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Using Agnewís General Strain Theory to Explain the Relationship Between Early Victimization and Deviant Behavior

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Using Agnew's General Strain Theory to Explain the Relationship Between

Early Victimization and Deviant Behavior

by

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A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Arts
Department of Criminology
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Dedication

This thesis would not have been possible without the love and support of my family and friends. In particular, I would like to thank my mom and dad for always believing in me.

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Dena Carson

ABSTRACT

This study used Agnew's General Strain Theory to examine the relationship between early victimization and deviant behavior, as well as the mediating effects through negative emotions and social bonds. This study draws on developmental psychology literature and general strain literature to develop its hypotheses. Also, it expands the current research in developmental psychology and general strain theory by operationalizing strain as early victimization and using (a) dichotomous measures of alcohol use, drug use, and delinquency, (b) measures of frequency of binge drinking, drug use, and delinquency, (c) and measures of age of first binge drinking and drug use. Data from the National Survey of Adolescents, a cross-sectional national probability sample of 4,023 adolescents aged 12 to 17 years, was used to test the hypotheses. Tobit and logistic regression analyses were used to examine the mediating effects of friend and family problems, school problems, and depression and suicidal thoughts. The results show that when youth are sexually or physically assaulted at a young age they have an increased odds of participating in alcohol use, drug use and delinquency, use drugs and binge drink more frequently, are younger when they first take part in drug use and binge drinking, and they participate in more delinquent acts. These relationships were only partially mediated by the presence of friend and family problems, school problems, and depression and suicidal thoughts. These findings indicate early

victimization is able to explain participation in alcohol, drugs, and delinquency as well as explain an increase in the frequency of these acts. In addition, early victimization leads to an early age of onset of binge drinking and drug use. These results show support for general strain theory and indicate the importance of examining early strains.

Chapter 1

Introduction

Robert Agnew's general strain theory has been examined frequently since it was proposed in 1992. These studies have found support for the direct relationship between various types of strain and deviant behavior (Agnew, 1985, 1989; Agnew & White, 1992; Paternoster & Mazerolle, 1994; Hoffman & Su, 1997; Hoffman & Miller, 1998; Hoffman & Cerbone, 1999; Aseltine, Jr., Gore, & Gordon, 2000). Agnew argues that, in addition to a direct relationship, there is a mediating effect through negative emotions and legitimate coping strategies. Several studies have examined the mediating effects of both negative emotions (Mazerolle & Piquero, 1998; Aseltine, Jr., Gore, & Gordon, 2000; Mazerolle et al., 2000; Agnew et al., 2002; Jang & Johnson, 2003; Bao, Haas, & Pi, 2004; Sigfusdottir, Farkas, & Silver, 2004) and legitimate coping strategies (Paternoster & Mazerolle, 1994; Hoffman & Miller, 1998; Hoffman & Cerbone, 1999; Mazerolle et al., 2000; Broidy, 2001; Jang & Johnson, 2003).

None of these studies, however, has provided an examination of the direct and indirect effects of early strains on deviant behavior. This study addresses this by examining the direct relationship between early victimization and deviant behavior. Also, mediating effects of the relationship between early victimization and deviant behavior through negative emotions and social bonds are examined. The research done on the effects of early onset victimization is mainly focused in developmental psychology. These studies have found that early onset victimization leads to a range of social and behavioral problems (Famularo et al., 1994; Duncan et al., 1996; Dodge, Pettit, & Bates, 1997; Kilpatrick et al., 2000; Keiley et al., 2001; Hilarski, 2004). An examination of the

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direct and indirect relationship between early victimization and deviant behavior will benefit both developmental psychology literature and general strain theory research. Using these two disciplines as a framework, this study will look to answer the following questions:

1. Are youth who are victimized at an early age more likely to try alcohol and drugs, binge drink more often, use drugs more often, begin binge drinking and using drugs at a young age, participate in delinquent acts and participate more often?

2. Are youth who experience negative emotions more likely to try alcohol and drugs, binge drink more often, use drugs more often, begin binge drinking and using drugs at a young age, participate in delinquent acts and participate more often?

3. Are youth whose social bonds are weakened more likely to try alcohol and drugs, binge drink more often, use drugs more often, begin binge drinking and using drugs at a young age, participate in delinquent acts and participate more often?

4. Do youths' weak social bonds and negative emotions mediate the relationship between the early victimization and delinquent behavior?

The following chapters attempt to answer these questions. Chapter 2 discusses the developmental psychology and the general strain theory literature. Testable hypotheses are developed from these two literatures. Chapter 3 discusses the data set that will be used to test the hypotheses. In this chapter the sampling and data collection of the National Survey of Adolescents are discussed. Also, the measurement of the variables and the analytic plan are discussed. The analytic plan will discuss how the mediating relationships were examined as well as the types of regression analysis used. The results are presented and discussed in Chapter 4. In Chapter 5, a review of the document will be presented along with a discussion of the limitations of the study and the theoretical and policy implications.

Chapter 2

Theoretical Framework and Literature Review

This chapter provides a discussion of the extant literature and theoretical foundation employed to answer the research questions. First, there is a discussion of the developmental psychology literature on the effects of early onset victimization. This includes a discussion of the social and behavioral problems that occur when youth are victimized at an early age. Next, Agnew's general strain theory and its empirical tests are examined. Specifically, the research examining the three categories of strain, negative emotions that result from these strains, and legitimate coping mechanisms are discussed. Testable hypotheses are developed from these two theoretical literatures.

Early Onset Victimization

Psychological research has used early onset victimization to successfully predict a range of social and behavioral problems. This research has shown that children who are victimized early in life are more likely to show signs of post-traumatic stress disorder (Famularo et al., 1994; Duncan et al., 1996; Kilpatrick et al., 2000) and depression than children with later ages of onset (Toth, Manly, & Cicchetti, 1992; Duncan et al., 1996; Kilpatrick et al., 2000; Keiley et al., 2001). A study examining non-harmed, late-harmed, and early-harmed children found that children harmed early in life had more parent and teacher reported internalizing problems like depression and low self-esteem when compared with those not harmed and those harmed later in life. In another study involving early onset abuse, Bolger, Patterson, and Kuperschmidt (1998) found that it was related to both lower self-esteem and negative peer relationships. In addition, Beitchman et al. (1991) found that younger children are more susceptible to feelings of

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guilt and shame related to being victimized. Studies have also found that a child's age when the victimization occurs has a larger affect on externalizing and internalizing problems than the recentness of the victimization (Nash, Zivney, & Hulsey, 1993; Keiley et al., 2001). For example, in a study involving sexual abuse, Nash, Zivney, and Hulsey (1993) found that early onset of abuse was related to emotional problems, regardless of how recently the abuse occurred.

Early onset victimization has also been associated with aggression and delinquent behavior (Dodge, Pettit, & Bates, 1997; Kilpatrick et al., 2000; Keiley et al., 2001; Hilarski, 2004). Tong, Oates, and McDowell (1987) found that youth who are victimized experience problems at school such as fights, truancy, and suspension. Also, Keiley et al. (2001) reported that youth who are harmed early in life have more behavior problems such as conduct disorder both at home and at school. In addition to aggressive behavior several studies have found correlations between childhood victimization and drug and alcohol use (Dembo et al., 1987; Kilpatrick et al., 1997; Epstein et al., 1998; Kilpatrick et al., 2000). In particular, one study found that early onset victimization predicted past and present use of marijuana, prescription drugs, and hard drugs (Duncan et al., 1996). In addition, this study found that victims were more likely to drive under the influence of alcohol and to have alcohol and drug related arrests.

Criminologists frequently use early onset of offending measures in their research (Lewis, Shanok, Grant, & Ritvo, 1983; Loeber, 1988; Farrington et al., 1990; Stattin & Magnusson, 1995; LeBlanc & Loeber, 1998; Grant & Dawson, 1998; Ayers et al, 1999; Loeber et al., 1999; Piquero & Chung, 2001). These studies have predicted the stability, volume, and continuation of delinquency over the life course (Loeber, 1988; Farrington et al., 1990; Piquero & Chung, 2001) as well as increased likelihood of victimization (Loeber et al., 1999) and increased risk of depression and suicide (Lewis, Shanok,

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Grant, & Ritvo, 1983). Early onset of delinquency has also been shown to predict early onset and persistent substance use (Le Blanc & Loeber, 1998; Grant & Dawson, 1998). The studies examining early onset of substance have found that it increased the likelihood of delinquent behavior (Zhang, Wieczorek, & Welte, 1997), early sexual experiences (Lynch, 2001), and academic problems (Chatlos, 1997).

The above studies show that developmental psychology research is the primary resource for examinations of the effects of early onset victimization. Criminologists (Widom, 1989; Zingraff et al., 1994; Smith & Thornberry, 1995; McClellan, Farabee, & Crouch, 1997; Brezina, 1998; Weeks & Widom, 1998; Fagan, 2005), with some exceptions, have not fully explored the effects of early onset victimization. As demonstrated above criminological research mainly uses age at onset measures to examine delinquency and substance use. This lack of early onset victimization research in criminology is surprising given its ability to explain a range of deviant behaviors.

The effects of early onset victimization are frequently examined in developmental psychology. This body of research has consistently found that age at the time of first occurrence or onset of a traumatic experience is negatively related to the severity of subsequent consequences. In other words, the younger a person is at the time of the first traumatic event, the stronger the effects of that event will be (Carlson, Furby, Armstrong, & Schlaes, 1997). Young children will experience higher levels of stress over traumatic events because they cannot behaviorally avoid the event and they do not have the ability to cope with the victimization. Carlson et al. (1997) states that older children have higher cognitive and social development which gives them more control over the situation; thereby, reducing the stress related to the event. Also, older children are both able to avoid traumatic situations and to have formed social attachments with others such as teachers or friends to help them cope with these events.

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In general, individuals that experience traumatic events, such as victimization, will have a range of externalizing and internalizing problems (Keiley et al., 2001). One typical response to a traumatic event is aggression, which can appear as the release of frustration at the event or as an imitation of the abuser (Carlson et al., 1997). Also, when victimized, an individual might believe that the abuse is their fault. This guilt and shame related to the events can lower self-esteem (Dalenberg & Jacobs, 1994). In addition, low self-esteem can be a product of poor school performance and the behavioral problems that often result from victimization (Keiley et al, 2001). These problems are especially troublesome for children that have been abused at a young age. Young children are still developing self-esteem and self-control which may cause these events to have a greater impact on them (Cicchetti, 1989; Moran & Eckenrode, 1992; Bolger, Patterson, & Kupersmidt, 1998). Although the traumatic events will have some effect on the self-esteem of those victimized later in life, the effect will not be as prominent. Also, as children get older they have a more developed self-esteem, are more able to cope with stress, and will feel more in control of their environment. Older children also have more control over themselves which stops them from acting out as aggressively as a younger child (Moran & Eckenrode, 1992).

This study uses the above research to examine early onset victimization from a general strain theory perspective. Strains that occur early in life have not been examined using general strain theory variables such as negative emotions and legitimate coping. This examination will increase the understanding of the serious effects of early onset victimization in both psychology and criminology. Because these are similar disciplines they will benefit from this type of study in similar ways. This type of early onset measure has been used very little in criminology research. Therefore, criminologists and general strain theorists will benefit from more studies using early

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onset measures, especially a study examining these measures with strain variables. In addition, psychologists will benefit from an examination of early onset victimization and its effects on substance use and delinquent behavior from a theoretical perspective. Previous research on early onset victimization has been largely atheoretical. Applying general strain theory will help to explain why the relationship between early onset victimization and deviant behavior occurs. Below is an examination of general strain theory and related research. Hypotheses are developed from this research as well as the developmental psychology literature discussed previously.

General Strain Theory

Agnew's general strain theory (1992) is a revised form of classical strain theories (Merton, 1938; Cohen, 1955; Cloward & Ohlin, 1960). Classical strain theories are centered on the inability of persons to obtain their cultural goals of monetary success and/or middle class status. It is the blockage of these goals that leads to high levels of crime and delinquency (Merton, 1938; Cohen, 1955; Cloward & Ohlin, 1960). The poor results of micro level tests on early strain theories (Voss, 1966; Hirschi, 1969; Quicker, 1974; Burton, Cullen, Evans, & Dunaway, 1994) led Robert Agnew to develop a revised version of strain theory. Agnew (1983) challenged two assumptions of classical strain theory. First, Agnew questioned whether or not monetary success and middle-class status are the primary goals of youth. In particular, he questioned whether or not this was true for lower class youth. Second, Agnew questioned the weight placed by early strain theories on long-term goals rather than more immediate goals. He believed that youth are concerned with more current and age-relevant goals like popularity, grades, and parental relationships. Agnew believed that focusing on these more immediate goals would allow strain theory to explain middle class delinquency. Also, focusing on immediate goals would explain why most delinquents abandon crime in late adolescence

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and why they will go for long periods without offending. In late adolescence some of the immediate goals become irrelevant and some are fulfilled. For example, school related goals will become irrelevant as the youth gets older. Agnew (1984) identified seven immediate goals that he believed to be important to youth from all socioeconomic backgrounds: academic, intellectual, student activities, athletics, affiliation, independence, and success. In other words, youth from all social classes believe it is important to get good grades, use their intelligence, be a leader in school activities, be a good athlete, spend time with their friends, be given independence, and to improve themselves by attempting difficult goals. Agnew stated that delinquency will be most common in individuals who can not achieve most or all of their immediate goals. Empirical tests did not show strong support for this version of strain theory, however (Agnew, 1983, 1984).

Thus, in another version of strain theory, Agnew introduced an alternate mechanism by which youth experience strain, the blockage of pain-avoidance behavior (Agnew, 1985). He stated that youth, while still seeking certain immediate goals, also want to avoid or escape circumstances that they find painful or aversive. Also, like the more immediate goals, avoidance of these circumstances may also be blocked. Agnew's key example of this type of strain is abusive parents. He states that youth who are abused by their parents might be unable to legally leave the home; therefore, they cannot avoid or escape the source of the strain (Agnew, 1989). Agnew (1985, 1989) provides two ways in which blockage of pain-avoidance behavior will lead to delinquency. First, delinquency could be a way to escape or avoid the source of painful or adverse circumstance. For example, a child that is experiencing problems at school with his teachers may become truant to avoid or escape those difficulties. Second, when youths cannot escape or avoid the circumstance and they react in anger and strike

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out at the source of the problem. For example, if the child cannot escape or avoid the conflict by truancy they might become angry and vandalize the school or show aggression toward a certain teacher. Agnew's research demonstrated support for this addition to strain theory. In a cross-sectional study, Agnew (1985) found that strain, measured as unfavorable school and family environments, had both a direct effect on self-reported delinquency as well as an indirect effect through anger. In his longitudinal study, Agnew (1989) found that environmental adversity led to an increase in delinquency over time.

From the stress, equity/justice, and aggression literatures, Agnew (1992) once again revised his theory into what today is referred to as general strain theory. This is a micro-level theory that focuses on the individual and their social environment, such as negative relationships at home, school, or in the community. Agnew (1992) defines negative relationships as those in which the other person is not treating the individual as he or she would like to be treated. He identified three different types of strain that referred to three different types of negative relationships: failure to achieve positively valued goals, removal of positively valued stimuli, and confrontation with negative stimuli (Agnew, 1992). Agnew further argues that these strains will lead to negative emotions which, in turn, will lead to deviant behavior.

Failure to Achieve Positively Valued Goals

Failure to achieve positively valued goals consists of three subtypes. The first Agnew derived from classical strain theories and the last two were derived from the equity and justice literature. The first type is the disjunction between aspirations and expectations/actual achievements. This type of strain is measured as the gap between what individuals hope to achieve (aspirations) and what they expect to achieve or are actually able to achieve (expectations/actual achievements). Classical strain theorists

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stated that this disjunction would be especially problematic among lower class individuals and believed the aspirations of these individuals were monetary success and achieving middle class status. This view was criticized empirically because it was unable to give an explanation for middle-class delinquency, it focused only on monetary and social class aspirations, and it did not account for why some youth are delinquent and others are not. In his revision, Agnew (1992) states that youth aspire to more immediate goals like good grades, athletic ability, and popularity; therefore, strain should be measured as the gap between aspirations and achievement of immediate goals rather than future goals. Individuals that are not able to achieve these goals may experience anger or depression which leads to deviant behavior.

The second subtype is the disjunction between expectations and actual achievements. This type of strain is measured as the gap between what individuals expect to achieve and what they are actually able to achieve. Individual expectations for achievement are based on past experiences and on the comparison with the achievements of similar others. Agnew states that this type of strain is likely to create more negative emotions than the gap between aspirations and achievements. This is because aspirations are ideal goals and the inability to achieve ideal goals might not be taken as seriously by the individual as the inability to achieve expected goals. Therefore, they are likely to feel more strain when they are not able to achieve what they expected they would achieve. Agnew states that not achieving what is expected will lead to negative emotions such as anger, resentment, dissatisfaction, and depression and these negative emotions will lead to deviant behavior.

The third subtype of strain is the disjunction between just/fair outcomes and actual outcomes. This disjunction can occur when individuals enter into situations without a set goal or expectation. In this instance, people will compare the effort they

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put into a certain situation (effort) with what they received from that situation (reciprocation). If the effort and reciprocation are comparable the outcome is seen as just or fair. However, if the effort outweighs the reciprocation individuals may see the outcome as being unfair, causing feelings of strain. These feelings of strain may lead to anger which precipitates deviant behavior even when no goals or expectations were present.

Removal of Positively Valued Stimuli

This type of strain involves the actual or anticipated loss of something individuals value. Examples of this type of strain include moving away from a well liked school or community, loss of a friend or a significant other, and the death of someone important to the individual. An individual that experiences the loss of positively valued stimuli may experience negative emotions such as anger or depression which, in turn, lead to deviant behavior. Individuals may attempt to stop the removal of the stimuli, to regain the stimuli if lost, look for revenge against those attributable for the loss, or to cope with the loss through alcohol and drug use (Agnew, 1992).

Presentation of Negative Stimuli

This involves the actual or anticipated occurrence of something individuals view as aversive. Examples of this type of strain include negative relationships with parents, teachers or friends and victimization. When individuals are presented with negative stimuli they may experience negative emotions which, in turn, lead to deviant behavior. Individuals will attempt to escape from the situation, to avoid or stop the stressors, to seek revenge on the cause of the negative stimuli, or to cope with the negative stimuli through alcohol and drug use (Agnew, 1992).

The three types of strain do have overlapping qualities. For example, a breaking up with a boyfriend may cause strain because it interferes with a youth's expectations

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about the just and fair outcomes of the relationship, it is a loss of a relationship that the youth valued, and because it presents the youth with frequent negative stimuli whenever she sees her ex-boyfriend. Agnew (1992) mentions that these types of strain are ideal categories and are meant to envelop a variety of strains; therefore, some overlap is expected.

Negative Emotions

Each of the types of strain described above increases the likelihood that an individual will experience negative emotions. These emotions include anger, frustration, disappointment, depression, anxiety, and fear. These negative emotions build up over time and lead to a feeling of pressure to take action, to escape, to avoid, or to cope with strain. Agnew (1992) states that anger is a key reason for deviant behavior in reaction to strain. This is because anger increases the amount of injury that the individual feels, creates a need for revenge, increases the likelihood that the individual will take action, and lowers the individual's inhibitions. Also, the individual will believe that these feelings and behaviors are justified. Although anger is an important emotion, Agnew (2006) states that other negative emotions also play an important role in explaining the effect of strain on other types of criminal behavior. For example, anger is strongly related to violent crimes, but substance use might be more relatable to feelings of depression and anxiety.

Legitimate Coping

In general strain theory, Agnew (1992) discusses why some individuals react to strain with delinquent behavior and others do not. Positive coping responses such as intelligence, creativity, self-efficacy, and self-esteem can help people to cope with strain in a positive way. These traits affect the individual's ability to engage in cognitive, emotional, and behavioral coping. Other factors that contribute to positive reactions to

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strain include strong social support and social controls. Individuals that have strong relationships with family, friends, and significant others will cope with strain more successfully than individuals without these relationships. Also, these individuals will be less likely to participate in deviant behavior because they will view the costs as higher than the rewards. There are certain personality traits that allow an individual to view the costs of crime as less and to have more favorable views on crime than individuals without these traits. For example, a disposition towards delinquency, bad temperament, deviant beliefs, association with delinquent peers, and low self-control can increase the likelihood of deviant behavior when strain is present (Agnew, 1992). In later works, Agnew (2001) discussed the types of strains that are most likely to result in deviant behavior. These are strains that are seen as unjust, are high in magnitude, are associated with low self-control, and create some pressure or motivation for delinquent coping strategies (Agnew, 2001). These types of strain are more likely to lead to delinquency because they cause negative emotions favorable to crime, reduce the ability to cope in a noncriminal way, reduce the perceived cost of crime, influence criminal dispositions, and expose the individual to delinquent peers and opinions.

Research on General Strain Theory

This review of the literature on general strain theory will show that most of the studies are supportive of a direct relationship between strain and deviant behavior as well as an indirect relationship through negative emotions and coping factors such as self-esteem, self-efficacy, and strong social bonds. Despite the empirical support, the previous literature is limited in three ways. First, these studies measure a variety of strains as described in general strain theory; however, very few examine victimization as a type of strain. Second, most of the studies use only one measure of delinquency and

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drug use. Lastly, there have been few, if any, studies examining strains that occur early in a youth's lifetime as they relate to deviant behaviors.

The research examining the direct relationships between strain and deviant behavior are generally supportive of strain theory. Agnew and White (1992), in the first test of general strain theory, related eight different measures of strain to delinquency and drug use. They found a significant, positive relationship between strain and delinquency and drug use when controlling for social control and differential association variables. The relationship with delinquency held up when examined with longitudinal data as well; however, the relationship with drug use did not hold. Other longitudinal studies have found support for the relationship between strain and deviant behavior when controlling for social control and differential association/social learning variables (Paternoster & Mazerolle, 1994; Hoffman & Su, 1997; Hoffman & Miller, 1998; Hoffman & Cerbone, 1999; Aseltine, Jr., Gore, & Gordon, 2000). However, cross-sectional studies of this relationship find mixed results. For example, in a study that examined the relationship between strain as exposure to noxious stimuli and loss of positively valued stimuli and delinquent behavior as violence, drug use, and school deviance found that strain has a direct positive effect on violence, but that it has a direct negative effect on drug use and school deviance (Mazerolle et al., 2000). Based on these studies a direct relationship is hypothesized between early victimization and delinquent behavior. Hypothesis$_1$: *As the age at first victimization increase (1) the odds of alcohol use, drug use, and delinquency will decrease, (2) the frequency of binge drinking, drug use, and delinquent acts will decrease, and (3) the age at first binge drinking and drug use will increase.*

The above studies offer some support for this theory, but they are limited. Although general strain theory suggests a direct relationship between strain and deviant behavior, it also indicates that this relationship is mediated by negative emotions, coping

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factors, and social bonds. Despite controls for the proposed mediators, social bonds and negative emotions, the direct examinations mentioned above do not examine the intervening effects of these variables. Most of the research on general strain theory has examined the indirect effects of the relationship between strain and deviant behavior. This relationship sometimes works through negative emotions, coping factors such as self-esteem, self-efficacy and social bonds. This research has provided partial support for the conditioning effects described in this theory.

Agnew argues that negative emotions such as anger, depression and anxiety, and resentment mediate the relationship between strain and delinquent behavior. The studies that have examined the mediating effects of negative emotions have shown only partial support for general strain theory. A few studies have shown that negative emotions do mediate the relationship between strain and delinquent coping and that strain increases negative emotions leading to an increase in delinquent behavior (Agnew et al., 2002; Jang & Johnson, 2003). Other studies, however, have not been as supportive. One study that examined the mediating effects of anger on the relationship between strain and delinquent behavior such as driving drunk, shoplifting, and fighting while controlling for moral beliefs and deviant peers found that only feelings of injustice and experiencing noxious neighborhood conditions were significantly related to an increase in anger; however, they only explained a small part of the variation in anger. They did not find evidence of the mediating effect of anger on the relationship between strains and delinquent behavior (Mazerolle & Piquero, 1998). A similar study found that anger does not mediate the relationship between strain and violent behavior, drug use, or school deviance (Mazerolle et al., 2000). Brezina (1996) actually found that it was delinquency that mediated the impact of strain on negative emotions such as anger, resentment, anxiety, and depression. In other words, as strain and delinquency

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increased, the presence of those negative emotions decreased. However, in a later study he found that anger does play an intervening role in the relationship between strain and delinquency (Brezina, 1998).

Other studies find that the mediating effects of negative emotions are dependent upon the type of strain, the type of delinquent behavior, and the type of negative emotion. In a more complete examination of negative emotions, Broidy (2001) found that the presence of unfair outcomes is positively related to anger, but it had no affect on other negative emotions. Similarly, Aseltine, Jr., Gore, and Gordon (2000) found that anger and anxiety mediated the relationship between strain and violent behavior, but not marijuana use. In a study examining family conflict, researchers found that exposure to arguments and fights at home are positively related to depression and anger in adolescents. Anger, however, was positively related to delinquent behavior, but depression had no effect on delinquency (Sigfusdottir, Farkas, & Silver, 2004). Another study found that anger mediates the relationship of strain on violent offenses, resentment mediates the effect of strain on non-violent delinquency, and anxiety and depression both mediate the relationship between strain and minor offenses (Bao, Haas, & Pi, 2004). Based on these studies it is hypothesized that negative emotions will mediate the relationship between early victimization and deviant behavior. Hypothesis$_2$: *As the age at first victimization increases the odds of negative emotions will decrease. The presence of negative emotions, in turn (1) increases the odds of alcohol use, drug use, and delinquency, (2) increases the frequency of binge drinking, drug use, and delinquent acts, and (3) decreases the age at first binge drinking and drug use.*

Agnew also specifies that positive coping factors mediate the relationship between strain and delinquent behavior. These include coping factors such as self-efficacy, self-esteem, and social bonds. The research examining the mediating effects

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of positive coping such as self-efficacy and self-esteem shows little support for this component of general strain theory. In a longitudinal study, Hoffman and Cerbone (1999) found self-efficacy and self-esteem does not mediate the relationship between stressful life events and delinquency. Similar results were found in a cross-sectional study involving a sample of African Americans (Jang & Johnson, 2003). However, Broidy (2001) found that legitimate coping was related to a decrease in self-reported delinquency, which provides some support for the effects of positive coping.

Research that examined various types of social bond variables has been supportive of a mediating effect on the relationship between strain and deviant behavior. Paternoster and Mazerolle (1994) measured social control using good grades and family attachment and found that it mediated the relationship between strain and delinquency. These results are similar to those found in other studies (Hoffman & Miller, 1998; Mazerolle et al., 2000). These studies consistently find that youth with strong social bonds to family, friends, and school will be able to cope with strain more effectively and, in turn, participate in less delinquency and drug use. Conversely, youth with weak social bonds will be unable to cope in a legitimate way. From this research it is hypothesized that social bonds will mediate the relationship between early victimization and deviant behavior. Hypothesis$_3$: *The negative effect of victimization on the strength of social bonds increases as the age at first victimization decreases. The presence of weak social bonds, in turn (1) increases the odds of alcohol use, drug use, and delinquency, (2) increases the frequency of binge drinking, drug use, and delinquent acts, and (3) decreases age at first binge drinking and drug use.*

The studies described above conceptualize strain in many different ways as described in general strain theory. Several of these studies measure strain as stressful life events including variations on school problems, family problems, and neighborhood

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problems (Paternoster & Mazerolle, 1994; Brezina, 1996; Aseltine, Jr., Gore, & Gordon, 2000; Mazerolle et al., 2000; Agnew et al., 2002; Bao, Haas, Pi, 2004; Sigfusdottir, Farkas, & Silver, 2004). A few studies measure strain using a scale from the stress literature that includes familial death along with family, school, and neighborhood problems (Agnew & White, 1992; Hoffman & Su, 1997; Hoffman & Miller, 1998). Very few of those studies, however, measure of strain as victimization. Agnew (2001) indicates that criminal victimization is a type of strain that will most often lead to deviant behavior because they are usually seen as unjust and high in magnitude, they usually occur in environments where social control is low, and are likely to lead to the social learning of crime. The few general strain theory studies that have used this form of strain find that they are positively related to delinquency (Brezina, 1998; Agnew, 2002; Jang & Johnson, 2003).

Also, previous research on general strain theory has mostly used only one measure of delinquency and drug use. Several studies use a composite measure of delinquency, but exclude alcohol and drug use both in the composite measure and as an outcome variable (Paternoster & Mazerolle, 1994; Brezina, 1996; Hoffman & Miller, 1998; Bao, Haas, Pi, 2004; Sigfusdottir, Farkas, & Silver, 2004). Other studies include alcohol use and drug use in composite measures of delinquency (Agnew et al., 2002; Jang & Johnson, 2003). Still other studies use separate measures of alcohol and drug use to examine their relationship with strain variables (Agnew & White, 1992; Hoffman & Su, 1997; Aseltine, Jr., Gore, & Gordon, 2000; Mazerolle et al., 2000). These types of composite measures are not able to examine how strains affect alcohol, drug use, and delinquency separately. In addition, all of the extant research uses a frequency measurement for the outcome variables. Using only delinquency variables, combining alcohol and drug use with delinquency and by using only frequency measurements limits

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the amount of information that can be drawn from these studies. A dichotomous alcohol use, drug use, and delinquency measure and early onset measures would provide more information that would be relevant both theoretically and in policy development. Dichotomous measures reflect the decision to participate alcohol, drug use, and delinquency. This is especially important to strain theorists because it relates to the question of why some individuals become delinquent and others do not (Paternoster & Triplett, 1988).

In addition to limited strain measures and limited deviant behavior measures, previous research has failed to examine strains that occur at an early age as well as the effects that these strains might have on the age when a youth begins binge drinking and using drugs. As discussed above, developmental psychology has found that early onset victimization is related to many deviant behaviors that are relevant to psychology as well as criminology. Therefore, it is important to examine the effects of early strain. This study looks to remedy the limitations in strain research by examining the direct relationship between early victimization and alcohol use, drug use, and delinquency; also, by examining the mediating effects of social bonds and negative emotions on this relationship. This study also uses three measures of alcohol and drug use as well as two measures of delinquency to examine the direct and indirect effects of early onset strains.

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Chapter 3

Methods

This chapter provides a discussion of the sampling methods and data collection strategy used in the National Survey of Adolescents. Also, a full discussion of the measurement of the variables is provided. Lastly, the analytic plan used to test the hypotheses in the present study is discussed.

Sampling and Data Collection

The data were obtained by Dean Kilpatrick and Benjamin Saunders of the Medical University of South Carolina, National Crime Victims Research and Treatment Center in 1995. The study consisted of two sub samples, a national probability sample of 3,161 adolescents and a probability over sample of 862 high-risk adolescents located in inner-city regions of the United States. The sampling of youth in inner cities was designed to increase the number of minority respondents and provided a larger sample of individuals whose neighborhoods put them at a higher risk of victimization and more opportunities for substance use and deviant behavior. Kilpatrick and Saunders weighted the full sample so that it matched the 1995 census for the age, race, and gender of youths in the United States.

The sample selection and interviewing was conducted by Schulman, Ronca, and Bucuvalas, Inc. The national probability sample was a multistage, stratified, area probability, random-digit dialing sampling procedure that consisted of four parts. First, they stratified the United States geographically based on the census region and on population. Next, they selected telephone banks for each stratum based on a database of working telephone banks. Then, they used random-digit dialing to sample households

within the telephone banks. Out of service numbers were replaced by using random-digit dialing. Non-answering households were also replaced after four attempts. Finally, they asked adult respondents in these households if there was a child, age 12-17, living in the household. If more than one child in the household was eligible to participate in the study Kilpatrick and Saunders used a systematic selection (most recent birthday) to determine which child would participate. The probability over sample was selected in the same way except for the first step. Instead of stratification, they sampled households located in counties that were classified as urban by the census bureau.

Since all participants had to be reached via the telephone there were some youths that had to be excluded. Youths that were not invited to participate in the study were those living in institutional settings, in households without parents or guardians, or in a house without a telephone. Youths that did not speak English or Spanish and whose parents did not give permission for them to participate were also excluded. A total of 5,367 households were eligible to participate in the survey. Of the eligible households, 4,836 parents completed the initial interview or 90.1% of the eligible households. Of these parents, 4,236 parents allowed their child to participate in the survey or 78.9% of the eligible households and 87.6% of the parents that participated in the initial interview. Of these parents, 4,023 youths participated and completed the survey or 75.0% of eligible households, 83.2% of the parents with completed interviews, and 95.0% of all the children that had parental permission to participate. Overall, 75% of the eligible households participated in the survey for a total sample of 4,023. A listwise deletion of missing data led to final sample size of 2,359. Despite the loss of 1,664 cases the sample was still representative of the total sample prior to deletion. This was true for all variables used in analysis with the exception of gender. After listwise deletion there were slightly more girls than boys in the sample.

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A cross-sectional data set was used to examine deviant behavior and was obtained from the National Survey of Adolescents (NSA). As mentioned above the data was collected using telephone surveying techniques. The surveys were conducted in English or Spanish using Computer-Assisted Telephone Interviewing (CATI) technology. Interviews were conducted with a parent or guardian first, mainly to secure permission to interview the child and establish a relationship. The parent or guardian was given a toll-free number to call in order to make sure it was a valid study. Then the children were interviewed either immediately after talking with the parents or by appointment.

Since some of the questions in the survey covered sensitive topics; the ability of youth to answer freely and privately was a concern. Kilpatrick and Saunders took two steps to ensure that the respondents could answer freely. First, respondents were asked if they were in a situation in which they could be assured of privacy and could answer freely. If the youths were not in a private situation the interviewer offered to call back at another time when privacy was more likely. Second, the survey involved mainly closed-ended questions. Therefore, respondents could answer with a "yes" or "no", a number, or other one-word or one-phrase answers.

Kilpatrick et al. (2000) outlined the steps taken to protect the participants that appeared to be in danger. First, a child was considered in danger if they had been sexually assaulted in the past year, had been physically assaulted by a family member in the past year, or had not told anyone about the sexual or physical assault. Second, an endangered child was examined by a trained professional in order to asses the amount of danger. Third, the children that were considered in danger were encouraged to contact child protective services. Fourth, the trained professional was prepared to contact child protective services if the child in danger did not. Fifth, all the children that participated were asked if they would like the number to the toll-free Child Help line.

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Measurement of Variables

        Developmental psychology research and general strain theory research both find that victimization is related to deviant behaviors. The developmental psychology literature pays particular attention to the effects of early victimization and finds that it is more likely to lead to social and behavioral problems than victimization that occurs later in life. In Agnew's general strain theory (1992) gives victimization as an example of strain that can lead to weakened social bonds, negative emotions, and deviant behavior. No test of general strain theory has examined the effects of early strains on deviant behavior. This study examines the how early strain is directly related to deviant behavior and indirectly related through social bonds and negative emotions. Figure One (below) shows the conceptual model of the variables used to examine the direct and mediating relationships.

Figure 1: Conceptual Model of Key Study Relationships
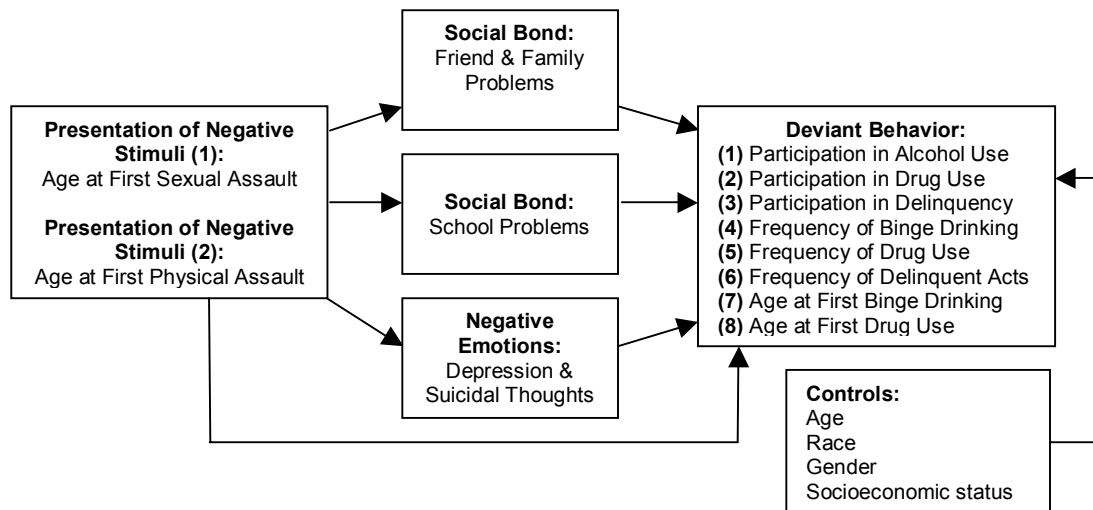
Strain: Presentation of Negative Stimuli

        This study uses two measures of strain to examine its direct and mediating effects on deviant behavior. Drawing on the psychology literature and general strain

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both age at first sexual assault and age at first physical assault are used as measures of strain.

The age at first sexual assault variable was created by determining whether or not a juvenile had experienced sexual assault and if so, the age it first occurred. The presence of sexual assault was determined by defining sexual assault to the participant and then asking a series of six questions about unwanted sexual contact by another person (related or not). The exact wording of these questions and their factor loadings were: (1) has a man or a boy ever put a sexual part of his body inside your private parts, inside your rear end or inside your mouth when you didn't want them to? (0.92), (2) has anyone, male or female, ever put fingers or objects inside your private parts, inside your rear end when you didn't want them to? (0.96), (3) has anyone, male or female, ever put their mouth on your private parts when you didn't want them to? (0.97), (4) has anyone, male or female, ever touched your private parts when you didn't want them to? (0.88), (5) has anyone, male or female, ever made you touch their private sexual parts when you didn't want them to? (0.95), (6) for boys only, has a woman or girl ever put your private sexual parts in her mouth or inside her body when you didn't want her to? (0.08) The factor loadings were good for these questions and the alpha reliability is acceptable ($\alpha=0.602$).

Participants that answered yes to any of the above questions were asked which event occurred first and what age they were at the time of the first event. This age variable did not include information on those participants who were not sexually assaulted. In order to account for no assaults a new variable was created that coded all negative responses as eighteen and incorporated the ages for those who gave positive responses. Therefore, this variable gave information on the age of first sexual assault as well as accounted for youth that were not sexually assaulted. This is similar to

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Zhang, Wieczorek, & Welte (1997) which used top-coding in their study of early onset substance use. The age of first victimization of those who were sexually assaulted range from two to seventeen years of age.

The age when a youth was first physically assaulted was measured similar to the age of first sexual assault. To determine presence of physical assault, the participants were given an explanation of physical assault and then asked a series of five questions about physical assaults. The exact wording and factor loadings of these questions were: (1) has anyone, including family members or friends, ever attacked you with a gun, knife, or some other weapon, regardless of when it happened or whether you ever reported to the police? (0.68), (2) has anyone, including family members or friends, ever physically attacked you without a weapon, but you though they were trying to kill or seriously injure you? (0.63), (3) has anyone, including family members or friends, ever threatened you with a gun or knife, but didn't actually shoot or cut you? (0.61), (4) has anyone, including family members or friends, ever beat you up, attacked you, or hit you with something like a stick, club, or bottle so hard that you were hurt pretty bad? (0.67), (5) has anyone, including family members or friends, ever beat you up with their fists so hard that you were hurt pretty badly (0.61)? The factor loadings for these questions are good as is the alpha reliability (α=0.772).

Similar to the sexual assault variable, participants that answered yes to any of the above questions were asked which event occurred first and what age they were at the time of the first event. In order to account for the participants that were not physically assaulted a new variable was created that coded all negative responses as eighteen and incorporated the ages for those who gave positive responses. The ages of those who were physically assaulted range from two to seventeen years.

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Social Bond Variables

In his description of legitimate coping Agnew (1992) gave the presence of social bonds as an example of why some youth will react to strain with deviant behavior while others will not. Several studies examining strain theory have found that weak social bonds mediate the relationship between various types of strain and delinquency (Paternoster & Mazerolle, 1994; Hoffman & Miller, 1998; Mazerolle et al., 2000). In this study youth's relationships with their friends and family as well as their school experiences are used to measure social bonds.

The variable measuring friend and family problems was part of a set of questions that followed the Post-Traumatic Stress Disorder (PTSD) assessment questions. A juvenile that responded affirmatively to at least six of the twenty PTSD questions was considered to be experiencing PTSD (information on the measurement of PTSD can be found in Kilpatrick et al. 2000). It was then explained to these juveniles that traumatic events that cause emotional problems and bad moods can also cause other problems. The juveniles were asked if they had experienced problems with their family members or friends that included getting into more arguments or fights than before the traumatic event, lack of trust, or not feeling as close to them. Juveniles who responded yes to this question were coded as one and juveniles that responded no were coded as zero.

The variable measuring school problems combined three different questions. The exact wording and the factor loadings for these questions were: I'd like you to tell me which of these have happened to you in the past year (1) having to repeat a school grade (0.53), (2) being suspended from school (0.50), and (3) getting at least one failing grade on a report card (0.47). The factor loadings for these questions are acceptable; however, the alpha reliability is low ($\alpha=0.461$) which is expected when only a few measures are used.

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A new variable was created from those questions to obtain a single measure of school problems. A participant who answered yes to any of the questions above was coded as one and those who responded negatively to all the questions were coded as zero. In other words, those students indicating that they were experiencing school problems were coded as one and those not experiencing school problems were coded as zero.

Negative Emotions

Agnew (1992) stated that the relationship between strain and deviant behavior is often mediated by the presence of negative emotions. He states that anger is the most common negative emotion that results from strain; however, in later works he called for research to examine other negative emotions (Agnew, 2006). This study examines the mediating effects of depression and suicidal thoughts on the relationship between strain and delinquency.

Depression and suicidal thoughts was measured using four different questions. The questions and their factor loadings were: (1) have you ever had a period of two weeks or longer when you were feeling depressed, down, or irritable most of the day, nearly everyday? (0.41), (2) has there ever been a time of two weeks or longer when you were uninterested in most things or unable to enjoy things you used to do nearly every day? (0.44), (3) has there ever been a period of two weeks or more when you felt like you wanted to die (0.56), and (4) have you ever felt so low that you thought of committing suicide (0.43)? The factor loadings for these questions were acceptable, but the alpha reliability is low ($\alpha=0.464$). Similar to the school problems variable, this could be due to the small number of measures.

A single measure of depression and suicidal thoughts was created by making a new variable. A participant who answered yes to any of the questions above was coded

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as one and those who responded negatively to all the questions were coded as zero. Participants experiencing depression and suicidal thoughts were coded as one and all others were coded as zero.

Deviant Behavior

Previous research on general strain theory has used strain variables to examine the effects of strain on alcohol use, drug use, and delinquency variables. However, these studies only examine these variables at the frequency level or examine them by combining alcohol and drug use with delinquency. This study measures three different levels of alcohol and drug use: any use, frequency of use, and age at first use and two different levels of measurement for delinquency: any delinquency and frequency.

The dichotomous measure of alcohol use was determined by asking: have you ever had a drink of beer, wine, liquor, or other alcoholic beverage? An affirmative response was coded as one and a negative response was coded as zero. The frequency of a youth's alcohol use was determined by asking: during the past year, on how many days did you have five or more drinks (binge drinking) of alcoholic beverages? In order to account for participants that never used alcohol or never had five or more drinks in one day a new variable was created. This variable coded all negative responses as zero and incorporated the number of days that a youth took five or more drinks in one day. This allowed for the variable to account for youth that did not drink alcohol or did not binge drink. The number of days that youth participated in binge drinking ranged from one day to 365 days. Age at first binge drinking was measured by asking: how old were you when you the first time you began drinking five or more drinks of alcohol/beer/wine on a given day? Similar to the other age at first variables, a new variable was created to account for those participants that did not use alcohol or binge

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drink and they were coded at eighteen. The ages for youth that have participated in binge drinking ranged from four to seventeen years old.

The dichotomous measure of drug use was constructed by asking: have you ever taken any of the following drugs non-medically (1) tranquillizers like valium, librium, and xanax (0.38), (2) sleeping medicines or sedatives like barbiturates, seconal, halcion, or quaaludes (0.41), (3) stimulants or diet pills, like amphetamines or speed (0.55), (4) pain medicines like codeine, darvon, percodan, demerol, morphine, methadone, or dilaudid (0.38), (5), marijuana (0.43), (6) cocaine or crack (0.51), (7) angel dust or PCP (0.38), (8) LSD or other hallucinogens like peyote, psilocybin, or mushrooms (0.65), (9) heroin or methadone (0.34), and (10) inhalants like glue, nitrous oxide, amyl nitrate, paint or gasoline (0.49)? Although the factor loadings for these variables are mixed most are acceptable and the alpha reliability is as well ($\alpha=0.663$). A participant that had used any of these drugs was coded as one and a juvenile who had not used any was coded as zero.

In addition to a dichotomous measure, frequency and age at first measures were constructed for the drugs listed above. Frequency of drug use was measured by asking: would you say you've used any of the following drugs on 1-3 occasions, 4-10 occasions, or more than ten occasions? A juvenile was coded as zero if they have never used drugs, coded as one if they had used any of the listed drugs one to three times, coded as two if they had used any of the drugs four to ten times, and coded as three if they had used any of the drugs more than ten times. The age at first use measure was determined by asking: how old were you when you first used any of the following types of drugs? Similar to the other age at first variables a new variable was created to account for those participants that did not use drugs. The age ranges for youth that have used drugs are three to seventeen years old.

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The last variable, delinquency, was measured by creating an additive scale from seven questions regarding the participant's deviant behavior. Participants were asked have you ever (1) stolen or tried to steal something worth more than $100 (0.69), (2) stolen or tried to steal a motor vehicle such as a car or motorcycle (0.51), (3) broken into or tried to break into a vehicle or building to steal something or just look around (0.55), (4) been involved in gang fights (0.53), (5) used force to get money or things from someone else (0.38), (6) had or tried to have sexual relations with someone against their will (0.06) , and (7) attacked someone with the idea or seriously hurting or killing that person (0.50). The factor loadings for these variables were mixed, but most were acceptable. Also, the alpha reliability is good (α=0.669). A youth that answered no to all the questions scored a zero on the additive scale and a juvenile that answered yes to all of the questions scored a seven. The number of delinquent acts ranged from zero acts to six. Also, a dichotomous measure was created from these questions. A youth that answered no to all the questions was coded as zero and a youth that answered yes to at least one of the questions was coded as one. Unfortunately, no information on the age at first delinquent act was available for this data set.

Control Variables

Several sociodemographic variables affect deviant behavior. Also, Crouch (2000) found that these variables can affect the likelihood of being a victim of assault. This study controls for five variables: gender, age, race, socioeconomic status. Gender was coded as zero for male and one for female. Participant's ages ranged from 12 to 17. There were six race categories: Caucasian, African American, Hispanic, Native American, Asian, and other. For simplicity the race variable was recoded so all white participants were identified as one and all non-white participants were identified as zero. Socioeconomic status was measured using a categorical variable with values ranging

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from \$0 to over \$100,000. This variable was also recoded into a dichotomous variable.

Participants living below the poverty level were coded as zero and those living above the

poverty level were coded as one. For the purposes of this study the poverty level was

defined as \$20,000.

Analytic Plan

The relationship between early victimization and deviant behavior and the

mediating effects of social bonds and negative emotions on this relationship will be

examined using both logistic and Tobit regressions. A demonstrative model of the

relationships to be analyzed is shown in Figure Two (below). The model shows how the

two primary independent variables are examined in relation to the eight dependent

variables. This relationship will be examined directly and indirectly through the expected

mediating variables, friend and family problems, school problems, and depression and

suicidal thoughts.

Figure 2: Analytical Model of Key Study Relationships
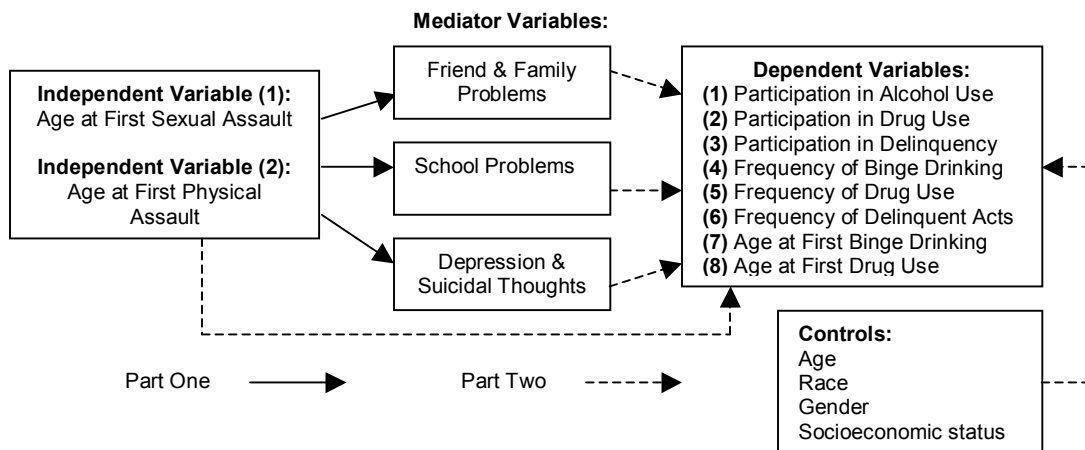
In order to examine the mediating effects, a relationship must first be established

between the independent variable, age at first sexual or physical assault, and the

expected mediating variables (Baron & Kenny, 1986), friend and family problems, school

problems, and depression and suicidal thoughts. This analysis is shown in Figure Two,

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part one by a solid line arrow. Next, a relationship must be established between the expected mediating variables and the dependent variables. This is shown in part two in Figure Two by a dotted line arrow. The direct relationship between age at first sexual or physical assault and deviant behavior is also shown in part two in Figure Two.

The expected mediating variables were added one at time to the models in order to see how each changes the relationship between age at first sexual or physical assault and the dependent variables. If the relationship between age at first sexual or physical assault and the dependent variable is erased with the addition of the friend and family problems, school problems, and depression and suicidal thoughts then they are fully mediating that relationship. If the magnitude of the relationship just decreases with the addition of those variables then the variables are only partially mediating the relationship. If there is no change in the relationship it can be inferred those variables have no mediating effect on the relationship.

Logistic regression and Tobit regression were employed to examine the direct and indirect effects of the early victimization and deviant behavior relationship. Logistic regression is used when examining relationships with a dichotomous outcome variable. This technique is different from OLS regression in that it does not require a linear relationship, but produces a sigmoidal or S-shaped curve. Logistic regression is able to predict the log odds and the odds that an event will occur given that the independent variable is present. Tobit regression is used when examining relationships with a censored outcome variable. This type of regression analysis assumes a normally distributed latent variable (y^*) in which the variable is censored at the upper or lower limit, but is otherwise normally distributed. Tobit regression coefficients are interpreted the same as OLS regression coefficients with respect to the latent variable (y^*). In addition to the interpretation of the Tobit coefficients with respect to the y^*, this study

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also reports the decomposed effects, similar to McDonald and Moffitt (1980). These reflect the effects of the independent variable on (a) the probability of being beyond the censoring point and (b) the effect of the independent variable on the frequency of alcohol, drug use, and delinquent acts, conditional on the case being beyond the censoring point (i.e., reporting some substance use or delinquency).

Two different types of regression analysis were used because of the dependent variables and expected mediating variables were measured on different levels. First, for the dichotomous dependent variables, participation in drug or alcohol use, and the mediating variables, friend and family problems, school problems, and depression and suicidal thoughts, logistic regression will be used. Second, all the other dependent variables contained censored data which will have to be analyzed using Tobit regression. Variables that are censored at the lower limit (i.e., zero) include: frequency of binge drinking, drug use, and delinquency. Variables that are censored at the upper limit (i.e., eighteen) include: age variables of when a youth began using drugs and binge drinking. In addition to the censoring problem these variables were also skewed. To account for this, the natural log of the dependent variables was used in the analyses involving Tobit regression so that the variables would be more normally distributed, meeting the specifications of censored normal regression (Osgood et al., 2002).

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Chapter 4

Results

This chapter presents the results of all analyses used to examine the hypotheses. As discussed above the hypotheses are:

(1) As the age at first victimization increase (1) the odds of alcohol use, drug use, and delinquency will decrease, (2) the frequency of binge drinking, drug use, and delinquent acts will decrease, and (3) the age at first binge drinking and drug use will increase.

(2) As the age at first victimization increases the odds of negative emotions will decrease. The presence of negative emotions, in turn (1) increases the odds of alcohol use, drug use, and delinquency, (2) increases the frequency of binge drinking, drug use, and delinquent acts, and (3) decreases the age at onset of binge drinking and drug use.

(3) The negative effect of victimization on the strength of social bonds increases as the age at first victimization decreases. The presence of weak social bonds, in turn (1) increases the odds of alcohol use, drug use, and delinquency, (2) increases the frequency of binge drinking, drug use, and delinquent acts, and (3) decreases age at onset of binge drinking and drug use.

Descriptive statistics are provided first for all the independent, dependent, and outcome variables. Then, the results for the first step in the analysis of the mediating relationship are discussed. In the last section the results for the second step in the examination of the mediating relationships are discussed. Also in this section, the direct relationships between early victimization and (a) dichotomous measures of alcohol use, drug use, and delinquency, (b) measures of frequency of binge drinking, drug use, and delinquency, (c) and measures of age of first binge drinking and drug use are examined. The decomposed effects are discussed for variables that are censored at zero. As mentioned above this analysis is only available for the frequency variables. Also, in a

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supplementary analysis, the predicted probabilities for the outcome variables are discussed at the end of this chapter.

Descriptive Statistics

The descriptive statistics for the age variables, mediating variables, and control variables are shown in the tables below. The means, standard deviations, modes, and the percent that never experienced/participated in the event for the age variables, frequency of binge drinking, and delinquency are given in Table One. The sample has a mean age of 14.5 with a standard deviation of 1.64. In the past year, the youths surveyed participated in binge drinking an average of 2.22 days with a standard deviation of about 13.81 days. On average, the respondents were only involved in 0.23 delinquent acts with a standard deviation of 0.74 acts.

The age at first variables were top-coded so the descriptive statistics are biased toward eighteen, which represents no use or no assault. To provide a better representation of the youths that were assaulted and/or did participate in drug use, Table One also shows the age at first variable's descriptive statistics when youth who never used alcohol or drugs and were not assaulted are excluded. Only 7.3 percent of the youths surveyed admitted that they had been sexually assaulted and they had a mean age of 11.5 with a standard deviation of 3.74. Only 16.6 percent of the sample admitted being physically assaulted, they had a mean age of 12.4 with a standard deviation of 2.98. Additional descriptive analyses were performed to determine the victim/offender relationship. The children that were assaulted reported that the first incident was committed by a friend or family member in 55.2 percent of the cases involving sexual assault and in 53.9 percent of the cases involving physical assault.

Examining substance use, only 17.7 percent of the youths surveyed admitting having five or more drinks in one day (binge drinking). They had a mean age of 14.3

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with a standard deviation 1.83. Drug users made up 14.8 percent of the sample with a

mean age of 13.6 and a standard deviation of 2.09.

Table 1: Descriptive Statistics for Age, Frequency of Binge Drinking, Delinquent Acts, and Age at First Variables.

Variable	Mean (S.D.)	Mode	Percent Never
Age (12-17)	14.5 (1.64)	14	--
Binge Drinking (Frequency)	2.22 (13.81)	0	82.2
Delinquent Acts	0.23 (0.74)	0	87.4
Age at First Sexual Assault	17.5 (1.97)	18	--
Age at First Sexual Assault$_a$	11.5 (3.74)	14	92.7
Age at First Physical Assault	17.1 (2.43)	18	--
Age at First Physical Assault$_a$	12.4 (2.98)	13	83.4
Age at First Binge Drinking	17.4 (1.61)	18	--
Age at First Binge Drinking$_a$	14.3 (1.83)	15	82.3
Age at First Drug Use	17.4 (1.75)	18	--
Age at First Drug Use$_a$	13.6 (2.09)	14	85.2

[a]Excluding youths that did not use alcohol or drugs or experience assault.

The frequencies for the dichotomous and categorical variables are shown in

Table Two (above). A total of 51.8 percent of the sample is female. White respondents

make up 70.5 percent of the sample. Respondents living above the poverty level make

up 83.6 percent of the sample; the rest live below the poverty level. Only about 9.8

percent of the sample experienced problems with friends and family members. Of the

children surveyed, 41.8 percent experienced school problems such as repeating a

school grade, being suspended from school, and receiving at least one failing grade. Of

the youth surveyed, 37.9 percent experienced depression and suicidal thoughts such as

feeling depressed for most of the day, admitting to having suicidal thoughts,

experiencing several days of being uninterested in most things they do and feeling like

they wanted to die. About 45.6 percent of the sample reported using alcohol and 14.8

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percent reported using drugs. Of the drug users, 10.7 percent had used more than ten

times and only 3.9 percent used between four and ten times.

Table 2: Frequency Table for Dichotomous and Categorical Variables.

Variable		Percent Affirmative (%)
Gender		
	Male	48.2
	Female	51.8
Race		
	Non-White	29.5
	White	70.5
Socioeconomic Status		
	Below Poverty Level	16.4
	Above Poverty Level	83.6
Friend and Family Problems		9.8
School Problems		41.8
Depression and Suicidal Thoughts		37.9
Alcohol Use		45.6
Drug Use (Dichotomous)		14.8
Delinquency		12.4
Drug Use (Frequency)		
	No Use	85.2
	1-3 Occasions	0.2
	4-10 Occasions	3.9
	> 10 Occasions	10.7

Multivariate Statistics

      This section presents the results for direct and mediating relationship between

age at first victimization and deviant behavior. The first step in the analysis sets up a

test of the mediating relationships. Next, the results for the second step in the

examination of the mediating relationships are discussed. Also in this section, the direct

relationships between age at first sexual and physical assault and (a) dichotomous

measures of alcohol use, drug use, and delinquency, (b) measures of frequency of

binge drinking, drug use, and delinquency, (c) and measures of age of first binge

drinking and drug use are examined. Decomposed effects for the frequency variables

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are examined in this section as well. Lastly, the predicted probabilities for the outcome variables will be discussed.

Setting Up the Mediating Relationship

The purpose of this part of the analyses is to establish a relationship between age of first sexual assault, age of first physical assault, and the expected mediating variables: friend and family problems, school problems, and depression and suicidal thoughts. All these variables are dichotomous; therefore, the relationships were studied using logistic regression; the results are shown in Tables Three and Four.

Table 3: Logistic Regression Results for the Control Variables and Age at First Sexual Assault with Friend and Family Problems, School Problems, and Depression and Suicidal Thoughts.

	Friend and Family Problems			School Problems			Depression and Suicidal Thoughts		
	B	Wald	Exp(B)	B	Wald	Exp(B)	B	Wald	Exp(B)
Age at First Sexual Assault	-0.207	72.04***	0.813	-0.105	19.91***	0.901	-0.235	56.45***	0.791
Age	0.317	45.05***	1.374	0.068	6.34*	1.070	0.219	63.66***	1.245
Gender	0.681	19.17***	1.975	-0.743	69.01***	0.476	0.341	14.53***	1.406
Race	-0.026	0.03	0.974	-0.781	64.31***	0.458	-0.160	2.58	0.852
Socioeconomic Status	-0.227	1.40	0.797	-0.679	31.85***	0.507	-0.030	0.06	0.971
Chi-Square (df)	158.43 (5)***			208.16 (5)***			187.41 (5)***		
Nagelkerke R^2	0.137			0.114			0.104		
-2 Log Likelihood	1358.10			2997.67			2943.27		

*p<0.05 ***p<0.001, N=2359

As shown in Table Three (above), there is a significant relationship between the age of first sexual assault and the expected mediating variables. The results show that as the age at first sexual assault increases the risk of experiencing friend and family problems, school problems, and depression and suicidal thoughts decreases. Next, a relationship between age of first physical assault and the expected mediating variables was established. Similarly the results, Table Four (below), show that early physical assault significantly increases the risk that a youth will have problems with friends and

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family, problems at school, and will have feelings of depression and suicide. The results

confirm the expected relationships and establish that the exogenous independent

variables are related to the prospective mediating variables (friend and family problems,

school problems, and depression and suicidal thoughts). Overall, these results meet the

first condition of Baron and Kenny's (1986) test of mediation (i.e., relationship between

independent variable and mediator).

Table 4: Logistic Regression Results for the Control Variables and Age at First Physical Assault with Friend and Family Problems, School Problems, and Depression and Suicidal Thoughts.

	Friend and Family Problems			School Problems			Depression and Suicidal Thoughts		
	B	Wald	Exp(B)	B	Wald	Exp(B)	B	Wald	Exp(B)
Age at First Physical Assault	-0.217	94.78***	0.805	-0.152	61.94***	0.859	-0.185	89.49***	0.831
Age	0.337	49.79***	1.400	0.067	6.14*	1.070	0.227	67.74***	1.255
Gender	1.001	40.48***	2.722	-0.644	52.38***	0.525	0.543	36.25***	1.721
Race	-0.050	0.10	0.951	-0.784	63.71***	0.457	-0.163	2.68	0.850
Socioeconomic Status	-0.208	1.16	0.813	-0.671	30.59***	0.511	-0.029	0.06	0.972
Chi-Square (df)	177.53 (5)***			255.46 (5)***			205.50 (5)***		
Nagelkerke R^2	0.153			0.138			0.114		
-2 Log Likelihood	1339.01			2950.37			2925.18		

*p<0.05 ***p<0.001, N=2359

Examination of the Direct and Mediating Relationships

The purpose the second part of the analyses is to examine the relationship

between the mediating variables and the dependent variables of interest: alcohol use,

drug use, and delinquency, frequency of binge drinking, drug use, and delinquent acts,

and age at first binge drinking and drug use. As mentioned above the mediating

variables were added to the equation one at a time resulting in four different models with

the first model examining the direct relationship between age of first sexual and physical

assault with the dependent variable. This determines if the relationship between age of

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sexual assault or age at first physical assault and delinquent behavior can be "explained away" by the mediating variables: friend and family problems, school problems, and depression and suicidal thoughts. These relationships are first examined for age of first sexual assault and then for age of first physical assault.

Age of First Sexual Assault

In Tables Five through Twelve, the results for the direct relationship between age at first sexual assault and the outcome variables are provided. The three dichotomous variables are examined first, followed by the frequency and age at first use outcome variables. The mediating variables are added one at a time to the equation to examine their relative effects on the relationship of interest.

In Table Five, using logistic regression, the direct relationship between early sexual assault and alcohol use is examined. Then the mediating variables, friend and family problems, school problems, and depression and suicidal thoughts are added separately to see how each impacts the outcome and affects the relationship between age at first victimization and alcohol use.

Table 5: Logistic Regression Results for the Control Variables, Age at First Sexual Assault, Friend and Family Problems, School Problems, and Depression and Suicidal Thoughts with Alcohol Use.

	Model One			Model Two			Model Three			Model Four		
	B	Wald	Exp(B)	B	Wald	Exp(B)	B	Wald	Exp(B)	B	Wald	Exp(B)
Age	0.564	340.1***	1.758	0.553	323.2***	1.738	0.556	321.3***	1.744	0.544	303.1***	1.722
Gender	-0.130	1.953	0.878	-0.163	3.041	0.849	-0.051	0.286	0.950	-0.097	1.002	0.907
Race	0.274	6.802**	1.315	0.278	6.955**	1.320	0.399	13.62***	1.490	0.410	14.25***	1.508
Socioeconomic Status	0.377	8.214**	1.458	0.394	8.834**	1.482	0.494	13.49***	1.639	0.488	13.02***	1.629
Age of First Sexual Assault	-0.158	33.48***	0.854	-0.137	24.48***	0.872	-0.129	21.66***	0.879	-0.113	16.56***	0.893
Friend and Family Problems				0.623	14.03***	1.864	0.495	8.600**	1.641	0.227	1.665	1.255
School Problems							0.626	39.42***	1.871	0.558	30.50***	1.747
Depression and Suicidal Thoughts										0.568	30.08***	1.766
Chi-Square (df)	479.12 (5)***			493.55 (6)***			533.52 (7)***			563.68 (8)***		
Nagelkerke R^2	0.246			0.252			0.271			0.284		
Chi-Square Change (df)	---			14.43 (1)***			39.97 (1)***			30.16 (1)***		
-2 Log Likelihood	2772.96			2758.53			2718.56			2688.41		

**p<0.01 ***p<0.001, N =2359

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Model One examines the direct relationship between age at first sexual assault and alcohol use while controlling for sociodemographic variables. This model was significant ($\chi^2 = 479.12_{(5)}$, p<0.001) and the covariates showed moderate predictive power for alcohol use (Nagelkerke $R^2 = 0.246$). The direct relationship showed that a one year increase in age at first sexual assault leads to a 14.6 percent decrease in the odds of participating in alcohol use.

In Model Two, the friend and family problems variable was added to the relationship between age at first sexual assault and alcohol use. This model was also significant ($\chi^2 = 493.55_{(6)}$, p<0.001) and there was a significant chi-square change after the addition of the mediator ($\chi^2 = 14.43_{(1)}$, p<0.001). Also, the covariates showed moderate predictive power (Nagelkerke $R^2 = 0.252$). After adding the expected mediator to the model, the direct relationship between early sexual assault and alcohol use decreased, but still attained significance. The findings indicated that the odds that a youth has consumed alcohol decreases by 12.8 percent when their age at first sexual assault increases by one year. Also, youth that have problems with their friends and family have 86.4 percent increased odds of alcohol use relative to those who do not.

In Model Three, the school problems variable was added to the equation. The direct relationship between early sexual assault and alcohol use decreased further when both social bond variables were included in the model. After adding the social bond mediators, the results showed that when the age at first sexual assault decreases by one year, youth have a 12.1 percent increased odds of having tried alcohol. The results also showed that school problems increase the odds of using alcohol by 87.1 percent and friend and family problems increases the odds by 64.1 percent relative to those who have not experienced these problems.

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The depression and suicidal thoughts variable was added to the equation of early sexual assault and alcohol use in Model Four. After the addition of this mediator, the direct relationship between early sexual assault and alcohol use decreased, but still attained significance. The results show that there is a 10.7 percent decrease in the odds of alcohol use when the age at first sexual assault increases by one year. The results of the mediator variables showed having problems at school increases the odds of alcohol use 74.7 percent and thoughts of depression and suicide increase the odds by 76.6 percent. The friend and family problems variable did not attain significance in this model.

To summarize, as the mediating variables were added to the model the relationship between early sexual assault and alcohol use decreased, but always remained significant. There was a 28.5 percent decrease in the magnitude of the relationship between age at first sexual assault and alcohol use after all the mediators were added. For the control variables, age, race, and socioeconomic status all held significance throughout the addition of the mediating variables. Gender never attained significance.

In Table Six, the direct relationship between early sexual assault and drug use is examined with logistic regression. Again, the mediating variables, friend and family problems, school problems, and depression and suicidal thoughts are added separately to see how each affects the direct relationship.

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Table 6: Logistic Regression Results for the Control Variables, Age of First Sexual Assault, Friend and Family Problems, School Problems, and Depression and Suicidal Thoughts with Drug Use.

	Model One			Model Two			Model Three			Model Four		
	B	Wald	Exp(B)	B	Wald	Exp(B)	B	Wald	Exp(B)	B	Wald	Exp(B)
Age	0.565	165.3***	1.759	0.540	147.1***	1.715	0.552	145.9***	1.736	0.537	132.9***	1.711
Gender	-0.164	1.668	0.849	-0.267	4.189*	0.766	-0.083	0.379	0.920	-0.190	1.894	0.827
Race	0.007	0.002	1.007	-0.002	0.000	0.998	0.178	1.455	1.194	0.159	1.145	1.172
Socioeconomic Status	0.194	1.133	1.214	0.250	1.810	1.284	0.404	4.585*	1.498	0.391	4.214*	1.479
Age of First Sexual Assault	-0.195	61.11***	0.823	-0.160	38.61***	0.852	-0.151	33.38***	0.860	-0.130	24.53***	0.878
Friend and Family Problems				1.141	45.89***	3.131	0.950	30.13***	2.587	0.546	9.131**	1.727
School Problems							1.045	58.93***	2.842	0.953	47.57***	2.592
Depression and Suicidal Thoughts										1.020	51.16***	2.773
Chi-Square (df)	267.93 (5)***			311.13 (6)***			372.11 (7)***			424.14 (8)***		
Nagelkerke R^2	0.189			0.218			0.257			0.290		
Chi-Square Change (df)	---			43.20 (1)***			60.98 (1)***			52.03 (1)***		
-2 Log Likelihood	1706.01			1662.80			1601.83			1549.80		

*$p<0.05$ **$p<0.01$ ***$p<0.001$, N =2359

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Model One examines the direct relationship between early sexual assault and participation in drug use while controlling for sociodemographic variables. This model was significant (χ^2 = 267.93 $_{(5)}$, p<0.001) and the covariates showed moderate predictive power for drug use (Nagelkerke R^2 = 0.189). The results showed that a one year increase in age of first sexual assault leads to a 17.7 percent decreased odds of participating in drug use.

In Model Two, the friend and family problems variable was added to the relationship between early sexual assault and drug use. This model was significant (χ^2 = 311.13 $_{(6)}$, p<0.001), had a significant chi-square change (χ^2 = 43.20 $_{(1)}$, p<0.001) and the covariates showed moderate predictive power (Nagelkerke R^2 = 0.218). After adding the mediating variable to the model, the direct relationship decreased, but still attained significance. This model showed a 14.8 percent decrease in the odds of drug use when the age at first sexual assault increases by one year. Also, youth that experience friend and family problems have a 213.1 percent increased odds of participating in drug use relative to those who do not.

The mediating variable, school problems, was added to the equation in Model Three. The direct relationship between early sexual assault and drug use decreased when both social bond variables were included in the model. After adding the social bond mediators, the results showed that when the age at first sexual assault increases by one year, youth have a 14.0 percent decreased odds of using drugs. Other results show that experiencing friend and family problems leads to a 158.7 percent increase in the odds of drug use and problems at school lead to a 184.2 percent increase.

In Model Four, the depression and suicidal thoughts variable was added to the model of the relationship between early sexual assault and drug use. After the addition of both the social bond variables and the negative emotions variable the direct

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relationship between early sexual assault and drug use decreased, but remained significant. The results show that there is a 12.2 percent decreased odds of drug use when the age at first sexual assault increases by one year. Also, other results show that the presence of friend and family problems increased the odds of drug use by 72.7 percent, school problems increased the odds by 159.2 percent, and thoughts of depression and suicide increased the odds by 177.3 percent.

Overall, when the mediating variables were added to the model the relationship between early sexual assault and drug use decreased. After the addition of the mediating variables, there was a 33.3 percent decrease in the magnitude of the relationship. For the control variables, age held significance throughout the addition of the mediating variables and race was the only variable that never attained significance. Gender attained significance in Model Two and socioeconomic status attained significance in Models Three and Four.

In Table Seven, using logistic regression, the direct relationship between early sexual assault and delinquency is examined. Again, the mediating variables, friend and family problems, school problems, and depression and suicidal thoughts are added into the model to see how each affects the direct relationship.

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Table 7: Logistic Regression Results for the Control Variables, Age at First Sexual Assault, Friend and Family Problems, School Problems, and Depression and Suicidal Thoughts with Delinquency.

	Model One			Model Two			Model Three			Model Four		
	B	Wald	Exp(B)	B	Wald	Exp(B)	B	Wald	Exp(B)	B	Wald	Exp(B)
Age	0.326	59.90***	1.386	0.293	46.44***	1.340	0.299	44.96***	1.349	0.285	39.58***	1.330
Gender	-1.111	60.08***	0.329	-1.271	71.52***	0.281	-1.088	49.08***	0.337	-1.188	56.76***	0.305
Race	-0.736	28.18***	0.479	-0.766	29.37***	0.465	-0.576	15.61***	0.562	-0.582	15.59***	0.559
Socioeconomic Status	-0.189	1.239	0.827	-0.139	0.638	0.870	0.048	0.074	1.049	0.021	0.013	1.021
Age of First Sexual Assault	-0.164	42.59***	0.849	-0.123	21.70***	0.884	-0.111	16.62***	0.895	-0.097	12.57***	0.908
Friend and Family Problems				1.365	56.71***	3.916	1.135	36.43***	3.111	0.782	16.02***	2.187
School Problems							1.528	95.33***	4.608	1.458	85.17***	4.296
Depression and Suicidal Thoughts										0.883	33.67***	2.418
Chi-Square (df)	184.65 (5)***			237.16 (6)***			346.20 (7)***			380.11 (8)***		
Nagelkerke R^2	0.143			0.181			0.259			0.282		
Chi-Square Change (df)	---			52.51 (1)***			109.05 (1)***			33.91 (1)***		
-2 Log Likelihood	1581.73			1529.22			1420.18			1386.27		

***$p<0.001$, N =2353

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Model One in Table Seven examines the direct relationship between early sexual assault and delinquency while controlling for other key variables. This model was significant (χ^2 = 184.65 $_{(5)}$, p<0.001) and the covariates showed low predictive power with respect to participation in at least one delinquent act (Nagelkerke R^2 = 0.143). The results showed that a one year increase in the age at first sexual assault led to a 15.1 percent decrease in the odds of committing at least one delinquent act.

The friend and family problems variable was added to the model of the direct relationship in Model Two. This model was significant (χ^2 = 237.16 $_{(6)}$, p<0.001), had a significant chi-square change (χ^2 = 52.51 $_{(1)}$, p<0.001), and the covariates showed low predictive power (Nagelkerke R^2 = 0.181). The direct relationship between early sexual assault and delinquency decreased after the addition of the mediator, but still remained significant. This model showed an 11.6 percent decrease in the odds of participation in delinquency when the age at first sexual assault increases by one year. Also, the results showed that youth who experience friend and family problems have a 290.4 percent increased odds being involved in delinquency relative to those who do not.

The mediating variable, school problems, was added to the equation of early sexual assault and delinquency in Model Three. The direct relationship decreased when the school problems variable was included in the model. After adding both social bond mediators, the results showed that when the age at first sexual assault increases by one year, youth have a 10.5 percent decreased odds of delinquency. Other results show that experiencing friend and family problems leads to a 211.1 percent increase in the odds of delinquency and problems at school lead to a 360.8 percent increase.

The negative emotions mediator, depression and suicidal thoughts, was added in Model Four. After the addition of both the social bond variables and the negative emotions variable the direct relationship between early sexual assault and delinquency

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decreased, but still remained significant. The results show that there is a 9.2 percent increased odds of delinquency when the age at first sexual assault decreases by one year. Also, other results show that the presence of friend and family problems increases the odds of delinquency by 187.7 percent, school problems increases the odds by 329.6 percent, and thoughts of depression and suicide increases the odds by 141.8 percent.

In summation, as the social bond and negative emotions variables were added to the model, the magnitude of the relationship between early sexual assault and delinquency decreases. There was a 40.9 percent decrease in the magnitude after all the mediators were added to the relationship. All of the control variables, with the exception of socioeconomic status, remained significant throughout.

The following are results of the relationship between early sexual assault and the censored variables: frequency of binge drinking, drug use and delinquency and age at first binge drinking and drug use. The relationships were examined using Tobit regression and the results are interpreted with respect to the latent variable (y^*). Also, all the outcome variables were logged in order to obtain a normal distribution. As mentioned above, the decomposed effects will be examined for these variables.

In Table Eight, the direct relationship between early sexual assault and frequency of binge drinking, censored at the lower limit, was examined. The mediating variables were added to the model to examine their effects on the direct relationship.

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Table 8: Tobit Regression Results for the Controls Variables, Age at First Sexual Assault, Friend and Family Problems, School Problems, and Depression and Suicidal Thoughts with Frequency of Binge Drinking.

	Model One		Model Two		Model Three		Model Four	
	B	t	B	t	B	t	B	t
Age	0.940	14.81***	0.910	14.48***	0.912	14.53***	0.883	14.21***
Gender	-0.519	-3.12**	-0.594	-3.57***	-0.401	-2.39*	-0.507	-3.01**
Race	0.579	3.01**	0.585	3.06**	0.756	3.94***	0.750	3.93***
Socioeconomic Status	0.433	1.78	0.469	1.93	0.631	2.60**	0.614	2.55*
Age at First Sexual Assault	-0.190	-5.33***	-0.154	-4.27***	-0.139	-3.88***	-0.117	-3.27***
Friend and Family Problems			0.992	4.14***	0.737	3.08**	0.357	1.45
School Problems					1.056	6.15***	0.953	5.59***
Depression and Suicidal Thoughts							0.911	5.19***
Chi-square (df)	382.78 (5)***		399.74 (6)***		439.40 (7)***		466.95 (8)***	
Pseudo R^2	0.110		0.115		0.126		0.134	
Log Likelihood	-1548.80		-1540.32		-1520.49		-1506.72	

*p<0.05,**p<0.01, ***p<0.001, N=2359

The direct relationship between early sexual assault and frequency of binge drinking was examined in Model One while controlling for sociodemographic variables. The model as a whole was significant (χ^2 = 382.78 $_{(5)}$, p<0.001) and the covariates demonstrated low predictive power of frequency of binge drinking (Pseudo R^2 = 0.110). The results showed that as the age at first sexual assault increases the frequency of binge drinking decreases (b = -0.190, p<0.001).

The mediating variable, friends and family problems, was added to the relationship in Model Two. After adding the mediator, the relationship remained significant, but did decrease (b = -0.154, p<0.001). Also the results showed that youth that admit to experiencing problems with friends and family members will have a higher expected frequency of binge drinking than those that have not experienced these problems (b = 0.992, p<0.001).

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In Model Three, the next mediator, school problems, was added to the equation. Similar to earlier results, the relationship between early sexual assault and frequency of binge drinking remained significant, but the relationship decreased (b = -0.139, p<0.001). Also, youth who experience problems with friends and family (b = 0.737, p<0.001) and problems at school (b = 1.056, p<0.001) binge drink more frequently than those who do not experience these problems.

In Model Four, the negative emotions variable, depression and suicidal thoughts, was added to the equation. Similar to the results of the previous models, the relationship between early sexual assault and frequency of binge drinking remained significant; however, the magnitude of the relationship decreased further (b = -0.117, p<0.001). The decomposed effects showed that for every one year increase in the age at first sexual assault there is a 0.012 decrease in the probability of binge drinking on at least one occasion in the past year. Also, there is a 0.024 decrease in the frequency of binge drinking conditional on the censoring point. Results for the mediating variables showed that youth that have friend and family problems (b = 0.357, p<0.001), school problems (b = 0.953, p<0.001), and thoughts of depression and suicide (b = 0.911, p<0.001) have a higher expected frequency of binge drinking. The decomposed effects for these variables showed that youth that experience problems with their friends and family members have a 0.036 increased probability of binge drinking on at least one occasion. Also, problems at school increases the probability by 0.099 and thoughts of depression and suicide increases the probability of binge drinking by 0.094 relative to those without these problems. There is a 0.074 increase in the frequency of binge drinking when friend and family problems are experienced, a 0.198 increase when school problems are present, and a 0.190 increase with depression and suicidal thoughts conditional on the case being beyond the censoring point.

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Overall, the relationship between early sexual assault and frequency of binge drinking decreased by 38.4 percent as the mediators were added to the model; however, the relationship remained significant throughout. Age, gender, and race all remained significant throughout the addition of the mediators. Socioeconomic status attained significance in Model Three.

In Table Nine, the direct relationship between early sexual assault and frequency of drug use, censored at the lower limit, was examined. The mediating variables were added to the model to examine their effects on the direct relationship.

Table 9: Tobit Regression Results for the Controls Variables, Age at First Sexual Assault, Friend and Family Problems, School Problems, and Depression and Suicidal Thoughts with Frequency of Drug Use.

	Model One		Model Two		Model Three		Model Four	
	b	t	b	t	b	t	b	t
Age	0.563	12.04***	0.523	11.52***	0.520	11.60***	0.489	11.16***
Gender	-0.145	-1.19	-0.235	-1.93	-0.045	-0.37	-0.142	-1.18
Race	0.005	0.03	0.002	0.02	0.197	1.49	0.175	1.35
Socioeconomic Status	0.197	1.14	0.230	1.35	0.364	2.18*	0.342	2.09*
Age at First Sexual Assault	-0.182	-7.44***	-0.144	-5.92***	-0.129	-5.49***	-0.106	-4.62***
Friend and Family Problems			1.079	6.43***	0.853	5.24***	0.480	2.95**
School Problems					1.003	7.87***	0.900	7.21***
Depression and Suicidal Thoughts							0.908	7.10***
Chi-square (df)	277.17 (5)***		319.34 (6)***		388.12 (7)***		442.29 (8)***	
Pseudo R^2	0.100		0.116		0.140		0.160	
Log Likelihood	-1243.91		-1222.83		-1188.44		-1161.35	

*p<0.05,**p<0.01, ***p<0.001, N=2359

The direct relationship between early sexual assault and frequency of drug use was examined in Model One. The model was significant (χ^2 = 277.17 $_{(5)}$, p<0.001), but it demonstrated low predictive power of frequency of drug use (Pseudo R^2 = 0.100). As

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the age when youth are first sexually assault increases their frequency of drug use decreases (b = -0.182, p<0.001).

The mediating variable, friends and family problems, was added in Model Two. The relationship between early sexual assault and frequency of drug use remained the same, but the magnitude decreases after adding the mediating variable (b = -0.144, p<0.001). Also, on average, youths who admit to experiencing problems with friends and family members have a higher expected frequency of drug use than those that have not experienced these problems (b = 1.079, p<0.001).

In Model Three, the mediating variable of school problems was included in the equation of frequency of drug use. After both social bonds variables were added to the model the magnitude of the relationship between early sexual assault and frequency of drug use decreased (b = -0.129, p<0.001). Also, the results showed that youth who experience problems with friends and family (b = 0.853, p<0.001) and problems at school (b = 1.003, p<0.001) use drugs more frequently than those who do not experience weakened social bonds.

The negative emotions mediator, depression and suicidal thoughts, was added to the equation in Model Four. Similar to the results of the previous models, the direction of the relationship between early sexual assault and frequency of drug use remained the same, but the magnitude decreased further (b = -0.106, p<0.001). The decomposed effects showed that a one year increase in the age at first sexual assault leads to a 0.014 decrease in the probability of using drugs on one or more occasions and a 0.021 decrease in the frequency of drug use. Youth that have friend and family problems (b = 0.480, p<0.001), school problems (b = 0.900, p<0.001), and thoughts of depression and suicide (b = 0.908, p<0.001) have a higher expected frequency of drug use. The decomposed effects for these variables showed that youth that experience problems

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with their friends and family members have a 0.065 increases the probability of using drugs on one or more occasion. Also, problems at school increases the probability by 0.122 and thoughts of depression and suicide increases the probability of using drugs one or more times by 0.123. There is a 0.093 increase in the frequency of drug use when friend and family problems are experienced, a 0.174 increase when school problems are present, and a 0.176 increase with depression and suicidal thoughts conditional on being beyond the censoring point.

The relationship between early sexual assault and frequency of drug use decreased by 41.8 percent as the mediators were added to the model. However, the relationship did remain significant throughout the addition of the mediators. Age was the only significant control variable throughout. The other control variables were insignificant, with the exception of socioeconomic status which became significant in Model Four.

In Table Ten, the relationship between early sexual assault and the frequency of delinquent acts is examined. This outcome variable was censored at the lower limit; therefore, Tobit regression was used to examine the direct relationship and mediating relationship. Again, all results are interpreted in terms of the latent variable (y*).

	Model One		Model Two		Model Three		Model Four	
	B	t	B	t	B	t	B	t
Age	0.263	7.61***	0.227	6.84***	0.221	6.88***	0.205	6.44***
Gender	-0.897	-7.82***	-0.976	-8.53***	-0.789	-7.26***	-0.858	-7.82***
Race	-0.576	-5.13***	-0.564	-5.18***	-0.382	-3.69***	-0.381	-3.72***
Socioeconomic Status	-0.165	-1.23	-0.140	-1.08	0.010	0.08	-0.020	-0.16
Age at First Sexual Assault	-0.139	-6.47***	-0.100	-4.82***	-0.087	-4.43***	-0.073	-3.79***
Friend and Family Problems			1.087	7.51***	0.828	6.08***	0.568	4.15***
School Problems					1.102	9.75***	1.037	9.32***
Depression and Suicidal Thoughts							0.636	5.94***
Chi-square (df)	196.52 (5)***		255.35 (6)***		374.60 (7)***		412.27 (8)***	
Pseudo R^2	0.087		0.113		0.165		0.182	
Log Likelihood	-1036.31		-1006.90		-947.28		-928.44	

***p<0.001, N=2359

In Model One, the direct relationship between early sexual assault and the frequency of delinquent acts is examined while controlling for sociodemographic variables. The included variables produced a significant model (χ^2 = 196.52 $_{(5)}$, p<0.001) and the covariates demonstrated fairly poor ability to predict the frequency of delinquent acts (Pseudo R^2 = 0.087). These results showed that as the age when youth are first sexually assaulted increases the number of delinquent acts they have committed decreases (b = -0.139, p<0.001).

The mediating variable, friends and family problems, was added to the relationship in Model Two. After adding the mediator, the relationship between early sexual assault and delinquent acts remained significant, but did decrease (b = -0.100, p<0.001). Also, the results showed that experiencing family problems leads to a higher expected frequency of delinquent acts (b = 1.087, p<0.001).

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In Model Three, the school problems variable was added to the model of the relationship between age at first sexual assault and delinquent acts. Similar to above, the relationship remained significant, but decreased further (b = -0.087, p<0.001). Also, on average, youth who experience problems with friends and family (b = 0.828, p<0.001) and problems at school (b = 1.102, p<0.001) are involved in more frequent delinquent acts than those who do not experience these problems.

In Model Four, the negative emotions variable, depression and suicidal thoughts, was added to the equation. Similar to the results of the previous models, the relationship between early sexual assault and delinquent acts remained significant and the magnitude decreased (b = -0.073, p<0.001). Decomposed effects showed that for every one year increase in the age at first sexual assault there is a 0.011 decrease in the probability of committing at least one delinquent act and a 0.023 decrease in the frequency of delinquent acts conditional on the case being beyond the censoring point. Results for the mediating variables showed that youth that have friend and family problems (b = 0.568, p<0.001), school problems (b = 1.037, p<0.001), and thoughts of depression and suicide (b = 0.636, p<0.001) have a higher expected frequency of delinquent acts. The decomposed effects for these variables showed that youth that experience problems with their friends and family members have a 0.087 increase in the probability of committing at least one delinquent act. Also, experiencing problems at school increases the probability by 0.159 and thoughts of depression and suicide increases the frequent delinquent acts by 0.098. There is a 0.103 increase in the frequency of delinquent acts when friend and family problems are experienced, a 0.189 increase when school problems are present, and a 0.116 increase with depression and suicidal thoughts.

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In summation, the relationship between early sexual assault and frequency of delinquent acts decreased by 47.5 percent after the mediators were added to the model, but remained significant throughout. All the control variables remained significant with the exception of socioeconomic status.

In Table Eleven, the relationship between early sexual assault and early binge drinking is examined. The age at first binge drinking variable was censored at the upper limit; therefore, Tobit regression was used in the analysis. After the direct relationship was examined the mediators were added to the equation.

Table 11: Tobit Regression Results for the Controls Variables, Age at First Sexual Assault, Friend and Family Problems, School Problems, and Depression and Suicidal Thoughts with Age at First Binge Drinking.

	Model One		Model Two		Model Three		Model Four	
	B	t	B	t	B	t	B	t
Age	-0.115	-12.44***	-0.110	-12.05***	-0.110	-12.06***	-0.105	-11.67***
Gender	0.074	2.98**	0.085	3.43***	0.055	2.21*	0.071	2.83**
Race	-0.067	-2.34*	-0.067	-2.38*	-0.094	-3.30***	-0.093	-3.30***
Socioeconomic Status	-0.059	-1.63	-0.064	-1.78	-0.088	-2.47*	-0.086	-2.41*
Age at First Sexual Assault	0.026	4.83***	0.020	3.74***	0.018	3.34***	0.015	2.74**
Friend and Family Problems			-0.153	-4.25***	-0.114	-3.18**	-0.058	-1.57
School Problems					-0.162	-6.35***	-0.147	-5.79***
Depression and Suicidal Thoughts							-0.134	-5.14***
Chi-square (df)	278.92 (5)***		296.80 (6)***		339.14 (7)***		366.13 (8)***	
Pseudo R^2	0.155		0.165		0.189		0.204	
Log Likelihood	-759.88		-750.94		-729.77		-716.28	

*$p<0.05$,**$p<0.01$, ***$p<0.001$, N=2359

The direct relationship between early sexual assault and early binge drinking is examined in Model One. The variables resulted in a significant model (χ^2 = 278.92 $_{(5)}$, $p<0.001$) and the covariates showed low predictive power for early binge drinking (Pseudo R^2 = 0.155). While controlling for sociodemographic variables, when a youth's

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age at first sexual assault increases so does his/her age at first binge drinking (b = 0.026, p<0.001).

In Model Two, the first mediator, friend and family problems, was added to the model of the direct relationship. The relationship between early sexual assault and early binge drinking remained significant, but the magnitude decreased after adding the mediating variable (b = 0.020, p<0.001). Also, friend and family problems led to an earlier age at first binge drinking (b = -0.153, p<0.001).

The school problems mediator was added in Model Three. After both social bonds variables were added to the model the magnitude of the relationship between early sexual assault and early binge drinking decreased (b = 0.018, p<0.001). Again, the relationship remained significant; however, other results showed that the presence of friend and family problems (b = -0.114, p<0.001) and school problems (b = -0.162, p<0.001), lowers the age at first binge drinking.

The negative emotions mediator, depression and suicidal thoughts, was added to the equation in Model Four. Similar to the results of the previous models, the relationship between early sexual assault and early drug use remained significant, but the magnitude decreased further (b = 0.015, p<0.001). Youth that have friend and family problems (b = -0.058, p<0.001), school problems (b = -0.147, p<0.001), and thoughts of depression and suicide (b = -0.134, p<0.001) tend to participate in binge drinking at a younger age.

In summation, the relationship between early sexual assault and early binge drinking decreased by 42.3 percent as the mediators were added to the model, but the relationship remained significant. Age, gender, and race were significant throughout the addition of the mediators. Socioeconomic status did not attain significance until Model Three.

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In Table Twelve, the relationship between early sexual assault and early drug use is examined. The age at first drug use variable was censored at the upper limit. After the direct relationship was examined the mediators were added to the equation.

Table 12: Tobit Regression Results for the Controls Variables, Age at First Sexual Assault, Friend and Family Problems, School Problems, and Depression and Suicidal Thoughts with Age at First Drug Use.

	Model One		Model Two		Model Three		Model Four	
	B	t	B	t	B	t	B	t
Age	-0.135	-10.91***	-0.124	-10.30***	-0.122	-10.37***	-0.115	-9.85***
Gender	0.060	1.80	0.085	2.59**	0.031	0.96	0.056	1.72
Race	-0.004	-0.11	-0.004	-0.10	-0.058	-1.64	-0.053	-1.51
Socioeconomic Status	-0.026	-0.57	-0.035	-0.77	-0.071	-1.59	-0.065	-1.48
Age at First Sexual Assault	0.050	7.54***	0.039	5.99***	0.035	5.56***	0.029	4.73***
Friend and Family Problems			-0.303	-6.70***	-0.239	-5.49***	-0.147	-3.33***
School Problems					-0.283	-8.26***	-0.260	-7.66***
Depression and Suicidal Thoughts							-0.230	-6.58***
Chi-square (df)	237.64 (5)***		283.26 (6)***		358.81 (7)***		405.24 (8)***	
Pseudo R^2	0.134		0.160		0.202		0.228	
Log Likelihood	-769.29		-746.48		-708.70		-685.49	

**p<0.01, ***p<0.001, N=2359

The direct relationship between early sexual assault and early drug use was examined in Model One. The overall model was significant (χ^2 = 237.64 $_{(5)}$, p<0.001) and the covariates showed low predictive power of the age when a youth will begin using drugs (Pseudo R^2 = 0.134). The results showed that as the age when youth are first sexually assaulted increases so too does their age at first drug use (b = 0.050, p<0.001).

In Model Two, the first mediator, friend and family problems, was added to the direct relationship. The direction of the relationship between early sexual assault and early drug use remained the same, but the magnitude decreased after adding the

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mediating variable (b = 0.039, p<0.001). Also, friend and family problems led to an earlier age at first drug use (b = -0.303, p<0.001).

The school problems mediator was added in Model Three. After both the social bonds variables were added to the model the magnitude of the relationship between early sexual assault and early drug use decreased. Again, the direction of the relationship remained the same (b = 0.035, p<0.001). Other results showed that the presence of friend and family problems (b = -0.239, p<0.001) and school problems (b = -0.283, p<0.001), led to an earlier age at first drug use.

The negative emotions mediator, depression and suicidal thoughts, was added to the equation in Model Four. Similar to the results of the previous models, the direction of the relationship between early sexual assault and early drug use remained the same, but the magnitude decreased further (b = 0.029, p<0.001). Youth that have friend and family problems (b = -0.147, p<0.001), school problems (b = -0.260, p<0.001), and thoughts of depression and suicide (b = -0.230, p<0.001) will begin using drugs at a younger age.

In summation, the relationship between early sexual assault and early drug use decreased by 42 percent as the mediators were added to the model, but remained significant throughout. Age was again the only significant control variable.

Age at First Physical Assault

In Tables Thirteen through Twenty, the results for the direct relationship between early physical assault and the outcome variables are provided. The dichotomous variables are examined first, followed by the frequency and age at first use variables.

In Table Thirteen, using logistic regression, the direct relationship between early physical assault and alcohol use is examined. Then the mediating variables, friend and family problems, school problems, and depression and suicidal thoughts are added separately to see how each affects the direct relationship.

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Table 13: Logistic Regression Results for the Control Variables, Age at First Physical Assault, Friend and Family Problems, School Problems, and Depression and Suicidal Thoughts with Alcohol Use.

	Model One			Model Two			Model Three			Model Four		
	B	Wald	Exp(B)	B	Wald	Exp(B)	B	Wald	Exp(B)	B	Wald	Exp(B)
Age	0.572	344.7***	1.772	0.560	327.5***	1.751	0.563	325.2***	1.755	0.550	307.1***	1.733
Gender	0.006	0.004	1.006	-0.041	0.192	0.960	0.051	0.285	1.053	-0.004	0.001	0.997
Race	0.279	7.008**	1.321	0.280	7.062**	1.324	0.389	12.93***	1.475	0.402	13.70***	1.495
Socioeconomic Status	0.388	8.652**	1.474	0.404	9.269**	1.498	0.494	13.50***	1.640	0.489	13.07***	1.631
Age of First Physical Assault	-0.150	55.56***	0.861	-0.137	43.93***	0.872	-0.122	34.50***	0.885	-0.108	26.84***	0.898
Friend and Family Problems				0.587	12.18***	1.798	0.487	8.174**	1.627	0.226	1.620	1.253
School Problems							0.574	32.64***	1.776	0.513	25.44***	1.670
Depression and Suicidal Thoughts										0.551	28.05***	1.734
Chi-Square (df)	499.55 (5)***			512.06 (6)***			545.04 (7)***			573.14 (8)***		
Nagelkerke R²	0.255			0.261			0.276			0.288		
Chi-Square Change (df)	---			12.51 (1)***			32.98 (1)***			28.09 (1)***		
-2 Log Likelihood	2752.53			2740.02			2707.04			2678.95		

**p<0.01 ***p<0.001, N =2359

The direct relationship between early physical assault and alcohol use when controlling for sociodemographic variables was examined in Model One. This model was significant (χ^2 = 499.55 $_{(5)}$, p<0.001) and the covariates showed moderate predictive power for alcohol use (Pseudo R^2 = 0.255). The results showed a 13.9 percent decrease in the odds of alcohol use when the age at first physical assault increases by one year.

In Model Two, the friend and family problems variable was added to the model of the relationship between early physical assault and alcohol use. This model was significant (X^2 = 512.06 $_{(6)}$, p<0.001), had a significant chi-square change (χ^2 = 12.51 $_{(1)}$, p<0.001) and the covariates showed moderate predictive power (Pseudo R^2 = 0.261). After the presence of friend and family problems was added to the model, the magnitude of the direct relationship between early physical assault and alcohol use decreased, but still attained significance. After the addition, a one year increase in the age at first physical assault results in a 12.8 percent decrease in the odds of alcohol use. Also, the presence of friend and family problems leads to 79.8 percent increased odds of alcohol use.

The mediating variable, school problems, was added to the equation in Model Three. The direct relationship between early physical assault and alcohol use decreased after both social bond variables were included in the model. After adding the school problems mediator, the results showed that for every one year increase in the age at first physical assault there is an 11.5 percent decrease in the odds of alcohol use. Other results show that experiencing problems at school led to a 77.6 percent increase in the odds of using alcohol and youth who experience problems with friends and family members have a 62.7 percent increased odds relative to those with no problems.

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In Model Four, the depression and suicidal thoughts variable was added to the model of the relationship between early physical assault and alcohol use. After the addition of both the social bond variables and the negative emotions variable the magnitude of the direct relationship decreased, but remained significant. The results show that there is a 10.2 percent decreased odds of alcohol use when the age at first of physical assault increases by one year. The results for the mediating variables showed that school problems increases the odds of trying alcohol by 73.4 percent and thoughts of depression and suicide increases the odds by 67.0 percent. Friend and family problems did not attain significance in this model.

To summarize, the relationship between age at first physical assault and alcohol use decreased as each mediator was added to the equation, but remained significant throughout. After the addition of the mediating variables, the magnitude of the relationship decreased by 28 percent. Age, race, and socioeconomic status were the control variables that held significance throughout. Gender, however, never attained significance.

In Table Fourteen, using logistic regression, the direct relationship between early physical assault and drug use is examined. Then the mediating variables, friend and family problems, school problems, and depression and suicidal thoughts are added separately to see how each affects the direct relationship.

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Table 14: Logistic Regression Results for the Control Variables, Age at First Physical Assault, Friend and Family Problems, School Problems, and Depression and Suicidal Thoughts with Drug Use.

	Model One			Model Two			Model Three			Model Four		
	B	Wald	Exp(B)	B	Wald	Exp(B)	B	Wald	Exp(B)	B	Wald	Exp(B)
Age	0.602	173.5***	1.826	0.572	153.7***	1.771	0.581	152.2***	1.787	0.568	140.4***	1.765
Gender	0.102	0.644	1.108	-0.023	0.030	0.978	0.130	0.921	1.138	0.015	0.012	1.015
Race	0.006	0.002	1.006	-0.004	0.001	0.996	0.161	1.166	1.175	0.155	1.054	1.167
Socioeconomic Status	0.240	1.667	1.272	0.271	2.064	1.311	0.410	4.617*	1.506	0.401	4.359*	1.493
Age of First Physical Assault	-0.241	125.0***	0.786	-0.214	91.95***	0.807	-0.197	74.92***	0.822	-0.180	62.16***	0.835
Friend and Family Problems				0.984	32.53***	2.676	0.825	21.79***	2.283	0.434	5.526*	1.543
School Problems							0.953	47.41***	2.593	0.873	38.71***	2.395
Depression and Suicidal Thoughts										0.986	47.07***	2.680
Chi-Square (df)	333.28 (5)***			364.27 (6)***			412.87 (7)***			460.70 (8)***		
Nagelkerke R^2	0.232			0.252			0.283			0.313		
Chi-Square Change (df)	---			30.99 (1)***			48.61 (1)***			47.83 (1)***		
-2 Log Likelihood	1640.65			1609.66			1561.06			1513.23		

*$p<0.05$ ***$p<0.001$, N =2359

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In Model One, the direct relationship between early physical assault and participation in drug use was examined while controlling for other key variables. This model was significant (χ^2 = 333.28 $_{(5)}$, p<0.001) and the covariates showed moderate predictive power for drug use (Pseudo R^2 = 0.232). The results show that there is a 21.4 percent decreased odds of drug use when the age at first physical assault is increases.

The friend and family problems variable was added to the relationship between early physical assault and drug use in Model Two. This model was significant (χ^2 = 364.27 $_{(6)}$, p<0.001), had a significant chi-square change (χ^2 = 31.00 $_{(1)}$, p<0.001) and the covariates showed moderate predictive power (Pseudo R^2 = 0.252). After this mediator was added to the model the direct relationship between early physical assault and drug use decreased, but still attained significance. After the addition, a one year increase in the age at first physical assault results in a 19.3 percent decreased odds of drug use. Also, the presence of friend and family problems leads to 167.6 percent increased odds of drug use.

The mediating variable, school problems, was added to the equation in Model Three. The direct relationship between early physical assault and drug use decreased after both social bond variables were included in the model. After adding the social bond mediators, the results showed that for every one year increase in the age of first physical assault there is a 17.8 percent decreased odds of using drugs. Other results show that experiencing friend and family problems led to a 128.3 percent increased odds of drug use and problems at school led to a 159.3 percent increase in the odds.

In Model Four, the depression and suicidal thoughts variable was added to the model of the relationship between early physical assault and drug use. After the addition of both the social bond variables and the negative emotions variable the magnitude of the direct relationship decreased, but remained significant. The results show that there

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is a 16.5 percent decreased odds of drug use when the age at first physical assault increases by one year. The results for the mediating variables show that the presence of friend and family problems increases the odds of drug use by 54.3 percent, school problems increases the odds by 139.5 percent, and thoughts of depression and suicide increases the odds by 168.0 percent.

In summation, the relationship between age at first physical assault and drug use decreased as each mediator was added to the equation. There was a 25.3 percent decrease in the magnitude of the relationship after the mediating variables were added to the model. Age was the only control variable that held significance throughout. Gender and race never attained significance and SES did not attain significance until Model Four.

In Table Fifteen, using logistic regression, the direct relationship between early physical assault and delinquency is examined. Then the mediating variables, friend and family problems, school problems, and depression and suicidal thoughts are added separately to see how each affects the direct relationship.

Table 15: Logistic Regression Results for the Control Variables, Age at First Physical Assault, Family Problems, School Problems, and Depression and Suicidal Thoughts with Delinquency.

	Model One			Model Two			Model Three			Model Four		
	B	Wald	Exp(B)	B	Wald	Exp(B)	B	Wald	Exp(B)	B	Wald	Exp(B)
Age	0.361	65.49***	1.435	0.327	52.33***	1.387	0.333	50.81***	1.395	0.320	45.74***	1.377
Gender	-0.923	41.97***	0.397	-1.094	53.42***	0.335	-0.942	37.20***	0.390	-1.043	44.25***	0.352
Race	-0.784	29.42***	0.457	-0.804	30.11***	0.447	-0.621	16.98***	0.537	-0.620	16.63***	0.538
Socioeconomic Status	-0.136	0.591	0.873	-0.109	0.365	0.897	0.062	0.118	1.064	0.042	0.053	1.043
Age of First Physical Assault	-0.259	151.6***	0.772	-0.233	115.9***	0.792	-0.213	91.65***	0.808	-0.200	79.11***	0.819
Friend and Family Problems				1.135	36.07***	3.111	0.932	22.91***	2.539	0.616	9.238**	1.851
School Problems							1.432	79.92***	4.189	1.377	72.83***	3.964
Depression and Suicidal Thoughts										0.790	25.63***	2.204
Chi-Square (df)	295.97 (5)***			329.83 (6)***			419.42 (7)***			445.13 (8)***		
Nagelkerke R^2	0.224			0.248			0.309			0.326		
Chi-Square Change (df)	---			33.87 (1)***			89.59 (1)***			25.71 (1)***		
-2 Log Likelihood	1470.41			1436.55			1346.96			1321.25		

**$p<0.01$ ***$p<0.001$, N =2353

In Model One, the relationship between early physical assault and delinquency is examined while controlling for other key variables. This model was significant ($\chi^2 = 295.97_{(5)}$, p<0.001) and the covariates showed moderate predictive power for the dependent variable of participation in at least one delinquent act (Pseudo $R^2 = 0.224$). The direct relationship between early physical assault and delinquency showed that a one year increase in the age at first physical assault decreases the odds of delinquency by 22.8 percent.

In Model Two, friend and family problems, was added to the relationship between early physical assault and delinquency. This model was significant ($\chi^2 = 329.83_{(6)}$, p<0.001), had a significant chi-square change ($\chi^2 = 33.87_{(1)}$, p<0.001), and the covariates showed moderate predictive power for any delinquency (Pseudo $R^2 = 0.248$). The direct relationship decreased after the addition of the mediator, but still remained significant. This model showed a 20.8 percent decrease in the odds of participation in delinquency when the age at first physical assault increases one year. Also, youth that experience problems with friends and family members have 211.1 percent greater odds of being involved in delinquency relative to those who have not been assaulted.

The mediating variable, school problems, was added to the model of early physical assault and delinquency in Model Three. The magnitude of the direct relationship decreased when the school problems variable was included in the model, but it still remained significant. After adding both social bond mediators, the results showed that when the age at first physical assault increases by one year youth have a 19.2 percent decreased odds of committing at least one delinquent act. Other results show that experiencing friend and family problems leads to a 153.9 percent increase in the odds of delinquency and problems at school lead to a 318.9 percent increase.

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In Model Four, depression and suicidal thoughts, was added to the model. After the addition of both the social bond variables and the negative emotions variable the direct relationship between early physical assault and delinquency decreased, but still remained significant. The results show that there is an 18.1 percent decreased odds of delinquency when the age at first physical assault increases by one year. Also, other results show that the presence of friend and family problems increases the odds of delinquency by 85.1 percent, school problems increases the odds by 296.4 percent, and thoughts of depression and suicide increases the odds by 120.4 percent.

To summarize, the relationship between early physical assault and delinquency decreased by 22.8 percent as the social bond and negative emotions variables were added to the model. Despite the decrease in magnitude, the direct relationship remained significant. All the model statistics were significant throughout the addition of the mediating variables and all of the control variables, with the exception of socioeconomic status.

The following are results of the relationship between early physical assault and the censored variables: frequency of binge drinking, drug use and delinquency and age at first binge drinking and drug use. The relationships were examined using Tobit regression and the results are interpreted with respect to the latent variable (y*). Also, all the outcome variables were logged in order to obtain a distribution that better approximated normal.

In Table Sixteen, the relationship between early physical assault and the frequency of binge drinking, censored at the lower limit, is examined.

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Table 16: Tobit Regression Results for the Controls Variables, Age at First Physical Assault, Friend and Family Problems, School Problems, and Depression and Suicidal Thoughts with Frequency of Binge Drinking.

	Model One		Model Two		Model Three		Model Four	
	B	t	B	t	B	t	B	t
Age	0.941	14.98***	0.914	14.63***	0.916	14.67***	0.889	14.35***
Gender	-0.295	-1.84	-0.385	-2.37*	-0.231	-1.41	-0.354	-2.15*
Race	0.601	3.16**	0.604	3.18***	0.754	3.95***	0.753	3.97***
Socioeconomic Status	0.462	1.92	0.486	2.02*	0.627	2.60**	0.613	2.56**
Age at First Physical Assault	-0.226	-7.74***	-0.199	-6.64***	-0.174	-5.83***	-0.158	-5.32***
Friend and Family Problems			0.789	3.30***	0.589	2.46*	0.225	0.92
School Problems					0.954	5.58***	0.861	5.07***
Depression and Suicidal Thoughts							0.878	5.07***
Chi-square (df)	414.98 (5)***		425.75 (6)***		458.12 (7)***		484.35 (8)***	
Pseudo R^2	0.119		0.122		0.132		0.139	
Log Likelihood	-1532.70		-1527.32		-1511.13		-1498.02	

*p<0.05,**p<0.01, ***p<0.001, N=2359

The direct relationship between early physical assault and frequency of binge drinking was examined in Model One while controlling for sociodemographic variables. The variables resulted in a significant model (χ^2 = 414.98 $_{(5)}$, p<0.001) and the covariates demonstrated low predictive power of frequency of binge drinking (Pseudo R^2 = 0.119). The results showed that as the age at first physical assault increases the frequency of binge drinking decreases (b = -0.226, p<0.001).

The mediating variable, friends and family problems, was added to the relationship Model Two. After adding the mediator, the relationship remained significant, but did decrease (b = -0.199, p<0.001). Also the results showed that youth who admit to experiencing problems with friends and family members will have a higher expected frequency of binge drinking than those that have not experienced these problems (b = 0.789, p<0.001).

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In Model Three, the next mediator, school problems, was added to the equation. Similar to above, the relationship between early physical assault and frequency of binge drinking remained significant, but the relationship decreased (b = -0.174, p<0.001). Also, youth who experience problems with friends and family (b = 0.589, p<0.001) and problems at school (b = 0.954, p<0.001) participate in binge drinking more frequently than those who do not experience these problems.

In Model Four, the negative emotions variable, depression and suicidal thoughts, was added to the equation. Similar to the results of the previous models, the relationship between early physical assault and frequency of binge drinking remained significant; however, the magnitude decreased further (b = -0.158, p<0.001). The decomposed effects showed that for every one year increase in the age at first physical assault there is a 0.016 decrease in the probability of binge drinking on at least one occasion in the past year and a 0.033 decrease in the frequency of binge drinking conditional on the case being beyond the censoring point. Results for the mediating variables showed that youth that have friend and family problems (b = 0.225, p<0.001), school problems (b = 0.861, p<0.001), and thoughts of depression and suicide (b = 0.878, p<0.001) have a higher expected frequency of binge drinking. The decomposed effects for these variables showed that youth who experience problems with their friends and family members have a 0.024 increased probability of binge drinking on at least one occasion. Also, problems at school increases the probability by 0.090 and thoughts of depression and suicide increases the probability of binge drinking by 0.092. There is a 0.047 increase in the frequency of binge drinking when friend and family problems are experienced, a 0.179 increase when school problems are present, and a 0.183 increase with depression and suicidal thoughts.

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Overall, the relationship between early physical assault and frequency of binge drinking decreased by 30.1 percent as the mediators were added to the model, but remained significant throughout. Age and race were the only control variables that remained significant throughout the addition of the mediators. Gender and socioeconomic status both attained significance in Model Two.

In Table Seventeen, using Tobit regression, the direct and indirect relationships between early physical assault and frequency of drug use, censored at the lower limit (i.e., zero), were examined.

Table 17: Tobit Regression Results for the Controls Variables, Age at First Physical Assault, Friend and Family Problems, School Problems, and Depression and Suicidal Thoughts with Frequency of Drug Use.

	Model One		Model Two		Model Three		Model Four	
	B	t	B	t	B	t	B	t
Age	0.565	12.26***	0.528	11.73***	0.525	11.79***	0.496	11.38***
Gender	0.098	0.84	-0.131	-0.11	0.134	1.14	0.018	0.16
Race	0.011	0.09	0.008	0.06	0.179	1.37	0.166	1.30
Socioeconomic Status	0.246	1.45	0.263	1.57	0.375	2.27*	0.353	2.18*
Age at First Physical Assault	-0.216	-10.3***	-0.184	-8.78***	-0.159	-7.79***	-0.144	-7.28***
Friend and Family Problems			0.879	5.32***	0.710	4.40***	0.341	2.11*
School Problems					0.894	7.12***	0.798	6.49***
Depression and Suicidal Thoughts							0.896	7.13***
Chi-square (df)	337.06 (5)***		365.45 (6)***		420.55 (7)***		475.44 (8)***	
Pseudo R^2	0.122		0.132		0.152		0.172	
Log Likelihood	-1213.97		-1199.77		-1172.22		-1144.78	

*p<0.05 ***p<0.001, N=2359

The direct relationship between early physical assault and frequency of drug use was examined in Model One while controlling for sociodemographic variables. The model was significant (χ^2 = 337.06 $_{(5)}$, p<0.001) and the covariates demonstrated low predictive power of frequency of drug use (Pseudo R^2 = 0.122). The results show that

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as age at first physical assault increases the frequency of drug use decreases (b = -0.216, p<0.001).

In Model Two, friend and family problems was added to the relationship between early physical assault and frequency of drug use. The relationship remained significant, but the magnitude decreased after adding the mediating variable (b = -0.184, p<0.001). Also, youth who admit to experiencing problems with friends and family members will have a higher expected frequency of drug use than those that have not experienced these problems (b = 0.879, p<0.001).

In Model Three, the mediating variable of school problems was included. After both the social bonds variables were added to the model the magnitude of the relationship decreased (b = -0.159, p<0.001). The age at first physical assault variable remained significant, however. Also, the results showed that youth who experience problems with friends and family (b = 0.710, p<0.001) and problems at school (b = 0.894, p<0.001) use drugs more frequently than those who do not experience weakened social bonds.

In Model Four, the negative emotions mediator, depression and suicidal thoughts was added to the equation. Similar to the results of the previous models, the relationship between early physical assault and frequency of drug use remained significant, but the magnitude decreased further (b = -0.144, p<0.001). Decomposed effects showed that for a one year increase in the age at first physical assault there is a 0.020 decrease in the probability of using drugs on one or more occasions and a 0.028 decrease in the frequency of drug use conditional on the case being beyond the censoring point. Youth that have friend and family problems (b = 0.341, p<0.001), school problems (b = 0.798, p<0.001), and thoughts of depression and suicide (b = 0.896, p<0.001) have a higher frequency of drug use. The decomposed effects for

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these variables showed that youth who experience problems with their friends and family members have a 0.047 increased probability of using drugs on one or more occasion. Also, having problems at school increases the probability by 0.111 and thoughts of depression and suicide increases the probability of using drugs one or more times by 0.124. There is a 0.066 increase in the frequency of drug use when friend and family problems are experienced, a 0.155 increase when school problems are present, and a 0.174 increase with depression and suicidal thoughts.

In summation, the relationship between early physical assault and frequency of drug use decreased by 33.3 percent as the mediators were added to the model. Age was the only significant control variable throughout. The other control variables were insignificant, with the exception of socioeconomic status which became significant in Model Four.

In Table Eighteen, the relationship between early physical assault and the frequency of delinquent acts is examined. This outcome variable was censored at the lower limit; therefore, Tobit regression was used to examine the direct relationship and mediating relationship.

Table 18: Tobit Regression Results for the Controls Variables, Age at First Physical Assault, Friend and Family Problems, School Problems, and Depression and Suicidal Thoughts with Delinquent Acts.

	Model One		Model Two		Model Three		Model Four	
	B	t	B	t	B	t	B	t
Age	0.259	7.91***	0.230	7.20***	0.225	7.26***	0.211	6.87***
Gender	-0.700	-6.78***	-0.789	-7.57***	-0.646	-6.45***	-0.720	-7.08***
Race	-0.556	-5.24***	-0.546	-5.26***	-0.389	-3.92***	-0.387	-3.93***
Socioeconomic Status	-0.112	-0.88***	-0.101	-0.81	0.023	0.20	-0.003	-0.02
Age at First Physical Assault	-0.200	-11.8***	-0.174	-10.4***	-0.149	-9.52***	-0.138	-8.98***
Friend and Family Problems			0.808	5.94***	0.612	4.71***	0.395	3.00**
School Problems					0.967	9.03***	0.919	8.67***
Depression and Suicidal Thoughts							0.552	5.41***
Chi-square (df)	318.83 (5)***		354.32 (6)***		452.58 (7)***		483.44 (8)***	
Pseudo R^2	0.141		0.156		0.200		0.213	
Log Likelihood	-975.16		-957.41		-908.28		-892.86	

**p<0.01, ***p<0.001, N=2359

In Model One, the direct relationship between early physical assault and the frequency of delinquent acts is examined while controlling for sociodemographic variables. The model was significant (χ^2 = 318.83 $_{(5)}$, p<0.001) and the covariates demonstrated modest ability to predict the frequency of delinquent acts (Pseudo R^2 = 0.141). These results showed that as the age when youth are first physically assaulted increases there is a decrease in the number of delinquent acts committed (b = -0.200, p<0.001).

The mediating variable, friends and family problems, was added in Model Two. After adding the mediator, the relationship between early physical assault and delinquent acts remained significant, but did decrease (b = -0.174, p<0.001). Also, the results showed that experiencing family problems led to a higher expected frequency of delinquent acts (b = 0.808, p<0.001).

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In Model Three, school problems, was added to the relationship between early physical assault and delinquent acts. Similar to what was presented above, the relationship remained significant, but decreased further in magnitude (b = -0.149, p<0.001). Also, youth who experience problems with friends and family (b = 0.612, p<0.001) and problems at school (b = 0.967, p<0.001) are involved in more delinquent acts than those who do not experience these problems.

In Model Four, the negative emotions variable, depression and suicidal thoughts, was added to the equation. Similar to the results of the previous models, the relationship between early physical assault and delinquent acts remained significant and the magnitude decreased (b = -0.138, p<0.001). The decomposed effects showed that for every one year increase in the age at first physical assault there is a 0.022 decrease in the probability of committing at least one delinquent act and a 0.025 decrease in the frequency of delinquent acts. Results for the mediating variables showed that youth that have friend and family problems (b = 0.395, p<0.001), school problems (b = 0.919, p<0.001), and thoughts of depression and suicide (b = 0.552, p<0.001) have a higher expected frequency of delinquent acts. The decomposed effects for these variables showed that youth that experience problems with their friends and family members have a 0.064 increased probability of committing at least one delinquent act. Also, experiencing problems at school increases the probability of delinquency by 0.149 and thoughts of depression and suicide increases the frequency delinquent acts by 0.090. There is a 0.072 increase in the frequency of delinquent acts when friend and family problems are experienced, a 0.167 increase when school problems are present, and a 0.100 increase with depression and suicidal thoughts.

In summation, the relationship between early physical assault and frequency of delinquent acts decreased by 31 percent after the mediators were added to the model, but remained significant throughout. All the control variables remained significant with the exception of socioeconomic status which was only significant in Model One.

In Table Nineteen, the relationship between early physical assault and early binge drinking is examined. The age at first binge drinking variable was censored at the upper limit; therefore, Tobit regression was used in the analysis. After the direct relationship was examined the mediators were added to the equation.

Table 19: Tobit Regression Results for the Controls Variables, Age at First Physical Assault, Friend and Family Problems, School Problems, and Depression and Suicidal Thoughts with Age at First Binge Drinking.

	Model One		Model Two		Model Three		Model Four	
	B	t	B	t	B	t	B	t
Age	-0.115	-12.54***	-0.110	-12.16***	-0.110	-12.17***	-0.106	-11.78***
Gender	0.043	1.80	0.057	2.35*	0.033	1.35	0.051	2.07*
Race	-0.070	-2.48*	-0.070	-2.51*	-0.094	-3.32***	-0.094	-3.34***
Socioeconomic Status	-0.063	-1.77	-0.067	-1.87	-0.088	-2.48*	-0.086	-2.43*
Age at First Physical Assault	0.032	7.37***	0.028	6.27***	0.024	5.42***	0.022	4.91***
Family Problems			-0.123	-3.42***	-0.092	-2.57**	-0.039	-1.05
School Problems					-0.147	-5.80***	-0.134	-5.29***
Depression and Suicidal Thoughts							-0.129	-4.98***
Chi-square (df)	310.63 (5)***		322.20 (6)***		357.23 (7) ***		382.60 (8)***	
Pseudo R^2	0.173		0.179		0.199		0.213	
Log Likelihood	-744.03		-738.24		-720.72		-708.04	

*p<0.05, **p<0.01, ***p<0.001, N=2359

In Model One, the direct relationship between early physical assault and early binge drinking is examined. The variables resulted in a significant model (χ^2 = 310.63 $_{(5)}$, p<0.001) and the covariates showed low predictive power for early binge drinking (Pseudo R^2 = 0.173). While controlling for sociodemographic variables, when a youth's

age at first physical assault increases so does their age at first binge drinking (b = 0.032, p<0.001).

In Model Two, the first mediator, friend and family problems, was added to the direct relationship. The relationship between early physical assault and early binge drinking remained significant, but the magnitude decreased after adding the mediating variable (b = 0.028, p<0.001). Also, friend and family problems led to an earlier age at first binge drinking (b = -0.123, p<0.001).

The school problems mediator was added in Model Three. After both the social bonds variables were added to the model the magnitude of the relationship between early physical assault and early binge drinking decreased (b = 0.028, p<0.001). Again, the relationship remained significant. Other results showed that the presence of friend and family problems (b = -0.092, p<0.001) and school problems (b = -0.147, p<0.001), leads to an earlier age at first binge drinking.

The negative emotions mediator, depression and suicidal thoughts, was added to the equation in Model Four. Similar to the results of the previous models, the relationship between early physical assault and early drug use remained significant, but the magnitude decreased further (b = 0.022, p<0.001). Youth that have friend and family problems (b = -0.039, p<0.001), school problems (b = -0.134, p<0.001), and thoughts of depression and suicide (b = -0.129, p<0.001) tend to participate in binge drinking at younger ages.

To summarize, the relationship between early physical assault and early binge drinking decreased by 31.3 percent after the mediators were added to the model, but remained significant throughout. Age and race were the only control variables significant throughout the addition of the mediators. Gender did not attain significance until Model Two and socioeconomic status did not attain significance until Model Three.

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In Table Twenty, the relationship between early physical assault and early drug use is examined. The age at first drug use variable was censored at the upper limit (i.e., eighteen); therefore, Tobit regression was used in the analysis. After the direct relationship was examined the mediators were added to the equation.

Table 20: Tobit Regression Results for the Controls Variables, Age at First Physical Assault, Friend and Family Problems, School Problems, and Depression and Suicidal Thoughts with Age at First Drug Use.

	Model One		Model Two		Model Three		Model Four	
	B	t	B	t	B	t	B	t
Age	-0.134	-11.15***	-0.124	-10.54***	-0.122	-10.59***	-0.116	-10.11***
Gender	-0.008	-0.25	0.023	0.73	-0.018	-0.59	0.011	0.34
Race	-0.007	-0.19	-0.006	-0.17	-0.054	-1.55	-0.051	-1.49
Socioeconomic Status	-0.038	-0.85	-0.043	-0.96	-0.071	-1.66	-0.067	-1.56
Age at First Physical Assault	0.060	10.88***	0.051	9.33***	0.044	8.30***	0.041	7.78***
Friend and Family Problems			-0.241	-5.49***	-0.194	-4.54***	-0.105	-2.42*
School Problems					-0.249	-7.47***	-0.228	-6.89***
Depression and Suicidal Thoughts							-0.222	-6.56***
Chi-square (df)	306.83 (5)***		336.92 (6)***		397.41 (7)***		443.81 (8)***	
Pseudo R^2	0.173		0.190		0.224		0.250	
Log Likelihood	-734.69		-719.65		-689.41		-666.21	

*p<0.05 ***p<0.001, N=2359

The direct relationship between early physical assault and early drug use was examined in Model One. The model was statistically significant (χ^2 = 306.83 $_{(5)}$, p<0.001) and the covariates showed modest predictive power with respect to the age when a youth will begin using drugs (Pseudo R^2 = 0.173). The results showed that as the age when at first physical assaulted increases so does their age at first drug use (b = 0.060, p<0.001).

In Model Two, the first mediator, friend and family problems, was added to the direct relationship. The direction of the relationship between early physical assault and

early drug use remained the same, but the magnitude decreased after adding the mediating variable (b = 0.051, p<0.001). Also, friend and family problems lead to an earlier age at first drug use (b = -0.241, p<0.001) relative to those without these problems.

The school problems mediator was added in Model Three. After both social bonds variables were added to the model, the magnitude of the relationship between early physical assault and early drug use decreased. Again, the direction of the relationship remained the same (b = 0.044, p<0.001). Other results showed that the presence of the social bond variables, friend and family problems (b = -0.194, p<0.001) and school problems (b = -0.249, p<0.001), led to an earlier age at first drug use.

The negative emotions mediator, depression and suicidal thoughts, was added to the equation in Model Four. Similar to the results of the previous models, the direction of the relationship between early physical assault and early drug use remained the same, but the magnitude decreased further (b = 0.041, p<0.001). Youth that have friend and family problems (b = -0.105, p<0.001), school problems (b = -0.228, p<0.001), and thoughts of depression and suicide (b = -0.222, p<0.001) began using drugs at a younger age relative to those who do not experience these problems.

In summation, the relationship between early physical assault and early drug use decreased by 31.2 percent after the mediators were added to the model, but remained significant throughout. All the models remained significant throughout the addition of the mediators and age was the only significant control variable.

Overall, the multivariate results show that when youth are sexually or physically assaulted at a young age or experience any sexual assault they have an increased odds of participating in drug use, alcohol use and delinquency, use drugs and binge drink more frequently, are younger when they first take part in drug use and binge drinking,

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and they participate in more delinquent acts. The results also show that when youth are sexually or physically assaulted at a young age they have increased odds of experiencing family problems, school problems, and depression and suicidal thoughts. Experiencing these family problems, school problems, and depression and suicidal thoughts leads to increased likelihood of drugs and alcohol use. Also, youth who experience friend and family problems, school problems, and depression and suicidal thoughts are likely to use drugs and binge drink, and participate in delinquency more frequently and use drugs and binge drink at younger ages.

The presence of the mediating variables, friend and family problems, school problems, and depression and suicidal thoughts consistently decreased the magnitude of the relationships between early sexual or physical assault and deviant behavior. The average percent decrease between the magnitudes was 34.3 percent with the smallest decrease being 22.8 percent and the largest being 47.5 percent. However, the relationship between these variables remained significant throughout the addition of the mediators. This indicates that there is not a full mediating relationship. In other words, the mediating variables only show a partial mediating effect on the relationship between early sexual or physical assault and deviant behavior.

Predicted Probabilities

To get another perspective on the relationships a supplementary analysis was employed. The predicted probabilities of deviant behavior were estimated for early assault (set at age six), middle assault (set at age ten), late assault (set at age seventeen), and no sexual and physical assault and the mediators when holding all other variables at their means and modes. The results are shown in Figures Three through Eight (below). The results of Figures Three and Four indicate that early sexual and physical assault both had the highest probability of alcohol use relative to middle,

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late and no assault. In addition the predicted probabilities increased with the presence of the mediating variables. In other words, when a youth experiences both early sexual assault and friend and family problems their predicted probabilities are higher than youth who experience assault at any age. This pattern was true for all mediating variables and for the age at first physical assault.

Figure 3: Predicted Probabilities of Alcohol Use with Age at First Sexual Assault and Key Mediators
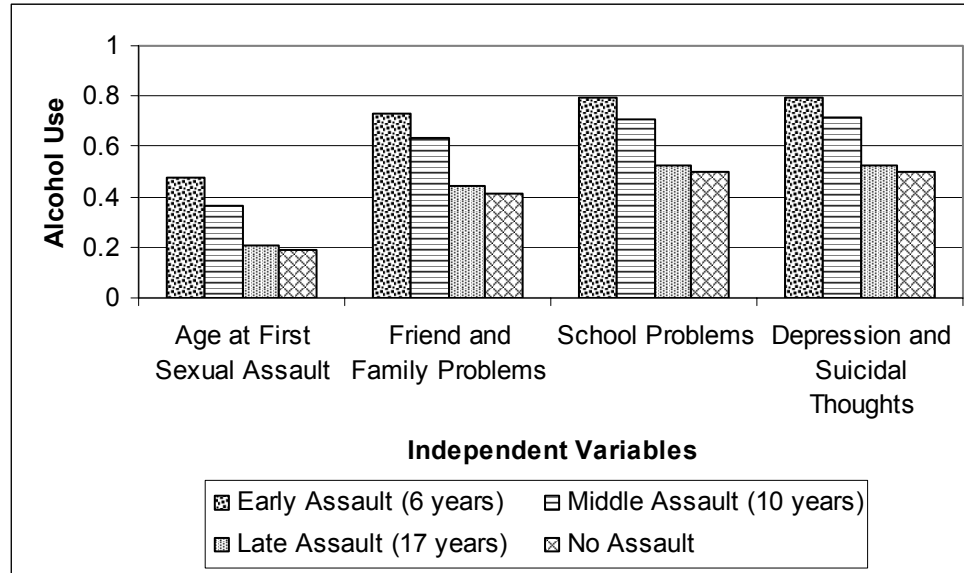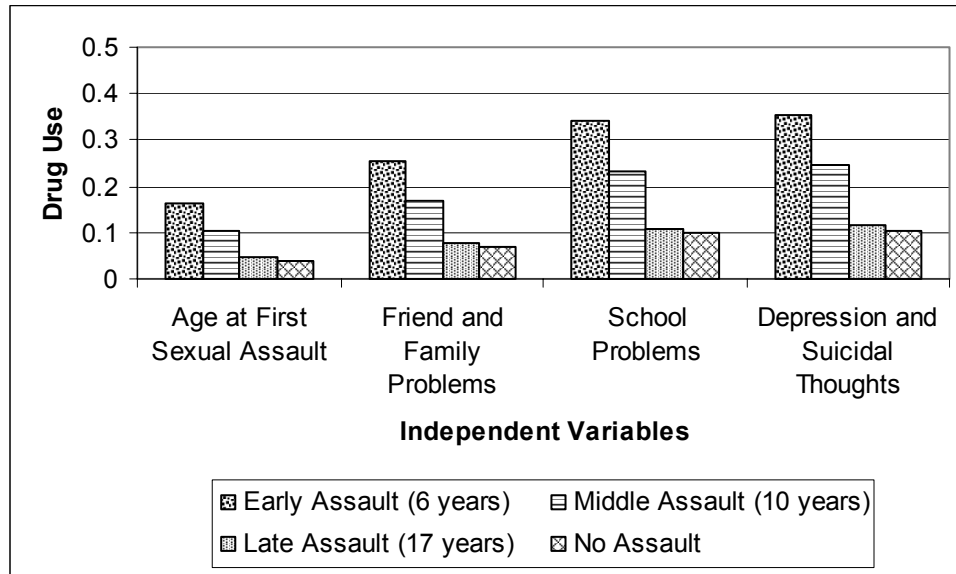

Figure 4: Predicted Probabilities of Alcohol Use with Age at First Physical Assault and Key Mediators
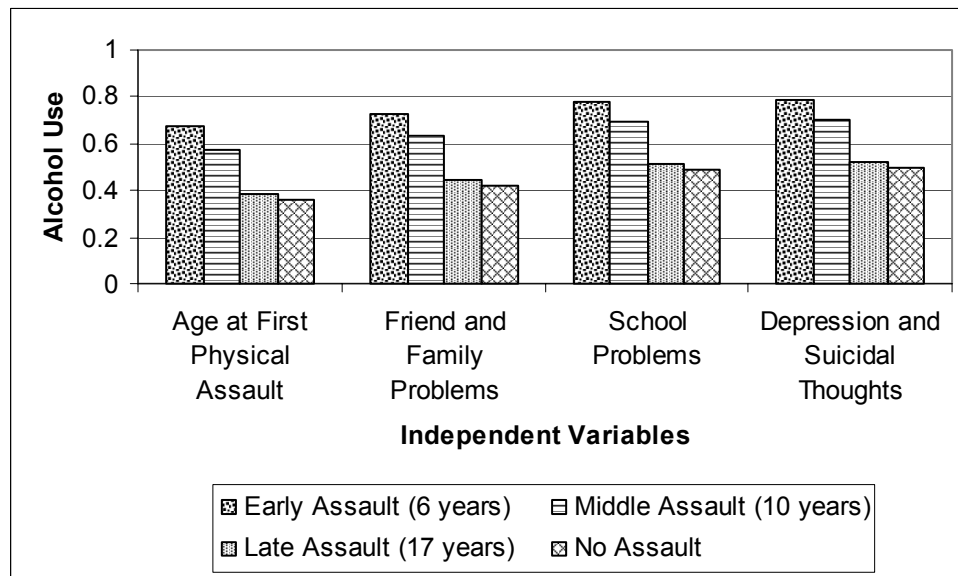
Figures Five and Six (below) show a similar pattern as above. Youth that are sexually or physically assaulted at an early age have higher predicted probabilities of drug use than those assaulted later in life or not assaulted. The mediating effects are more pronounced than the age at first victimization effects in these figures as well.

Figure 5: Predicted Probabilities of Drug Use with Age at First Sexual Assault and the Key Mediators*
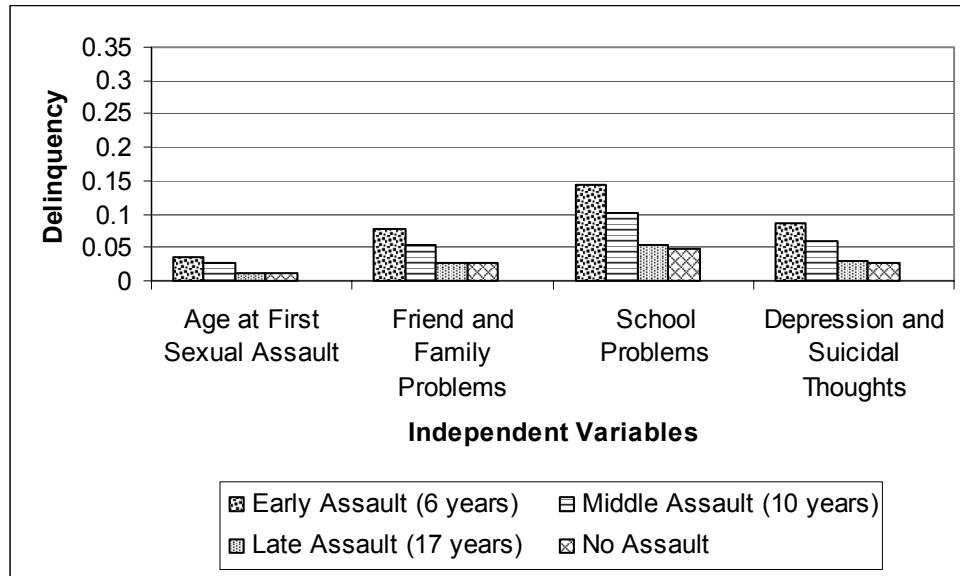

*Note: Scale ranges from 0 to 0.5.

Figure 6: Predicted Probabilities of Drug Use with Age at First Physical Assault and the Key Mediators*

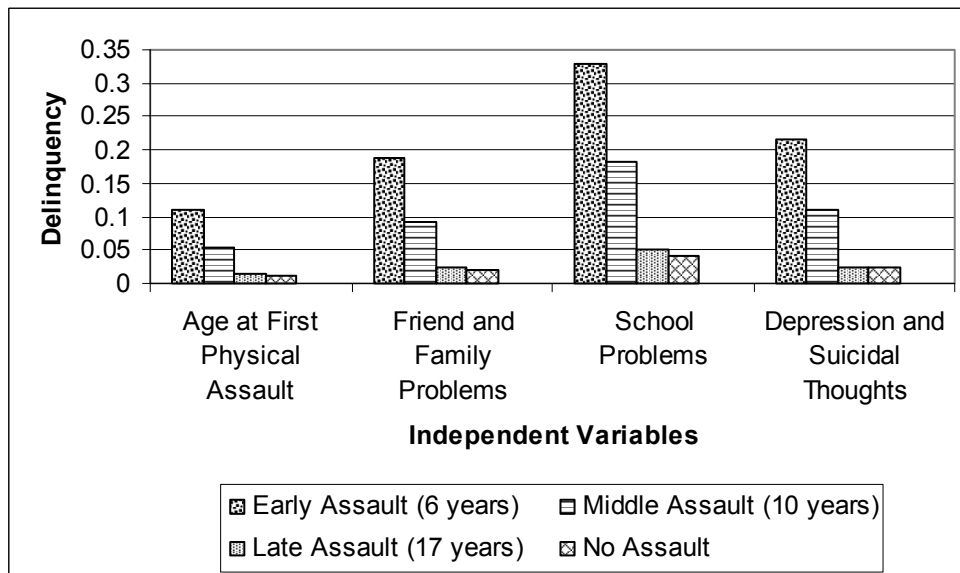*Note: Scale ranges from 0 to 0.5.

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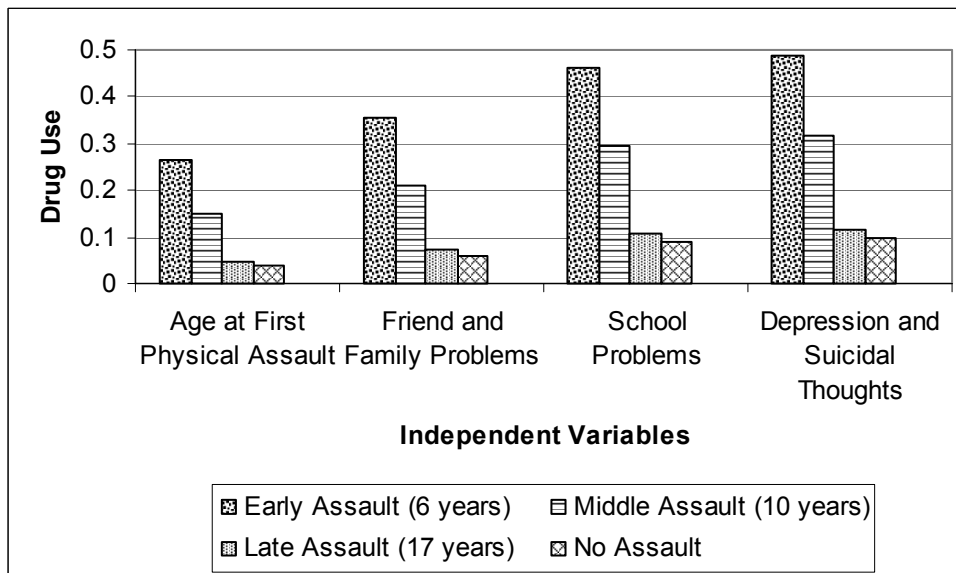
In Figures Seven and Eight (below) the results show a similar pattern to the previous figures. Early assault results in a higher predicted probability of delinquency when holding all other variables at their means and modes. Again, the results show that the mediating effects are more pronounced than the age at first effects.

Figure 7: Predicted Probabilities of Delinquency with Age at First Sexual Assault and the Key Mediators*

*Note: Scale Ranges from 0 to 0.35.

Figure 8: Predicted Probabilities of Delinquency with Age at First Physical Assault and Key Mediators*

*Note: Scale Ranges from 0 to 0.35.

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Chapter 5

Discussion and Conclusion

This chapter will first provide an overview of the findings discussed in the results section. Next, the implications for general strain theory, developmental psychology literature, and policy will be discussed. Finally, the limitations of this study will be considered.

This study examined the direct and mediating effects of the relationship between early victimization and deviant behavior. Early victimization and other strains have been linked to a range of social and behavioral problems (Toth, Manly, & Cicchetti, 1992; Paternoster & Mazerolle, 1994; Duncan et al., 1996; Dodge, Pettit, & Bates, 1997; Hoffman & Su, 1997; Hoffman & Miller, 1998; Hoffman & Cerbone, 1999; Aseltine, Jr., Gore, & Gordon, 2000; Kilpatrick et al., 2000; Keiley et al., 2001; Hilarski, 2004). However, this study was the first to examine the effects of early strains on deviant behavior as well as the mediating effects through social bonds and negative emotions. In addition to the use of early strains, this study uses a measure of strain, victimization, which is rare in extant research (although see Agnew 2001). Also, most general strain literature uses only one measure of drug use or delinquency and very few use alcohol use as an outcome variable (Paternoster & Mazerolle, 1994; Brezina, 1996; Hoffman & Miller, 1998; Bao, Haas, Pi, 2004; Sigfusdottir, Farkas, & Silver, 2004). This study used three measures of alcohol and drug use and two measures of delinquency to examine their relationship with early strains. Logistic and Tobit regression were employed to

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examine the relationships to answer the questions derived from general strain and early victimization literature.

The first hypothesis was supported and stated *that as the age at first victimization increase (1) the odds of alcohol use, drug use, and delinquency will decrease, (2) the frequency of binge drinking, drug use, and delinquent acts will decrease, and (3) the age at first binge drinking and drug use will increase.* The results showed that an increase in the age at first sexual and physical assault decreased the odds that youth have tried alcohol and drugs as well as the odds that they have participated in at least one delinquent act. Also, a one year increase in their age at first assault led to a decrease in the frequency of binge drinking and drug use as well as the number of delinquent acts they have participated in. Finally, there was a direct relationship between early victimization and early alcohol and drug use. As a youth's age at first sexual or physical assault increases they will begin binge drinking and using drugs at a later age.

The next hypothesis stated that *as the age at first victimization increases the odds of negative emotions will decrease. The presence of negative emotions, in turn (1) increases the odds of alcohol use, drug use, and delinquency, (2) increases the frequency of binge drinking, drug use, and delinquent acts, and (3) decreases the age at first binge drinking and drug use.* The results supported this hypothesis and showed that both early sexual and physical assault were associated with increased odds of experiencing thoughts of depression and suicide. The presence of depression and suicidal thoughts was correlated with an increase in the odds of alcohol and drug use and delinquency. Also, the presence increased the frequency of binge drinking, drug use, and delinquent acts and predicted an earlier age of substance use onset.

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The last hypothesis stated that *the negative effect of victimization on the strength of social bonds increases as the age at first victimization decreases. The presence of weak social bonds, in turn (1) increases the odds of alcohol use, drug use, and delinquency, (2) increases the frequency of binge drinking, drug use, and delinquent acts, and (3) decreases age at first binge drinking and drug use.* The results supported this hypothesis as well and found that both age at first sexual and physical assault lead to an increased odds of experiencing both problems with friends and family members and problems at school. Also, the presence of these weak social bonds increased the odds of participation in alcohol and drug use and delinquency and the frequency of these variables. The presence of weakened social bonds is related to a younger age at first binge drinking and drug use.

The direct relationship between early victimization and deviant behavior decreases in each occasion as the mediators were added to the model; however, the relationships remained significant. This indicates that the presence of friend and family problems, school problems, and depression and suicidal thoughts only partially mediates the relationship between both age at first sexual and physical assault and the outcome variables.

Theoretical and Policy Implications

The results of this study do provide a strong contribution to general strain theory literature and are supportive of the theory. Similar to previous studies of general strain theory, this study shows an indirect relationship between strain and deviant behavior through the presence of negative emotions and social bonds. However, by conceptualizing negative emotions as depression and suicidal thoughts, instead of anger, this study adds to previous literature that mostly uses anger as a negative

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emotion (although see Broidy, 2001; Sigfusdottir, Farkas, & Silver, 2004; Bao, Haas, & Pi, 2004).

This study is the first to examine the effects of early strain, showing that earlier events are more salient in terms of later problem behavior due to a lack of power over event. Similar to developmental psychology literature that finds that when victimized at an early age youth feel that they cannot control the events and, in turn, experience more strain from the event. This strain leads the youth to use alcohol and drugs and delinquency. Similar to previous literature, the results of this study consistently found that early strain does lead to deviant behaviors such as alcohol and drug use and delinquency. Early strains were also related to increased odds of problems with friends, family and school as well as feelings of depression and suicidal thoughts.

The outcome variables also provide an important contribution to general strain theory research. Previous research on general strain theory involves only frequency measures of deviant behavior and excludes dichotomous or early use measures. This study used dichotomous, frequency, and age of first measures as outcome variables, each provide a distinctive look at how early strains effect deviant behavior. The dichotomous variables represent the decision to use alcohol and drugs or participate in delinquent acts which helps to explain why some individuals become involved in deviant behavior while others do not. Frequency variables are representative of the decision to binge drink, use drugs, and commit delinquent acts on more than one occasion. The frequency variables are able to explain whether or not this type of behavior is successfully alleviating the strain felt by the individual. Age of first binge drinking and drug use provide information on how early strains contribute to early occurrence of these behaviors.

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In addition to the use of only frequency measures in previous literature, the research also excludes alcohol use as a possible consequence of strain. Many of the previous studies also use combined measures of drug use and delinquency. By combining measures in this way, these studies fail to examine the unique way in which strain effects alcohol use, drug use, and delinquency separately. This study contributed to the literature by examining these variables separately; thereby, examining how early strains affect each of the outcome variables. The results indicated that early strains have similar effects on each of the outcome variables (dichotomous alcohol use, drug use, and delinquency, frequency of binge drinking, drug use, and delinquent acts, and age at first binge drinking and drug use). Although the results were similar for each outcome variable, this study was able to examine whether or not early strains can predict (1) experimental alcohol use, drug use, and delinquency through the use of the dichotomous measures, (2) non-experimental binge drinking, drug use, and delinquency through the frequency variable, and (3) a younger age at substance use onset. Predicting early substance use is important because it has been shown to be related to chronic substance use and abuse as well as increase the likelihood of delinquency.

This study, however, was not able to provide a complete measure of strain because it lacks data on the two of the three types of strain. In addition, the study does exclude anger as a negative emotion; therefore, its mediating effects could not be examined. Future research would benefit from more tests of general strain theory that measure the effects of early strains on deviant behavior. These examinations should include all three measures of strain as well as more negative emotions variables (e.g., anger, depression, hopelessness, fear, and anxiety). In addition, longitudinal research on this subject would be preferable.

In addition to contributing to general strain theory research, this study also adds to the current research in developmental psychology. Previous research in psychology has shown that early victimization leads to a range of social and behavioral problems. This research, however, is usually not based on theory or the theory is applied after the research has been completed. This type of atheoretical research just demonstrates a relationship between victimization and deviant behavior; it provides no explanation as to why there is a relationship. This study addresses this issue by examining early victimization from a general strain theory perspective. In addition, the current study examined the mediating effects of social bonds and negative emotions which is rare in psychological literature. The findings are supportive of developmental psychology research by showing that early victimization leads to increased odds of problems at home and at school as well as feelings of depression and thoughts of suicide. In addition, a relationship was established between early victimization and delinquent coping strategies like alcohol use, drug use, and delinquency. The current study contributes to this literature by examining the relationships using statistical analysis. Most prior research in developmental psychology examines these relationships through experimental research.

The most important policy implication is derived from the mediating relationships examined in this study. Early victimization has been shown to be very harmful to children and the mediating effects show that it can be especially harmful when youth are experiencing problems at home, at school, and with depression. Attention to these problems will help children to better handle their strains and possibly lead to less deviant behavior.

Children that are victimized at an early age would benefit from long-term psychological counseling to help them cope with the strain of victimization in a prosocial

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way. Long-term counseling will help the individual cope with strain throughout their childhood and adolescence. This is needed because different coping strategies may be needed at different stages throughout adolescence. In other words, the coping strategies that worked for a child at age ten might not be as useful to the child at age fifteen or sixteen. If new coping strategies are not available the child may turn to substance use or delinquency to cope with prior victimizations. Also, the long-term psychological counseling should be made easily accessible to these children; for example, free and anonymous counseling programs within the school and community. In addition to anonymity, the counseling programs should be at no cost to the victimized youth.

Limitations

There were three methodological limitations relating to the data collection strategy that need to be addressed. First, the information that was provided in the interview was serious and potentially embarrassing in nature and in some cases the respondent might not have been able to answer openly or might not have felt comfortable answering. For example, the interviewee might have excluded pertinent information due to fear of being overheard or fear of being judged by the interviewer. In addition, this was a retrospective, self-report study which may have produced biased responding. Youth may have under or over reported their experiences with assault, alcohol and drug use, and delinquency. In addition, they may not have been able to recall the age when they were first victimized or the age when they first used alcohol or drugs. Second, this study was completed using a cross-sectional data set; therefore, no causal connection could be determined. Third, sampling representation may have been limited because participants in this study were limited to those who live in houses with telephones; therefore, some eligible participants were left out of the sampling process.

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However, only about 5 percent of the U.S. households did not have telephones (Kilpatrick et al., 2000).

Limitations were also present in the data set and within the variable measurements. First, as mentioned above, missing data was deleted listwise leading to a loss of 1,664 cases. However, descriptive statistics showed that the frequencies, means, and modes were very similar after those with missing information were deleted. The only notable change was that there were slightly more girls than boys after the missing data were expunged. Second, even after the missing data was deleted there was still a large sample size (N = 2359), which could have resulted in a relationship attaining significance only because of the sample size. Third, the nature of the friend and family problems variable is a limitation. Analysis of the victim/offender relationship showed that about half of the youth were victimized by a friend or a family member. This would lead to a bias because a youth that was assaulted by a friend or a family member could be said to have problems with friends and family. Lastly, the nature of the assault variables could have led to a bias in the results because they were top-coded. Due to the nature of the top-coding the results could be just a victimization effect and not an early victimization effect. By referring back to Figures Three through Eight (above), however, it can be seen that early victimization did demonstrate a consistently high probability of deviant behavior when all other variables were set at their means and modes compared to no victimization and later victimization. These figures show that the findings are not just a result of the top-coded nature of the variables.

In conclusion, the research questions asked in this study were answered and the results show that youth who are victimized at an early age, experience negative emotions and weak social bonds are more likely to participate in alcohol use, drug use, and delinquency, binge drink and use drugs more often, participate in more delinquent

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acts, and begin binge drinking and using drugs at an earlier age. However, the

presence of negative emotions and weak social bonds only partially mediates the

relationship between early victimization and these behaviors.

References

Agnew, R. (1983). Social class and success goals: An examination of relative and absolute aspirations. *Sociological Quarterly, 24*, 435-452.

Agnew, R. (1984). Goals achievement and delinquency. *Sociology and Social Research*, *68*, 435-447.

Agnew, R. (1985). A revised strain theory of delinquency. *Social Forces*, 64, 151-167.

Agnew, R. (1989). A longitudinal test of revised strain theory. *Journal of Quantitative Criminology*, *5*, 373-387.

Agnew, R. (1992). Foundation for a general strain theory of crime and delinquency. *Criminology*, *30*, 245-266.

Agnew, R. (2001). Building on the foundation of general strain theory: Specifying the types of strain most likely to lead to crime and delinquency. *Journal of Research in Crime and Delinquency*, *38*, 319-361.

Agnew, R. (2002). Experienced, vicarious, and anticipated strain: An exploratory study focusing on physical victimization and delinquency. *Justice Quarterly*, *19*, 603-632.

Agnew, R. (2006). General strain theory: Current status and directions for further research. In Cullen, Wright, & Blevins (Eds.), *Taking stock: The status of criminological theory.* (Vol. 15, pp. 101-126). New Brunswick, NJ: Transaction.

Agnew, R., Brezina, T., Wright, J.P., & Cullen, F.T. (2002). Strain, personality traits, and delinquency: Extending general strain theory. *Criminology*, *40*, 43-71.

Agnew, R., & White, H.R. (1992). An empirical test of general strain theory. *Criminology*, *30*, 475-499.

Aseltine, Jr., R.H., Gore, S., & Gordon, J. (2000). Life stress, anger and anxiety, and delinquency: An empirical test of general strain theory. *Journal of Health and Social Behavior*, *41*, 256-275.

Ayers, C.D., Williams, J.H., Hawkins, J.D., Peterson, P.L., Catalano, R.F., & Abbott, R.D. (1999). Assessing correlates of onset, escalation, de-escalation, and desistance of delinquent behavior. *Journal of Quantitative Criminology*, *15*, 277-306.

Bao, W.N., Haas, A., & Pi, Y. (2004). Life strain, negative emotions, and delinquency: An empirical test of general strain theory in the people's republic of China. *International Journal of Offender Therapy and Comparative Criminology*, *48*, 281-297.

Baron, R.M., & Kenny, D.A. (1986). The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology*, *51*, 1173-1182.

Beitchman, J.H., Zucker, K.J., Hood, J.E., & DeCosta, G.A. (1991). A review of the short-term effects of child physical abuse. *Child Abuse and Neglect*, *15*, 537-556.

Bolger, K.E., Patterson, C.J., & Kupersmidt, J.B. (1998). Peer relationships and self-esteem among children who have been maltreated. *Child Development*, *69*, 1171-1197.

Brezina, T. (1996). Adapting to strain: An examination of delinquent coping responses. *Criminology*, *34*, 39-60.

Brezina, T. (1998). Adolescent maltreatment and delinquency: The question of intervening processes. *Journal of Research in Crime and Delinquency*, *35*, 71-99.

Broidy, L.M. (2001). A test of general strain theory. *Criminology*, *39*, 9-35.

Burton, V.S., Cullen, F.T., Evans, T.D., & Dunaway, R.G. (1994). Reconsidering strain theory: Operationalization, rival theories, and adult criminality. *Journal of Quantitative Criminology*, *10*, 213-239.

Carlson, E.B., Furby, L., Armstrong, J., & Schlaes, J. (1997). A conceptual framework for the long-term psychological effects of traumatic childhood abuse. *Child Maltreatment*, *2*, 272-295.

Chatlos, J.C. (1997). Substance use and abuse and the impact of academic difficulties. *Child and Adolescent Psychiatric Clinics of North American*, *6*, 545-568.

Cloward, R., & Ohlin, L. (1960). *Delinquency and opportunity*. Free Press, New York.

Cohen, A. (1985). *Delinquent Boys*. Free Press, New York.

Crouch, J.L. (2000). Income, race/ethnicity, and exposure to violence in youth: Results from the national survey of adolescents. *Journal of Community Psychology*, *28*, 625-641.

Dembo, R., Dertke, M., la Voie, L., Borders, S., Washburn, M., & Schmeidler, J. (1987). Physical abuse, physical victimization, and illicit drug use: A structural analysis among high risk adolescents. *Journal of Adolescence*, *10*, 13-34.

Dodge, K.A., Pettit, G.S., & Bates, J.E. (1997). How the experience of early physical abuse leads children to become chronically aggressive. In D. Cicchetti & S. Toth (Eds.), *Rochester Symposium on Developmental Psychopathology: Vol. 8. The effects of trauma on the developmental process* (pp. 263-268). Rochester, NY: University of Rochester Press.

Duncan, R. D., Saunders, B.E., Kilpatrick, D.G., Hanson, R., & Resnick, H.S. (1996). Childhood physical assault as a risk factor for PTSD, depression, and substance use: Findings from a national survey. *American Journal of Orthopsychiatry*, *66*, 437-448.

Elliott, D.S., Ageton, S.S., & Canter, R.J. (1979). An integrated theoretical perspective on delinquent behavior. *Journal of Research in Crime and Delinquency*, *16*, 3-27.

Epstein, J.N., Saunders, B.E., Kilpatrick, D.G., Hanson, R., & Resnick, H.S. (1998). PTSD as a mediator between childhood rape and alcohol use in adult women. *Child Abuse and Neglect*, *22*, 437-448.

Fagan, A.A. (2005). The relationship between adolescent physical abuse and criminal offending: Support for an enduring and generalized cycle of violence. *Journal of Family Violence*, *20*, 279-290.

Famularo, R., Fenton, T., Kinscherff, R., Ayoub, C., & Barnum, R. (1994). Maternal and child posttraumatic stress disorder in cases of child maltreatment. *Child Abuse and Neglect*, *18*, 27-36.

Farrington, D.P., Loeber, P., Elliot, D.S., Hawkins, J.D., Kandel, D.B., Klein, M.W., McCord, J., Rowe, D.C., & Tremblay, R.E. (1990). Advancing knowledge about the onset of delinquency and crime. In B.B. Lahey & A.E. Kazdin (Eds.), *Advances in clinical psychology* (Vol. 13, pp. 283-342). New York, NY: Plenum Press.

Gottfredson, M.R., & Hirschi, T. (1990). *A General Theory of Crime*. Stanford, CA: Stanford University Press.

Grant, B.F., & Dawson, D.A. (1998). Age of onset of drug use and its association with DSM-IV drug use and dependence: Results from the National Longitudinal Alcohol Epidemiology Survey. *Journal of Substance Use*, *10*, 190-241.

Hilarski, C. (2004). Victimization history as a risk factor for conduct disorder behaviors: Exploring connections in a national sample of youth. *Stress, Trauma, and Crisis: An International Journal*, *7*, 47-59.

Hirschi, T. (1969). *Causes of Delinquency*. Berkeley, CA: University of California Press.

Hoffman, J.P., & Cerbone, F.G. (1999). Stressful life events and delinquency escalation in early adolescence. *Criminology*, *37*, 343-373.

Hoffman, J.P., & Miller, A.S. (1998) A latent variable analysis of general strain theory. *Journal of Quantitative Criminology*, *14*, 83-110.

Hoffman, J.P., & Su, S.S. (1997). The conditional effects of stress on delinquency and drug use: A strain theory assessment of sex differences. *Journal of Research in Crime and Delinquency*, *34*, 46-78.

Jang, S.J., & Johnson, B.R. (2003). Strain, negative emotions, and deviant coping among African Americans: A test of general strain theory. *Journal of Quantitative Criminology*, *19*, 79-105.

Keiley, M.K., Howe, T.R., Dodge, K.A., Bates, J.E., & Pettit, G.S. (2001). The timing of child physical maltreatment: A cross-domain growth analysis of impact on adolescent externalizing and internalizing problems. *Development and Psychopathology*, *13*, 891-912.

Kilpatrick, D.G., Acierno, R., Resnick, H.S., Saunders, B. E., & Best, C.L. (1997). A 2-year longitudinal analysis of the relationships between violent assault and substance use in women. *Journal of Consulting and Clinical Psychology*, *65* 834-847.

Kilpatrick, D.G., Acierno, R., Saunders, B.E., Resnick, H.S., & Best, C.L. (2000). Risk factors for adolescent substance abuse and dependence: Data from a national sample. *Journal of Consulting and Clinical Psychology*, *68*, 19-30.

Kilpatrick, D.G., Resnick, H., Saunders, B.E., & Best, C.L. (1989). *The National Women's Study PTSD Module*. Unpublished instrument. Charleston, SC: National Crime Victims Research and Treatment Center, Department of Psychiatry and Behavioral Sciences, Medial University of South Carolina.

Kilpatrick, D.G., & Saunders, B.E. (1999). National survey of adolescents in the United States [Computer file]. ICPSR version. Charlestown, SC: Medical University of South Carolina [producer]. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2000.

Kogan, S.M. (2004). Disclosing unwanted physical experiences: Results from a national sample of adolescent women. *Child Abuse & Neglect*, *28*, 147-165.

Le Blanc, M., & Loeber, R. (1998). Developmental criminology updated. In M. Tonry (Ed.), *Crime and justice: A review of research* (Vol. 23, pp. 115-198). Chicago: University of Chicago Press.

Lewis, D.O., Shanok, S.S., Grant, M., & Ritvo, E. (1983). Homicidally aggressive young children: Neuropsychiatric and experiential correlates. *The American Journal of Psychiatry*, *142*, 1161-1167.

Loeber, R. (1988). The natural histories of juvenile conduct problems, substance use and delinquency: Evidence for developmental progressions. In B. Lahey & A.E. Kazdin (Eds.), Advances in clinical child psychology (Vol. 11, pp. 73-124). New York, NY: Plenum Press.

Loeber, R., DeLamatre, M., Tita, G., Cohen, J., Van Kammen, W.B., & Stouthamer-Loeber, M. (1999). Gun injury and mortality: The delinquent background of its juvenile victims. *Violence and Victims*, *14*, 339-352.

Lynch, C.O. (2001). Risk and protective factors associated with adolescent physical activity. *Adolescent & Family Health*, *2*, 99-107.

Mazerolle, P., Burton, Jr., V.S., Cullen, F.T., Evans, T.D., & Payne, G.L. (2000). Strain, anger, and delinquent adaptations: Specifying general strain theory. *Journal of Criminal Justice*, *28*, 89-101.

Mazerolle, P., & Piquero, A. (1998). Linking exposure to strain with anger: An investigation of deviant adaptations. *Journal of Criminal Justice*, *26*, 195-211.

Merton, R.K. (1938). Social structure and anomie. *American Sociological Review*, *3*, 672-682.

McClellan, D.S., Farabee, D., & Crouch, B.M. (1997). Early victimization, drug use, and criminality: A comparison of male and female prisoners. *Criminal Justice and Behavior*, *24*, 455-476.

McDonald, J.F., & Moffitt, R.A. (1980). The uses of tobit analysis. *The Review of Economics and Statistics*, *62*, 318-321.

Moran, P.B., & Eckenrode, J. (1992). Protective personality characteristics among adolescent victims of maltreatment. *Child Abuse and Neglect*, *16*, 743-754.

Nash, M.R., Zivney, O.A., & Hulsey, T. (1993). Characteristics of physical abuse associated with greater psychological impartment among children. *Child Abuse and Neglect*, *17*, 401-408.

Osgood, D.W., Finkin, L.L., & McMorris, B.J. (2002). Analyzing multiple-item measures of crime and deviance II: Tobit regression analysis of transformed scores. *Journal of Quantitative Criminology*, *18*, 319-347.

Paternoster, R., & Mazerolle, P. (1994). General strain theory and delinquency: A replication and extension. *Journal of Research in Crime and Delinquency*, *31*, 235-263.

Paternoster, R., & Triplett, R. (1988). Disaggregating self-reported delinquency and its implications for theory. *Criminology*, *26*, 591-625.

Piquero, A.R., & Chung, H.L. (2001). On the relationships between gender, early onset, and the seriousness of offending. *Journal of Criminal Justice*, *29*, 189-206.

Quicker, J.C. (1974). The effect of goal discrepancy on delinquency. *Social Problems*, *1*, 76-86.

Sigfusdottir, I.D., Farkas, G., & Silver, E. (2004). The role of depressed mood and anger in the relationship between family conflict and delinquent behavior. *Journal of Youth and Adolescence*, *33*, 509-522.

Smith, C., & Thornberry, T.P. (1995). The relationship between childhood maltreatment and adolescent involvement in delinquency. *Criminology*, *33*, 451-481.

Stattin, H., & Magnusson, D. (1995). Onset of official delinquency. *The British Journal of Criminology*, *35*, 417-449.

Tong, L., Oates, K., & McDowell, M. (1987). Personality development following physical abuse. *Child Abuse and Neglect*, *11*, 371-383.

Toth, S.L., Manly, J.T., & Cicchetti, D. (1992). Child maltreatment and vulnerability to depression. *Development and Psychopathology*, *4*, 97-112.

Turner, R.J., Wheaton, B., & Lloyd, D.A. (1995). The epidemiology of social stress. *American Sociological Review*, *60*, 104-125.

Voss, H.L. (1966). Socio-economic status and reported delinquent behavior. *Social Problems*, 13-32.

Weeks, R., & Widom, C.S. (1998). Self-reports of early childhood victimization among incarcerated adult male felons. *Journal of Interpersonal Violence*, *13*, 346-361.

Widom, C.S. (1989). Does violence beget violence? A critical examination of the literature. *Psychological Bulletin*, *106*, 3-28.

Zhang, L., Wieczorek, W.F., & Welte, J.W. (1997). The impact of age of onset of substance use on delinquency. *Journal of Research in Crime and Delinquency*, *34*, 253-268.

Zingraff, M.T., Leiter, J., Johnsen, M.C., Myers, K.A. (1994). The mediating effect of good school performance on the maltreatment delinquency relationship. *Journal of Research in Crime and Delinquency*, *31*, 62-91.