I do well.	.75
Cronbach's Alpha: .85	
Eigenvalue: 3.10	

The paternal attachment scale was based on five items which were entered into a principal components factor analysis. One factor was found with an eigenvalue over one (Eigenvalue=3.31). Loadings on this single factor ranged from .77 to .87. The scale originally had a mean of 20.91, a standard deviation of 6.95, and values ranging from 4 to 30. Once the scale was centered, the mean for paternal attachment was .01 with a standard deviation of 4.04. These values ranged from -9.43 to 5.25 (see Table 1). The Cronbach's alpha was .87 for this standardized five-item scale (see Table 8 for complete listing of items and factor loadings). Items were coded so that higher numbers were indicative of more attachment.

Table 8: Items and Factor Loadings for Control Measures of Paternal Attachment

Think about your father or father-figure:	Factor Loadings: Factor One
1. I can always ask him for advice vs. I can never ask him for advice.	.87
2. I can talk to him about anything vs. I can't talk to him about anything.	.85
3. I want to be the kind of person he is vs. I don't want to be the kind of person he is.	.79
4. He always trusts me vs. he never trusts me.	.78
5. He always praises me when I do well vs. he never praises me when I do well.	.77

Cronbach's Alpha: .87
Eigenvalue: 3.31

Deterrence Theory.

Perceptual deterrence suggests that the more one perceives the likelihood of getting caught and punished for a crime the more likely one is to be deterred from crime (Pogarsky et al., 2004). One can only be successfully deterred from crimes when they are aware of their consequences. This operationalization tends to be better supported than objective deterrence and was therefore utilized in this study.

Perceptual deterrence was measured by asking how big of a problem it would be for the participant if they were caught by police for four different types of delinquency. The perceptual deterrence scale was based on four items, which were entered into a principal components factor analysis. One factor was found with an eigenvalue over one (Eigenvalue=2.40). Loadings on this single factor ranged from .73 to .81. The original scale had a mean of 9.93, standard deviation of 2.47, and values ranging from 0 to 12. The centered (i.e. standardized) scale, however, had a mean of .01 with a standard deviation of 3.08. Values for the centered scale ranged from -13.10 to 2.42 (see Table 1). The Cronbach's alpha was .78 for this standardized four-item scale (see Table 9 for

complete listing of items and factor loadings). Higher values were indicative of more perceptual deterrence.

Table 9: Items and Factor Loadings for Measures of Perceptual Deterrence

How big of a problem would it be for you if you were caught by the police for:	Factor Loadings: Factor One
1. skipping school?	.79
2. stealing something worth \$50 or less?	.81
3. hitting someone with the idea of hurting them?	.73
4. using marijuana?	.77

Cronbach's Alpha: .78
Eigenvalue: 2.40

General Strain Theory.

Originally both objective and subjective strains were used in analyses as recommended by Agnew (2001). However upon further inspection, the objective strains scale was found to provide little explanation for the likelihood of delinquency. Therefore, only subjective strains were examined for the purposes of this research. Subjective strains have been described as situations or events that are disliked by those who have or are experiencing them (Agnew, 2001). These strains were measured by asking if any of 11 objective strains occurred to the participant and if so how big of a problem was it. The 11 items were entered into a principal components factor analysis using promax rotation, where three factors emerged with eigenvalues over one. However, a Scree plot suggested a single factor solution (Eigenvalue=2.73). The 11 items were reentered into a principal components factor analysis, forcing a one-factor solution. Loadings on this single factor ranged from .34 to .64. The Cronbach's alpha was .68 for this standardized 11-item scale (see Table 10 for complete listing of items and factor loadings). Some items did not load as strongly as others, which explains the lower alpha reliability. However, the alpha would have been lower had any items been deleted; therefore this standardized 11-item

scale was used. The original scale had a mean of 10.14 with a standard deviation of 7.65. These values ranged from 0 to 44. Once the scale was standardized, the mean was .00 with a standard deviation of 5.40. Values ranged from -6.91 to 25.47 (see Table 1).

Higher values were indicative of more subjective strain.

Table 10: Items and Factor Loadings for Measures of Subjective Strains

Did any of the following happen to you and if so how big of a problem was this for you?	Factor Loadings: Factor One
1. Changed schools	.60
2. Parents divorced	.64
3. Parent moved out or away	.64
4. Brother or sister moved out	.34
5. Broke up with boyfriend or girlfriend	.35
6. Moved to new neighborhood	.63
7. Death of a relative	.44
8. Lost a friendship	.47
9. Pet died or disappeared	.48
10. Dropped from or quit athletic team or school activities	.38
11. Parent lost job for more than two months	.34

Cronbach's Alpha: .68

Eigenvalue: 2.73

The General Theory of Crime.

Gottfredson and Hirschi (1990) boldly suggest that low self-control is the only individual level predictor of criminal and analogous behavior. Those low in self-control are described as “impulsive, insensitive, physical, risk-taking, short-sighted, and nonverbal” (Gottfredson & Hirschi, 1990: 90). These components were entered into a scale comprising a total of 11 variables measuring both behavioral and attitudinal self-control. Because the items were on different metrics, the behavioral and attitudinal measures of self-control were standardized and summed². Behavioral measures focused on actual behaviors analogous to crime, while attitudinal measures of self-control focused

x1_____

² Because the items were on different metrics and had to be standardized and summed, there are no unstandardized descriptive statistics to report as there were with the other scales noted above.

on personality traits or characteristics (Gottfredson & Hirschi, 1990). While some criticism has been expressed with attitudinal measures like the ones used in the current analysis (see Hirschi, 2004), it is consistent with existing measures that have been widely used (e.g., Grasmick et al., 1993). In addition, despite Gottfredson and Hirschi's (1993) preference for behavioral measures, many have argued that such an approach is tautological (Akers, 1991). In spite of this, Pratt and Cullen (2000) concluded in their meta-analysis on self-control that effect sizes were similar for both types of measures and thus weakened the potentially tautological argument favoring behavioral measures.

Behavioral self-control was initially measured with five items. However, one item did not fare well in a reliability analysis; therefore, only four items were included. In addition to the behavioral measures, nine items that measured attitudinal self-control were included. However, after running a reliability analysis, it was found that two items did not load well. A total of 11 items comprising both behavioral and attitudinal measures of self-control were entered into a principal components factor analysis using promax rotation. Three factors were found with eigenvalues that exceeded one; however, a Scree plot suggested a single-factor solution (Eigenvalue=3.03). The 11 items were reentered into a principal components factor analysis, extracting a one-factor solution. Loadings on this single factor ranged from .41 to .65. The Cronbach's alpha was .73 for this 11-item scale (see Table 11 for complete listing of items and factor loadings). The mean of the self-control scale was .04 with a standard deviation of 5.70. The values ranged from -21.09 to 12.60 (see Table 1). Responses were coded such that a low score was indicative of low self-control.

Table 11: Items and Factor Loadings for Attitudinal and Behavioral Measures of Self-Control

	Factor Loadings: Factor One
1. Sometimes I will take a risk just for the fun of it.	.51
2. I like to test myself every now and then by doing something a little risky.	.52
3. I often act on the spur of the moment without stopping to think.	.41
4. I often do whatever brings me pleasure here and now, even at the cost of some distant goal.	.45
5. When things get difficult, I tend to quit.	.44
6. I lose my temper pretty easily.	.61
7. When I'm really mad, other people better stay away from me.	.62
8. More likely to hit vs. talk when mad.*	.65
9. More likely to confront vs. avoid classmate who is spreading rumors about me.*	.55
10. Do well on a test because I guessed vs. do well on a test because I studied hard.*	.45
11. More likely to tease vs. make friends with an unpopular student.*	.51
Cronbach's Alpha: .73	
Eigenvalue: 3.03	
* behavioral measures of self-control	

Analytic Plan

Bivariate correlations were first performed in order to analyze the extent to which each theoretical construct was related to delinquency. Additionally, Ordinary Least Squares (OLS) regression techniques were used to further determine the nature of the relationships that exists between each of the theoretical constructs and delinquency as well as the interaction between these theoretical constructs and self-control. As discussed previously, several studies have found divergent results in relation to person-environment interactions. Some have suggested that the relationship between external factors and delinquency is amplified for those low in self-control (Lynam et al., 2000; Wright et al., 2001), while others suggest this relationship to be stronger among those high in self control (Wikström & Loeber, 2000; Wikström & Sampson, 2003). The inclusion of interaction terms in the regression analyses allows for examination of this relationship to

determine whether or not youth who are low in self-control are more, less, or equally susceptible to external factors (e.g., peers, parents, strains). It should be noted that in order to avoid multicollinearity, all independent measures were centered prior to the creation of the interaction term and entered in one at a time to the regression equation.

Chapter Four

Results

Bivariate Findings

The matrix of Pearson's zero-order correlation coefficients for all variables examined in this research is presented in Table 12. All of the theoretical constructs included in this study were significantly related to delinquency in the expected direction. Self-control ($r=-.495, p<.05$) and perceptual deterrence ($r=-.470, p<.05$) were strongly and negatively correlated with delinquency. Therefore, lower levels of self-control and perception of deterrence were associated with an increased likelihood of delinquency. As expected, all measures of social learning were positively correlated with delinquency. Reinforcements were moderately related with delinquency ($r=.384, p<.05$), while peers and definitions demonstrated a much stronger correlation with delinquency ($r=.634, p<.05$ and $r=.648, p<.05$ respectively). Simply put, those who were more reinforced for their delinquent behavior, had more deviant peers, and more pro-criminal definitions were at an increased risk of delinquent behavior. Additionally, there was a modest positive correlation between subjective strains and delinquency ($r=.180, p<.05$), indicating that the more strain one experiences, the more likely one is to be delinquent. The three measures of parenting were all negatively correlated with delinquency. Parental control and delinquency demonstrated the strongest correlation ($r=-.482, p<.05$) among the control variables, while maternal and paternal attachment were moderately related to delinquency ($r=-.320, p<.05$ and $r=-.255, p<.05$ respectively). Thus, the more attached

one is to their mother and father and the more control parents exert on their child, the less likely the child is to be delinquent.

Table 12: Pearson's Zero-Order Correlations

	1	2	3	4	5	6	7	8	9
1. Delinquency									
2. Self Control	-.495*								
3. Subj Strain	.180*	-.080*							
4. P Attachment	-.255*	.203*	-.102*						
5. M Attachment	-.320*	.308*	-.111*	.480*					
6. Pt Control	-.482*	.346*	-.140*	.378*	.343*				
7. P Deterrence	-.470*	.428*	-.035	.132*	.208*	.372*			
8. Reinforcements	.384*	-.407*	.027	-.154*	-.189*	-.237*	-.266*		
9. Peers	.634*	-.459*	.160*	-.234*	-.283*	-.421*	-.475*	.388*	
10. Definitions	.648*	-.523*	.057*	-.225*	-.293*	-.432*	-.506*	.400*	.623*

*p<.05, two tailed test.

Note: Subj Strain= Subjective Strain, P Attachment= Paternal Attachment, M Attachment= Maternal Attachment, Pt Control= Parental Control, P Deterrence= Perceptual Deterrence
Sample size ranges from 1489 to 1657 because pairwise deletion was used.

Multivariate Findings

In order to test how robust the bivariate relationships were, multivariate analyses were performed to examine the independent effects of the various constructs while including appropriate controls (e.g., sex, race, and age). Additionally, one of the main purposes of the research was to investigate the extent to which various criminological constructs vary in their effects on delinquency as a function of self-control. This was accomplished through the creation of interaction terms. Attempts were made to put the composite of the interactions between each theory's constructs and self-control into one model, but the multicollinearity was simply too high. Therefore, the interactions of each of the constituent variables were individually examined. Delinquency was regressed on each of the theoretical constructs, self-control, and the interactions. The tables listed

below show the results of OLS regression for each theoretical construct with additional models to show the moderating effects of self-control.

Social Learning.

The results of the regression models for self-control and social learning are presented in Table 13. In the first model, delinquency was regressed on the social learning variables and self-control to determine their main effects, controlling for age, sex, and race. Overall, the first model was statistically significant ($F=245.38$, $p<.05$) and able to explain 54.2% of the variance in the variety of delinquent acts committed.³ Definitions, peers, and reinforcements ($\beta=.32$, $p<.05$; $\beta=.29$, $p<.05$; and $\beta=.08$, $p<.05$, respectively) all had significant positive relationships with delinquency, affirming earlier bivariate findings. Thus, those with increased criminal definitions, deviant peer associations, and negative reinforcements were more likely to engage in delinquent behavior. Self-control had a negative and statistically significant effect on delinquency ($\beta=-.16$, $p<.05$), meaning the more self-control one has, the less likely they are to be delinquent.

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³ All variance statistics included in the analyses are based on an adjusted R^2 .

Table 13: OLS Regression Results for Social Learning Variables, Self-Control, and Interactions (N=1448)

	MODEL A			MODEL B			MODEL C			MODEL D		
	B	se(b)	β	b	se(b)	β	b	se(b)	β	b	se(b)	β
Sex	-.002	.03	-.001	.002	.03	.001	.002	.03	.001	-.002	.03	-.001
Age	.06*	.01	.14	.05*	.01	.12	.05*	.01	.12	.06*	.01	.13
Race	-.01	.02	-.02	-.01	.02	-.02	-.02	.02	-.02	-.02	.02	-.02
Self Control	-.02*	.00	-.16	-.03*	.00	-.19	-.03*	.00	-.18	-.03*	.00	-.17
Peers	.08*	.01	.29	.09*	.01	.35	.08*	.01	.32	.08*	.01	.30
Definitions	.09*	.01	.32	.09*	.01	.32	.09*	.01	.34	.09*	.01	.32
Reinforcements	.02*	.01	.08	.02*	.01	.07	.02*	.01	.07	.02*	.01	.08
SC x Peers				.01*	.00	.14						
SC x Def							.004*	.00	.12			
SC x Reinforce										.003*	.00	.07
Adjusted R²	.542			.555			.554			.547		

*p<.05 two tailed test

Note: SC= Self-Control, Def= Definitions, Reinforce= Reinforcements

In Model B, all variables from Model A were included with the addition of the interaction between self-control and delinquent peers (see Table 13). This was the strongest interaction with self-control among the social learning variables ($\beta=.14$, $p<.05$). The positive coefficient for the interaction term revealed that the positive effect of delinquent peers was stronger among those higher in self-control (see Figure 1). In other words, delinquent peers have a stronger effect on delinquency for those with higher self-control versus those lower in self-control. The interaction term demonstrated incremental validity in model fit (R^2 Change=.01, $p<.05$). Simply put, the addition of the interaction resulted in significant increased explanation of variance.

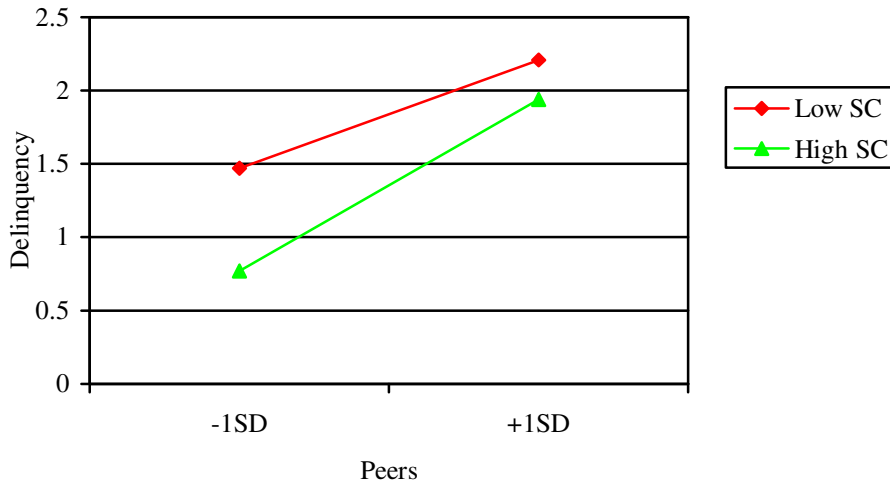


Figure 1: Effects of Peers on Delinquency by Levels of Self-Control
 Note: Model included only the peer association scale, self-control, and the interaction.
 Low SC=individuals scoring one standard deviation below the mean on self-control
 High SC= individuals scoring one standard deviation above the mean on self-control

In Model C, all variables from Model A were included with the addition of the interaction between self-control and definitions (see Table 13). This interaction was positive and statistically significant ($\beta=.12$, $p<.05$), indicating that as one increases in self-control, the importance of criminal definitions on delinquency also increases (see Figure 2). In other words, criminal definitions were more influential in increasing delinquency among those higher in self-control. The R^2 change was statistically significant, suggesting that the introduction of the interaction term significantly increased the model fit (R^2 Change=.01, $p<.05$).

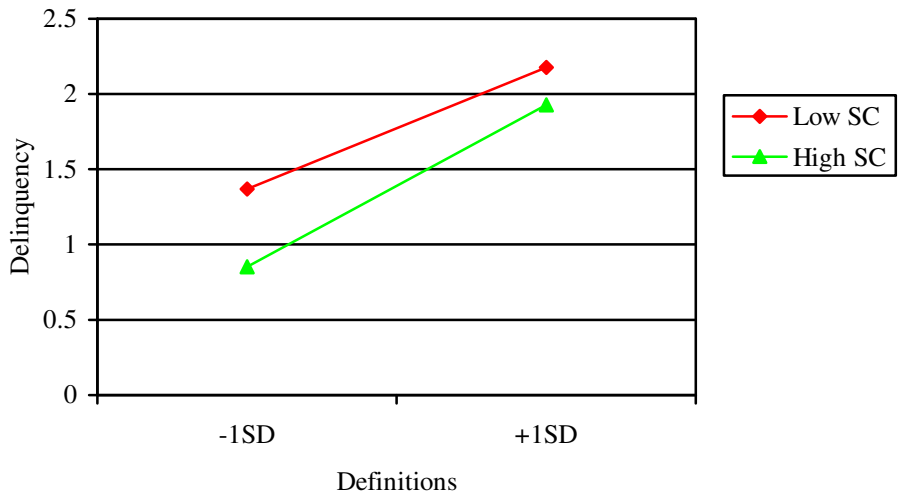


Figure 2: Effects of Definitions on Delinquency by Levels of Self-Control
 Note: Model included only the definitions scale, self-control, and the interaction.
 Low SC= individuals scoring one standard deviation below the mean on self-control
 High SC= individuals scoring one standard deviation above the mean on self-control

Lastly, in Model D, all variables from Model A were included with the addition of the interaction between self-control and reinforcements (see Table 13). The interaction was positive and statistically significant ($\beta=.07, p<.05$). Thus, the relationship between reinforcements and delinquency was stronger for those higher in self-control (see Figure 3). Stated differently, reinforcements increase the likelihood of delinquency more strongly for those higher in self-control than those lower in self control. Additionally, the R^2 change was statistically significant, indicating that the introduction of the interaction term significantly increased the model fit (R^2 Change=.01, $p<.05$).

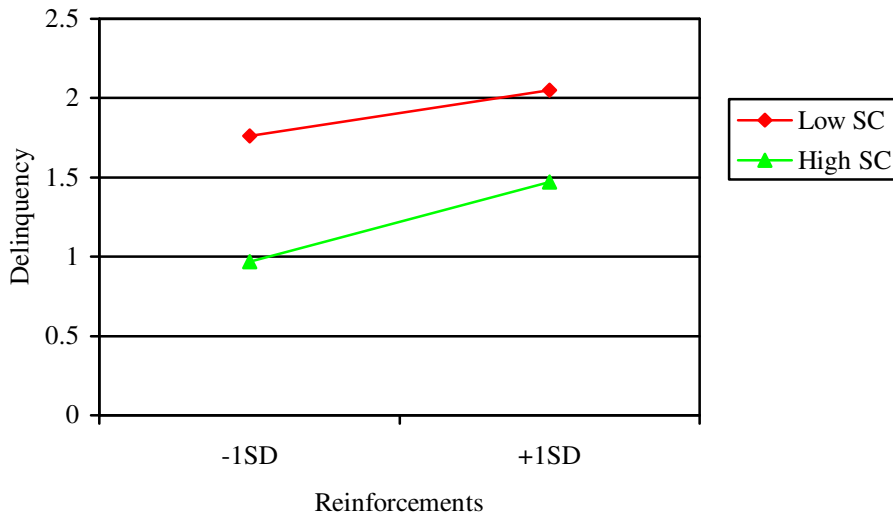


Figure 3: Effects of Reinforcements on Delinquency by Levels of Self-Control
 Note: Model included only the reinforcements scale, self-control, and the interaction.
 Low SC= individuals scoring one standard deviation below the mean on self-control
 High SC= individuals scoring one standard deviation above the mean on self-control

Control.

Table 14 shows the results of the OLS regression analyses used to assess the relationships between delinquency, three measures of parenting, and self-control, controlling for age, sex, and race. Overall, the first model was statistically significant and able to explain 41.5% of the variance in the variety of delinquent acts committed ($F=132.77, p<.05$). In this model, delinquency was regressed on parental control, maternal attachment, paternal attachment and self-control to determine their main effects. Parental control was the strongest parenting predictor of delinquency ($\beta=-.31, p<.05$) followed by maternal attachment ($\beta=-.09, p<.05$). Those with less parental control and less attachment to their mothers were more likely to be delinquent. Self-control also proved to be a strong predictor of delinquency ($\beta=-.35, p<.05$), meaning those with less

self-control were more likely to be delinquent. The significant bivariate relationship between paternal attachment and delinquency was no longer significant in multivariate analyses.

Table 14: OLS Regression Results for Control, Self-Control, and Interactions (N=1302)

	MODEL A			MODEL B			MODEL C			MODEL D		
	B	se(b)	β	b	se(b)	β	B	se(b)	β	b	se(b)	β
Sex	-.04	.04	-.03	-.04	.04	-.03	-.04	.04	-.02	-.04	.04	-.03
Age	.09*	.01	.22	.09*	.01	.21	.09*	.01	.21	.09*	.01	.21
Race	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
Self Control	-.05*	.00	-.35	-.05*	.00	-.36	-.05*	.00	-.35	-.05*	.00	-.35
Parental Control	-.08*	.01	-.31	-.08*	.01	-.31	-.08*	.01	-.31	-.08*	.01	-.30
M Attachment	-.02*	.01	-.09	-.02*	.01	-.08	-.02*	.01	-.09	-.02*	.01	-.08
P Attachment	-.004	.01	-.02	-.004	.01	-.02	-.004	.01	-.02	-.01	.01	-.03
SC x Pt Control				-.002*	.00	-.06						
SC x M Attach							-.002*	.001	-.06			
SC x P Attach										-.001	.001	-.04
Adjusted R²	.415			.418			.418			.416		

*p<.05 two tailed test

Note: SC= self-control, Pt Control= Parental Control, M Attach/ment= Maternal Attachment, P Attach/ment= Paternal Attachment

Model B shows the results of the variables from Model A with the addition of the interaction between parental control and self-control (see Table 14). The interaction was negative and significant at ($\beta=-.06$, $p<.05$), indicating that parental control had a greater negative effect on delinquency for those with higher self-control (see Figure 4). That is, parental control was stronger inhibitor of delinquency among those higher in self-control. The R^2 change was statistically significant, indicating that the introduction of the interaction term significantly increased the model fit (R^2 Change=.004, $p<.05$).

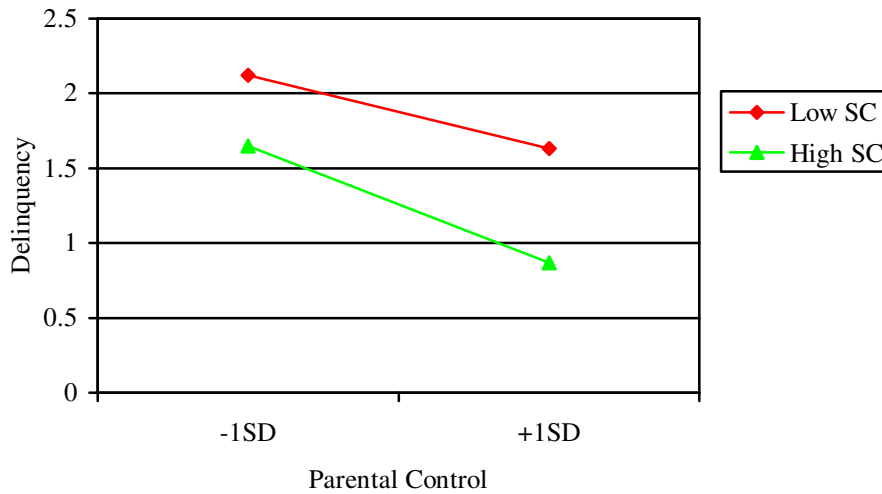


Figure 4: Effects of Parental Control on Delinquency by Levels of Self-Control
 Note: Model included only the parental control scale, self-control, and the interaction.
 Low SC= individuals scoring one standard deviation below the mean on self-control
 High SC= individuals scoring one standard deviation above the mean on self-control

In Model C, all variables from Model A were included with the addition of the interaction between maternal attachment and self-control (see Table 14). The interaction term was significant and negative at the $p < .05$ level ($\beta = -.06$). This showed that maternal attachment had a greater negative effect on delinquency for those higher in self-control (see Figure 5). In other words, maternal attachment had a greater influence in reducing delinquency for those youth who are higher in self-control. Additionally, the inclusion of the interaction term resulted in a significant increase in explained variance (R^2 change = .004, $p < .05$).

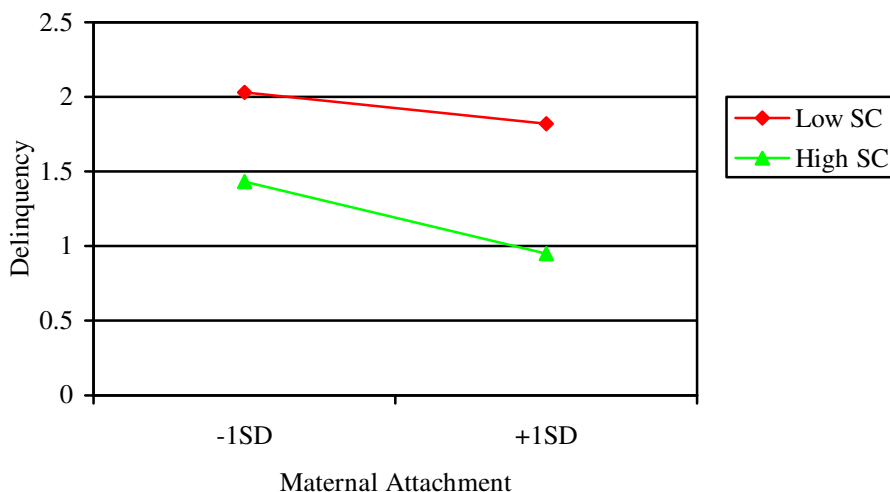


Figure 5: Effects of Maternal Attachment on Delinquency by Levels of Self-Control
 Note: Model included only the maternal attachment scale, self-control, and the interaction.
 Low SC= individuals scoring one standard deviation below the mean on self-control
 High SC= individuals scoring one standard deviation above the mean on self-control

Lastly, Model D includes the results of all variables from Model A and the interaction between paternal attachment and self-control (see Table 14). Once again, as in the main effect OLS regression model, paternal attachment proved insignificant and the interaction followed suit.

Perceptual Deterrence.

Model A of Table 15 shows the results of delinquency regressed on perceptual deterrence and self-control, controlling for age, sex, and race. This overall model was statistically significant and able to explain 39.2% of the variance of variety of delinquent acts committed ($F=192.17, p<.05$). Perceptual deterrence and self-control were both significant, negative predictors of delinquency ($\beta=-.29, p<.05$ and $\beta=-.38, p<.05$ respectively). Therefore, the more one perceives getting caught as a problem and the higher one is in self-control, the less likely one is to be delinquent.

Table 15: OLS Regression Results for Perceptual Deterrence, Self-Control and Interaction (N=1485)

	MODEL A			MODEL B		
	b	se(b)	β	b	se(b)	β
Sex	.01	.04	.01	.03	.03	.02
Age	.10*	.01	.24	.09*	.01	.22
Race	.01	.02	.01	.01	.02	.01
Self Control	-.06*	.00	-.38	-.06*	.00	-.39
P Deterrence	-.08*	.01	-.29	-.09*	.01	-.34
SC x P Deterrence				-.004*	.00	-.12
Adjusted R²	.392			.403		

*p<.05 two tailed test

Note: SC= self-control, P Deterrence= Perceptual Deterrence

Model B shows the results of OLS regression analyses for all variables from Model A with the addition of the interaction between perceptual deterrence and self-control (see Table 15). This interaction was statistically significant and negative ($\beta=-.12$, $p<.05$), indicating that perceptual deterrence had a stronger negative effect on delinquency among those higher in self-control (see Figure 6). In simple terms, perceptual deterrence is more influential in reducing delinquency among those higher in self-control. Additionally, the R^2 change was statistically significant, indicating that the introduction of the interaction term significantly increased the model fit (R^2 Change=.01, $p<.05$).

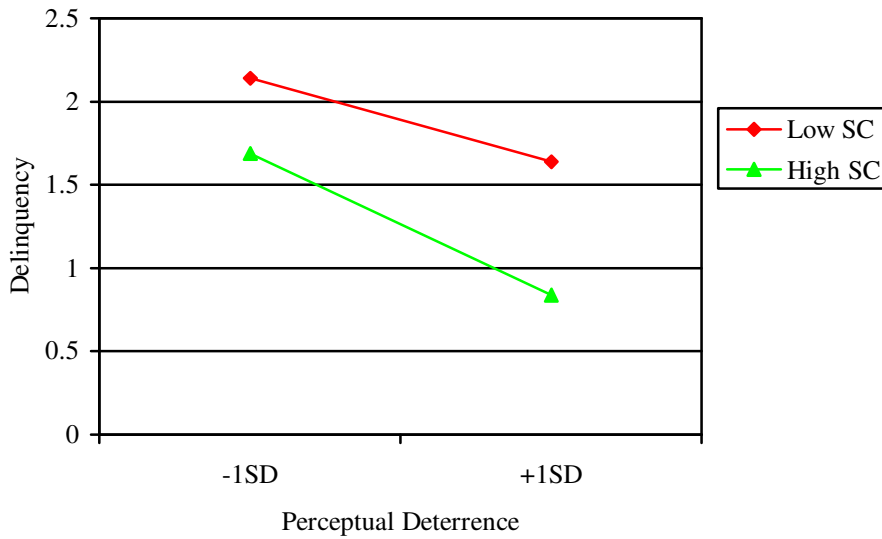


Figure 6: Effects of Perceptual Deterrence on Delinquency by Levels of Self-Control
 Note: Model included only the perceptual deterrence scale, self-control, and the interaction.
 Low SC= individuals scoring one standard deviation below the mean on self-control
 High SC= individuals scoring one standard deviation above the mean on self-control

Strain.

Table 16 presents the results of OLS regression with delinquency and subjective strains. In Model A, delinquency was regressed on the subjective strains scale and self-control to assess the main effects controlling for age, sex, and race. Overall, the first model was statistically significant and able to explain 34.1% of the variance in the variety of delinquent acts committed ($F=155.77, p<.05$). Subjective strains had a positive and statistically significant relationship with delinquency ($\beta=.13, p<.05$), while self-control has a negative and statistically significant relationship with delinquency ($\beta=-.48, p<.05$). The more those who experience strains perceive it as a problem and the less self-control they have, the more likely they are to participate in delinquent activity.

Table 16: OLS Regression Results for Subjective Strains, Self-Control, and Interaction (N=1494)

	MODEL A			MODEL B		
	B	se(b)	β	b	se(b)	β
Sex	-.07	.04	-.04	-.07	.04	-.04
Age	.12*	.01	.28	.12*	.01	.28
Race	.02	.02	.02	.02	.02	.02
Self Control	-.07*	.00	-.48	-.07*	.00	-.48
Subjective Strains	.02*	.00	.13	.02*	.00	.14
SC x Subjective Strains				.001*	.00	.05
Adjusted R²	.341			.343		

*p<.05 two tailed test
 Note: SC= self-control

In Model B, all variables from Model A were included with the addition of an interaction between subjective strains and self-control. The interaction proved to be significant at $p < .05$ ($\beta = .05$). The significant interaction suggests that strains have a greater effect on delinquency for those higher in self-control. In other words, those higher in self-control are more likely to react to subjective strains with delinquency (see Figure 7). Additionally, the inclusion of the interaction term resulted in a significant increase in variance explained (R^2 change = .002, $p < .05$).

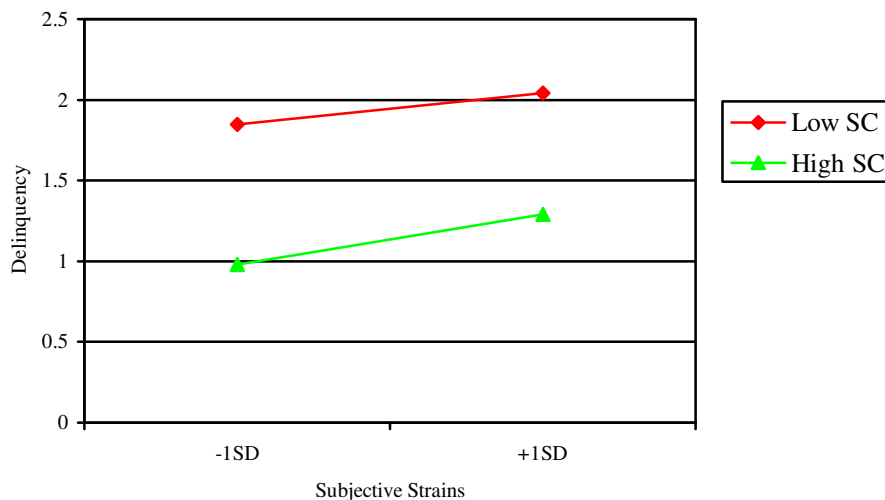


Figure 7: The Effect of Subjective Strain on Delinquency by Levels of Self-Control
 Note: Model included only the subjective strain scale, self-control, and the interaction.
 Low SC= individuals scoring one standard deviation below the mean on self-control
 High SC= individuals scoring one standard deviation above the mean on self-control

Chapter 5

Discussion and Conclusions

Most criminological theory testing has focused on the main effects of theoretical constructs, where rival theories are often pitted against one another in an attempt to examine which theory is a better predictor of criminal behavior. Others prefer to integrate different criminological theories in an effort to provide more comprehensive explanatory models (see Messner et al., 1989). More recently, researchers have examined the interactive nature of various criminological constructs (e.g. Wright et al., 2001). Some have investigated the extent to which self-control (or similar constructs, such as impulsivity) moderates the relationships between various criminological constructs and antisocial behavior (see Wooton et al., 1997, Carlo et al., 1998; Agnew et al., 2002; Jones et al., 2007). However, consistent support is lacking, leaving little to be reliably concluded. Specifically, two major hypotheses exist that suggest very different findings. The first suggests that those most at-risk will be more strongly influenced by external factors. The other proffers that the least at-risk will be more easily swayed by external influences. Both of these hypotheses have received empirical support resulting in much ambiguity.

In order to test these two competing arguments about the potential moderating role of self-control, this study sought to remedy the equivocal findings by focusing on a broad array of criminological constructs – more so than any single study to date. Three reasons could be cited for the divergent findings. First, the divergent findings previously noted could be the result of idiosyncratic sample characteristics. That is, there may be

something peculiar to the samples used in previous research that is influencing the findings. This raises the possibility that the interactive effects are not robust. A second possibility is that different operationalizations of “at-risk” individuals have been used. For example, Wright et al. (2001) have relied on a measure of self-control that includes symptoms of ADHD and antisocial behavior generated from various sources (e.g., parents, teachers, etc.). Others have focused on particular personality constructs such as negative emotionality and constraint (Agnew et al., 2002) or impulsivity (Lynam et al., 2000) as operationalizations of self-control. Lastly, several studies have examined only one or a few important criminological constructs and how self-control (or a related concept) moderated their relationship with delinquency (e.g. Wooton et al., 1997; Piquero & Pogarsky, 2002). That is, important criminological constructs have been neglected that may in fact have important interactive effects with self-control. The current study sought to partially remedy these issues by relying on a single sample, using a comprehensive measure of self-control, and examining multiple theoretical constructs. While this strategy cannot offer a definitive conclusion to these issues, they may help to resolve some of the ambiguity and thus offer fruitful guidance for future research.

One theory examined was social learning theory. Specifically, peers, definitions, and reinforcements were explored, and the extent to which their effects were modified by self-control. No study to date has included definitions and reinforcements, two central components to social learning theory, in the context of the interactive hypothesis. As expected, peers and definitions were very strong direct predictors of delinquency, while reinforcements were slightly weaker. Self-control also exerted significant influence on delinquency, but demonstrated a smaller effect size than peers and definitions. All three

social learning constructs significantly interacted with self-control in the same direction. As such, delinquent peers, criminal definitions, and criminal reinforcements all exerted a significantly stronger effect among those higher in self-control.

Constructs representing control theory (i.e. parental control, maternal attachment, and paternal attachment) were also examined. While paternal attachment was not significantly related to self-reported delinquency, parental control and maternal attachment were both significant correlates of lower delinquency. The lack of significance for paternal attachment could be due to the fact that maternal attachment may overwhelm this factor. That is, mothers might play a more central role in the adolescent's life, and while fathers may be important by themselves, they do not offer any additional "control" beyond that of mothers. Additionally, self-control had the strongest direct effect on delinquency in this model. Interactions were found for both parental control and maternal attachment, which, once again, indicated that these factors were more influential among those higher in self-control.

Deterrence theory was the third criminological theory examined. Both perceptual deterrence and self-control exerted significant main effects on delinquency, with self-control being the strongest predictor in the model. The interaction of the two further added to the model, and indicated that perceptual deterrence is more influential for those higher in self-control.

Lastly, strain theory was tested. Subjective strains were found to have significant main effects on delinquency. Once again, self-control was the strongest direct predictor in the model. As in the previous models that incorporated other theoretical constructs (see above), the interaction between subjective strains and self-control was significant and

indicated that subjective strains played a more important role for those higher in self-control.

Collectively, the results consistently indicated that external factors were more influential among those high in self-control. That is, with the exception of paternal attachment (which failed to demonstrate a significant main effect as well), all external factors measured in this study induced those with high self-control to conform or deviate more so than low self-control counterparts. Stated alternatively, those with lower self-control were influenced less by peers, parents, and strains, among other factors, than those evincing higher self-control. Delinquent peers, pro-criminal definitions, differential reinforcements of crime, and subjective strain increased the likelihood of delinquency while perceptual deterrence, parental control, and maternal attachment decreased the likelihood of delinquency to a greater extent among those higher in self-control compared to those low in self-control. This is in contrast to some previous arguments, and suggests that the interdependence model may, in fact, work in the opposite direction of that proposed by Wright and his colleagues (2001).

With several controversial and competing arguments concerning the role of self-control, these findings bear important implications that warrant further discussion. In particular, the explanatory power of constructs derived from the theories examined here (and potentially all criminological theories) may be partially contingent upon one's level of self-control. This suggests that Lewin (1935) and Magnusson (1988) were both correct in suggesting that similar environments can have a differential impact on two individuals as a result of their individual characteristics. That is, this study has found that behavior is better explained and therefore better predicted when the interaction between the person

and environment is taken into account. Furthermore, this suggests that previous explanations of crime may be partly misspecified if they do not take into consideration that the impact of some social processes may vary as a function of one's level of self-control. In order to more accurately predict crime, theories may need to be somewhat modified to account for these individual differences. Specifically, integrating social selection and social causation models via examination of their interactive effects will improve the predictive power of the overall model. However, more research is needed to determine what additional social influences vary as a function of self-control.

Practically speaking, policies should address all risk factors, both individual and social. The findings from the current study suggest two specific approaches depending on the type of individual being targeted. First, prevention policies should be aimed toward the acquisition of self-control early in life to avoid later delinquent behavior. Specifically, parenting classes aimed at proper supervision, discipline, control, conventional prosocial attitudes, and strong bonds, among others, will be most cost-effective and influential as effective parenting will increase the likelihood of acquiring self-control (see Gottfredson & Hirschi, 1990). Individuals low in self-control will also be harder to deter once they reach adolescence and will offend at higher rates throughout the life course. Thus, traditional interventions that target family issues, peer relationships, or other life stressors might prove to be ineffective among those low in self-control. Therefore focusing on this period of early development will be most effective and should have the greatest impact on overall offending rates (see Gottfredson & Hirschi, 1995).

Even if strategies to develop self-control early in life are implemented, this does not eliminate the possibility of delinquent behavior among youth with higher levels of

self-control. Results of this study indicate that these youth are at an increased risk of delinquency if they are exposed to negative external factors (e.g. delinquent peers, strain) compared to low self-control counterparts. Therefore, intervention policies that focus on deterring those offenders high in self-control from recidivating should also prove very effective. This could be accomplished first by making a concentrated effort to reduce the presence of negative factors, especially delinquent peers, among these youth. These high self-control offenders could also be deterred from recidivating by increasing exposure to positive external factors (e.g. increased parental control, better maternal attachment). Getting youth involved in prosocial activities (e.g. Boy Scouts, after school clubs, sports) should also prove successful as this will positively influence youth (e.g. via pro-social peers; forming definitions unfavorable to law violations). This study found that high self-control youth were more strongly persuaded to conform when they experience these positive factors and thus emphasis placed on positive social influences should decrease delinquent activity. Therefore, youth with higher self-control will make responsible decisions when they are not exposed to negative social influences, but introducing these influences will induce these youth to deviate when they would not have otherwise. From this it can easily be concluded that any study that neglects either psychological or sociological factors will risk misspecification.

This study is not without its limitations, however. Since only cross-sectional data were analyzed, it cannot be concluded that the findings are a result of developmental processes or that these relationships will change as a process of development. Although much research attests to this, it is not the focus here. Additionally, not all variables of each theoretical tradition were examined and fully measured in this study. Therefore, this

study cannot be conceptualized as a comprehensive and definitive test of the interactional hypothesis. That being said, this study did investigate more theoretical constructs than any other to date. Lastly, the results of the current study might not be generalizable. The sample used in this analysis was drawn from middle and high school students from Largo, Florida. It is unknown to what degree this sample differs from others that would be of interest to criminologists.

Despite these limitations, this study has provided a useful test of competing arguments regarding the moderating role of self-control by examining how relationships between constructs derived from several criminological theories varied in their effects on delinquency as a function of one's self-control. Ultimately, results from this study suggest that further replication is needed to confirm if, in fact, it is those individuals with higher levels of self-control who are more strongly influenced by social factors. If this is the case, the theoretical and practical implications previously listed should be taken into consideration as they will likely contribute to reducing delinquency among adolescents.

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