Understanding Victim-Offender Overlap Taxonomies:

A Longitudinal Study

by

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ABSTRACT

The victim-offender overlap is a widely accepted empirical fact in criminology. While many methodological strategies have been used to study overlap, prior studies have assumed that it is uniform, taking little consideration into the potential differences *within* the overlap. The larger body of criminological research on pathways to crime suggests that victim-offenders also have variability in their victimization experiences and offending patterns. Not accounting for variation within the overlap has produced inconsistent findings in terms of establishing theoretical explanations for the victimization and offending relationship.

Several general theories of crime have merit in their assumptions about the relationship between victimization and offending. Routine activity/lifestyle theory, low self-control theory, and general strain theory offer insight into the overlap. Variables derived from these three general theories are assessed to test their ability to explain a more complex conceptualization of the victim-offender overlap.

Using data on 3,341 individuals drawn from four waves of the publically available National Longitudinal Study of Adolescent to Adult Health (Add Health), a latent class analysis establishes unique victim-offender overlap taxonomies. A multinomial logistic regression is conducted to test how well theoretically derived variables from three general theories (e.g., routine activity theory, low self-control theory, and general strain theory) predict membership in the unique victim-offender overlap taxonomies. Additional multinomial logistic regressions are run using a split sample analyses to test the invariance of the findings across different social groupings (e.g., gender and race/ethnicity).

Comparing the more complex operationalization of the victim-offender overlap with the baseline regression models shows notable differences. For example, depression significantly predicts membership in the general victim-offender overlap group, but when taking into consideration variation within the overlap, depression does not consistently predict membership in all taxonomies. Similar results are found for routine activity/lifestyle theory and low self-control theory. Tests of invariance across gender and race/ethnicity highlight the need to consider how theoretical explanations of the victim-offender overlap differ based on social groupings. Males and females have unique risks and needs and these should be reflected in how routines and negative emotions are measured. The findings underscore the need to consider overlap when studying the relationship between victims and offenders. Implications for theory, future research, and policy are also discussed.

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CHAPTER ONE

INTRODUCTION

The concept of the victim-offender overlap – recognition that victims and offenders often come from the same population – is one of the most widely accepted and persistent empirical facts in the field of criminology (Berg, 2012; Berg & Felson, 2016; Jennings, Piquero, & Reingle, 2012). The victim-offender overlap has been documented across a variety of crime contexts. For example, overlap has been observed for violent and property crimes (Broidy et al., 2006; Lauritsen, Sampson, & Laub, 1991; TenEyck & Barnes, 2017), intimate partner violence (Heyman & Smith, 2002; Reingle et al., 2012; Tillyer & Wright, 2014), bullying (Bender & Lösel, 2011; Cullen et al., 2008; Marcum et al., 2014), and fraud (Holtfreter, Reisig, Piquero, & Piquero, 2010). While there is consistent evidence that the overlap exists, many questions remain unanswered.

To date, strategies for studying the overlap have varied. The most common approach involves the use of offending as an independent variable to predict victimization (or vice versa). While many studies have relied on cross-sectional data, longitudinal designs are also occasionally used to establish time ordering (Barnes & Beaver, 2012; Berg et al., 2012; Mulford et al., 2016; Sullivan, Wilcox, & Ousey, 2011). The most sophisticated strategies consist of group-based trajectory models that allow researchers to examine the strength of the relationship between victimization and offending at various developmental stages (e.g., early adolescence to early adulthood; Jennings et al., 2010). A basic assumption underlying much of this research is that the connection between victimization and offending is spurious and can therefore be explained by a common underlying factor (Berg, 2012). Accordingly, attempts to explain

the overlap have drawn on several general criminological theories (e.g., routine activity theory, low self-control theory, and general strain theory). Some of these studies have revealed partial theoretical support, but have not been able to fully explain the overlap. For example, Schreck, Stewart, and Fisher (2006) found that the relationship between victimization and offending persisted, net of low self-control. Others have found significant relationships between theoretically relevant variables (e.g., routine activities, deviant peer associations, and social support) and the victim-offender overlap; however, the attenuated estimates suggest that a large portion of the overlap is still not accounted for (Posick & Zimmerman, 2015; Schreck, Stewart, & Osgood, 2008; Vogel & Keith, 2015).

Prior studies of the victim-offender overlap have also been guided by an assumption that the overlap itself is monolithic. Along those lines, different types of victimization and offending items are often lumped together without consideration of the possibility that there is variation *within* the victim-offender overlap. This assumption, however, runs counter to the large body of life course criminology research that suggests that individuals have unique offending trajectories. For instance, "adolescence limited" offenders begin engaging in offending at a young age, but their involvement in crime is largely restricted to the teenage years. By comparison, "life course persisters" also start offending early, but continue to do so well into late adulthood (Moffitt, 1993; Moffitt & Caspi, 2001; Moffitt et al., 2002). Similarly, qualitative and mixed methodological pathways-to-crime studies have identified distinct groups of offenders, each of which vary in terms of their victimization histories and other life experiences. Daly's (1992) *street woman* pathway includes women who are victimized at an early age, typically run

away from home to a life of crime on the streets, and are continually victimized during the course of their offending (e.g., being robbed and/or sexually assaulted while engaging in prostitution). This pathway differs considerably from *economically motivated* women, the majority of whom are educated, commit fraud-related offenses (e.g., embezzlement and forgery), and have no traumatic experiences in their past (Daly, 1992; Reisig, Holtfreter, & Morash, 2006). Thus far, much of the research on the victim-offender overlap has failed to consider this variability.

Variability in the Victim-Offender Overlap

Previous scholarship has operated under the assumption that victims and offenders behave in similar ways. That said, despite differences in offending type or victimization experiences, victim-offenders have often been studied as a uniform category with similar risk and protective factors (Barnes & Beaver, 2012; Chen, 2009b; TenEyck & Barnes, 2017). However, prior research indicates that when studying patterns of offending or patterns of victimization, variability among experiences plays a large role. For example, risk factors for fraud victimization differ from risk factors for homicide victimization (Broidy et al., 2006; Holtfreter, Reisig, & Pratt, 2008; Pratt, Holtfreter, & Reisig, 2010; Tewksbury & Mustaine, 2000). In a similar vein, drug offenders have different risk and protective factors than individuals who engage in intimate partner violence (Linder, Crick, & Collins, 2002; Reingle et al., 2012; Soulé, Gottfredson, & Bauer, 2008). To this end, the underlying strategy to treat all victim-offenders monolithically washes out potential important differences that may lie within the victim-offender overlap. Pathways scholarship sheds some light on differences in patterns of offending and victimization and can help support the call for studying the victim-offender

overlap as a more complex phenomenon. This argument is further supported by previous victim-offender overlap research. Studies addressing explanatory factors of victimization, offending, and their overlap have failed to provide adequate evidence that indicates a more nuanced understanding of the causal mechanisms behind the victimization-offending link. Put differently, prior research has provided a great deal of evidence that partially explains the relationship between victims and offenders, however, the attenuated estimates in many of these studies leave much to be desired.

Pathways to Offending

Pathways literature provides a roadmap for how people become offenders. A majority of the research identifies critical elements of offenders' histories that contribute to their onset and persistence in offending. Perhaps more importantly, pathways literature acknowledges differences in the risk and protective factors as they relate to crime type, severity, and persistence. This body of literature provides context as to why not all victim-offenders share similar backgrounds.

With the growing availability of longitudinal data, pathways research has become more popular and informative. Scholars have taken to collecting and analyzing the life histories of offenders to establish commonalities and differences in pathways to crime. For example, Loeber and colleagues (1993) identified three pathways that juveniles take to offending. These pathways range from minor offending to more serious offenses. For example, the *authority conflict* pathway includes stubborn behavior that advances to acts such as truancy and running away. The *covert* pathway includes escalated behaviors such as lying, property damage, and burglary. Serious offenses fall under the *overt* pathway and include violent offenses ranging from bullying to rape. Many of the behaviors

reflected in these pathways are also empirically documented consequences of early childhood victimization, establishing an early link between victimization and offending (Bender, 2010; Bergen et al., 2004; Ford, 2002).

From a gendered perspective, Daly (1992) identified five unique pathways female offenders take to felony court: *street women*, *harmed and harming women*, *battered women*, *drug-connected women*, and other (later deemed *economically motivated women* by Morash & Schram, 2002). Several of these gendered pathways also include accounts of victimization; however the contexts in which they engage in crime or are victimized may differ based on their experiences. For example, the *street women* are categorized as running away from home at an early age, abusing substances, and engaging in prostitution. On the other hand, *battered women* are in abusive relationships and engage in crime primarily as a way of defending themselves against their abuser. Additional research has confirmed and extended Daly's original pathways (see Brennan et al., 2012; Huebner, DeJong, & Cobbina, 2010; Reisig, Holtfreter, & Morash, 2006).

In addition to pathways identified by Loeber and colleagues (1993) and Daly (1992), scholars have established additional pathways to crime. Francis, Soothill, and Fligelstone (2004) identified nine different pathways to offending for males and three pathways for females. Two general pathways were recognized: marginal lifestyle with versatile offending and fraud and general theft. The *marginal lifestyle with versatile offending* pathway involves drug use, sexual offenses, and theft. Those who comprise the *fraud and general theft* pathway are involved in fraud and forgery as well as commercial burglary, and shoplifting. Additional pathways are centered on specific forms of crime, for example *vehicle theft* (non-violent vehicle theft), *wounding* (violence, murder, and

kidnapping), and *shoplifting*. Pathways for females included *versatile offending*, *shoplifting*, and *trust violation*. In sum, the literature has shown that some pathways include little to no victimization while others have limited offending but prevalent victimization. Noting the differences in the existence of victimization and offending within different pathways to crime is important because it suggests that differences within the victim-offender overlap also likely exist. To date, however, most studies on the victim-offender overlap have failed to capture the variation among victims and offenders that has been observed by pathways research.

Approaches to Studying the Victim-Offender Overlap

Many different methodological strategies have been used to study the victim-offender overlap. Among the most common is the use of bivariate techniques to document the overlap between victimization and offending (e.g., correlations or cross-tabulations; see Chang, Chen, & Brownson, 2003; Feigelman et al., 2000; Jenson & Brownfield, 1986). This method measures the extent to which the overlap exists (e.g., 30 percent of offenders in the sample were also victims). These methods give little insight to the overall nature of the relationship between victimization and offending and fail to take into consideration the impact of other independent variables, which may lead to overestimated coefficients. At the bivariate level, Feigelman et al. (2000) found that there was a significant yet modest correlation ($r = .29$) between violent perpetration and victimization. However, a stepwise multiple regression analysis showed that despite the significant relationship at the bivariate level, victim status only accounted for two percent of the variation in offending. Beyond bivariate methods, regression models estimate the

strength of the relationship between victims and offenders while simultaneously controlling for the effects of other correlates.

Regression modeling techniques have been used to estimate predictive models of offending, victimization, and their overlap. Many studies report that offending predicts victimization and/or victimization predicts offending (Broidy et al., 2006; Fagan, Piper, & Cheng, 1973; Feigelman et al., 2000; Heyman & Smith, 2002; Jenson & Brownfield, 1986). These models estimate the overlap relationship while simultaneously considering the impact of other explanatory variables. Studies measuring the victim-offender overlap using basic regression techniques have revealed mixed support. Fagan, Piper, and Cheng (1973) found that the inclusion of victimization only accounted for one percent of the variance explained by a model including social control and learning variables. In a study on family violence, Hayman and Smith (2002) found that experiencing parent-child violence significantly increased future child abuse perpetration. Additionally, regression analyses have displayed mixed findings for theoretical explanations of the victim-offender overlap. Several studies have found that theoretical explanations such as routine activities, low self-control, and vicarious strain are significant predictors of both victimization and offending (Holtfreter, Reisig et al., 2010; Mustaine & Tewskbury, 2000; Zavala & Spohn, 2013). Other studies, using similar theoretical explanations found that factors such as low self-control, vicarious victimization, and negative emotions do not contribute to the understanding of the victim-offender relationship (Flexon, Meldrum, & Piquero, 2016; Piquero et al., 2005; Posick & Zimmerman, 2015; Vogel & Keith, 2015). These inconsistencies across findings have led scholars to employ more statistically rigorous methods.

Perhaps the most sophisticated statistical technique used in victim-offender overlap research is the use of group-based trajectory models or similar approaches used to develop groups of individuals based on shared characteristics (e.g., cluster analysis and latent class analysis). These methods statistically construct groups based on offending and/or victimization patterns and assess the frequency of events over time. For example, Jennings and colleagues (2010) constructed trajectories for delinquency and victimization using data from several time points between the ages of 12 and 16. Their findings indicated four different delinquency trajectories: non-delinquents, low-rate delinquency, moderate-rate delinquency, and high-rate delinquency. Three victimization trajectories were estimated: non-victims, low-rate victimization, and high-rate victimization. Taken together, a cross-tabulation shows that about 18 percent of respondents fall into a non-offender/non-victimization group. However, about 34 percent are classified as victim-offenders. Predictors including school commitment, parental monitoring, and low self-control significantly predicted membership in both delinquency and victimization trajectories. Differences emerge, however, depending on the rate of victimization and delinquency. For example, school commitment decreased the likelihood of being assigned to the moderate or high delinquency rate and low or high-rate victimization. These differences highlight the hypothesis that variation within victimization and offending is present. Failure to consider this variation loses important factors that may influence an individual's risk of victimization and likelihood of offending. Using a similar methodological approach, Maldonado-Molina and colleagues (2010) established delinquency trajectories from two different location-based samples. Their findings closely mirrored the delinquency trajectories established by Jennings et al. (2010). One

sample found a five-group solution with trajectories ranging from non-delinquents to high-rate delinquents. The second sample fit a four-group solution with trajectories including non-delinquents, low-rate delinquency, stable delinquency, and initially high-rates of delinquency followed by low-rates of delinquency. The trajectories constructed in these studies show within group differences among offenders and victims independently.

Reid and Sullivan (2012) used latent class analysis to estimate groups based on offending and victimization measures. Four classes were estimated that reflected different patterns in the type of offending the respondents engaged in and the victimization they experienced. These groups included general victim-offenders, bullied-combative, abused-substance abuse, and nonvictim-nonoffenders. This method provides further support for the presence of variety within the victim-offender overlap. Using latent class analysis, several statistically constructed groups emerged as having significant unique characteristics. These established classes highlight the importance of considering differences within the overlap and helps establish possible avenues for where we should expect to see differences among victimization and offending patterns. While this study certainly advances our understanding of the victim offender overlap, the advanced methodological approach, inconsistency in the findings and mixed support for theoretical explanations of the overlap still remain. These inconsistent findings may be a result how predictor variables are operationalized. For instance, ADHD is used as a proxy for low self-control. While ADHD is a factor of low self-control, important facets remain. Additionally, Reid and Sullivan were limited in the scope of their indicator variables. The indicator variables are limited to a single time point and unable to establish any trends victimization and offending patterns across time and a causal relationship cannot be

established when using cross-sectional data. To this end, further exploration of the within-group variation in the victim-offender overlap is warranted.

Explaining Crime, Victimization, and the Victim-Offender Overlap

The field of criminology has its fair share of theoretical explanations for criminal behavior. Arguably, most criminological theories place a sole emphasis on explaining crime, playing little to no attention to victimization (Jennings, Piquero, & Reingle, 2012; Lauritsen & Laub, 2007). Within the large body of criminological theories, routine activity theory, low self-control theory, and general strain theory enjoy a fair amount of empirical support. These theories have been used to explain offending behavior and also victimization. Much of the support for the victim-offender overlap relies on the demographic and behavioral similarities between victims and offenders (Daday et al., 2005; Jennings, Piquero, & Reingle, 2012). Given these similarities and the extensive applicability of these theories to both offending and victimization, they have become natural choices for explaining the victim-offender overlap.

Lauritsen and Laub (2007) separate theoretical explanations of crime and victimization into two categories that focus on different causal factors of the overlap: individual heterogeneity and state dependent. Individual heterogeneity includes theories that reflect traits and characteristics than an individual may possess. For example, low self-control theory would fall under the individual heterogeneity perspective due to its emphasis on an individual's level of self-control, a stable trait, and how it influences victimization experiences and offending behaviors. In contrast, the state-dependence hypothesis focuses on experiences or behaviors that increase risk. This angle is in line with routine activity theory and general strain theory's explanation of crime and

victimization. Specifically, an event such as victimization may lead an individual to cope criminally. Scholars who study the victim-offender overlap have typically taken a stance on whether they believe the overlap is a result of individual heterogeneity or whether it is state dependent. As a result of their preference, they typically test theories that fall under one position or the other. As previously discussed, theoretical explanations of the victim-offender overlap have received varying support. The attenuated estimates of theoretical independent variables may be a consequence of treating the victim-offender overlap as a monolithic construct. Perhaps the theories have more explanatory power for certain types of victimization/crimes and less for others? This idea is reflected through the extensive body of literature testing theory as it relates to different types of crime and victimization. Some theories are better suited to explain certain crimes while other theories have more explanatory power for different crimes. Should similar outcomes be expected when applying theory to the victim-offender overlap?

Routine Activity Theory

One of the most popular theoretical explanations for the existence of the victim-offender overlap is routine activity/lifestyle-exposure theory (RAT/L). Within the body of literature applying RAT/L to the victim-offender overlap, three different explanatory approaches are typically assessed. First, a common explanation includes the impact of routine activities on victimization risk through involvement in crime. Put differently, routine activities work indirectly through offending to influence victimization experiences. Many studies on victimization use offending, in addition to other deviant or risky lifestyles, as a proxy for routine activities (Lauritsen, Sampson, & Laub, 1991; Mustaine & Tewskbury, 2000; Sampson & Lauritsen, 1990). A second approach posits

that routine activities influence victimization directly through exposure (Jenson & Brownfield, 1986; Katz et al., 2011; Pyrooz, Moule, & Decker, 2014). This has commonly been seen in gang research where gang involvement, considered a risky lifestyle, increases victimization risk through exposure to offenders (Katz et al., 2011). Third, routine activities are used to predict offending, victimization, and their overlap (Mulford et al., 2016; Tanner, Asbridge, & Wortley, 2015). While these approaches are not mutually exclusive the manner in which they are employed reflects differences in how RAT/L may influence the victim-offender overlap based on crime type.

Low Self-Control Theory

The position of using low self-control theory to explain the victim-offender overlap assumes the relationship between the two outcomes is spurious. Put simply, low self-control theory argues that individuals with lower levels of self-control are more likely to engage in offending and are at a greater risk of victimization. While low self-control theory has received extensive empirical support in relation to offending and victimization, findings have not been so robust with respect to the victim-offender overlap. Several studies have concluded that net of control variables and theoretical explanations; a strong and significant relationship between offending and victimization persists (Flexon, Meldrom, & Piquero, 2016; Jennings et al., 2011; Piquero et al., 2005; Reisig & Holtfreter, 2018). These studies did find support for the relationship between low self-control, victimization, and offending, however, the relationship was not strong enough to fully account for the overlap. Consistent with theoretical expectations, there has been some empirical support for low self-control and the victim-offender overlap (Holtfreter, Reisig, et al., 2010; Marcum et al., 2014; Schreck, Stewart, & Fisher, 2006).

The inconsistent findings between these studies have led to the suggestion that low self-control may be working in conjunction with other theoretical explanations to account for the overlap between victims and offenders (Jennings et al., 2011; Piquero et al., 2005; Turanovic, Reisig, & Pratt, 2015).

General Strain Theory

Victimization is commonly acknowledged as a strong source of strain (Agnew, 2013). Agnew (2006) argues that crime may be a source of coping with the negative emotions associated with strains when an individual lacks the means to cope prosocially. When examining the role of victimization as a strain and crime being a means of coping with strain, general strain theory has merit in explaining the victim-offender overlap. The relationship between victimization and offending is frequently discussed in research on child maltreatment and bullying. The child maltreatment literature suggests that children are malleable and influenced by their environment. Victims of child maltreatment have been found to display future offending behaviors (Cicchetti & Toth, 2005; Fagan, 2001; Widom, 1989). Similar connections have been demonstrated among victims and perpetrators of bullying. Being a victim of bullying (both in-person and cyber-bullying) induces negative emotions. The victim may attempt to alleviate these negative emotions by exacting revenge against the bully or bullying others as a way to regain their power (Bender & Lösel, 2011; Cullen et al., 2008; Hinduja & Patchin, 2007). Posick and Zimmerman (2015) found that negative emotions, a consequence of strain, moderated the relationship between victimization and offending. However, they conclude that while negative emotions prove important for the victim-offender overlap, the mechanisms with which they operate remain unclear.

Purpose of Dissertation

The primary purpose of this dissertation is to gain a comprehensive understanding of variation within the victim-offender overlap. While research on the victim-offender overlap has been extensive, much of the scholarship has failed to consider contextual differences that characterize membership in different victim-offender overlap taxonomies. Building on the current body of victim-offender overlap research, this dissertation considers variation in victimization and offending experiences over four stages of the life course (i.e., adolescence through young adulthood).

In an effort to assemble an extensive list of victimization experiences and offending behaviors, four waves of the National Study of Adolescent to Adult Health (Add Health) will be used (Harris, 2011). The Add Health data is a large nationally representative sample and is ideal for this project because it provides extensive data on individuals throughout their crime-prone years. While the offending and victimization measures included are by no means exhaustive, the use of over one hundred indicator variables to construct the victim-offender overlap taxonomies is significantly more inclusive than previous studies using group-based trajectory models or latent class analyses to construct victim-offender overlap groups (Jennings et al., 2010; Maldonado-Molina et al., 2010; Reid & Sullivan, 2012). In addition to using a nationally representative sample, the current dissertation advances existing studies in several ways. First, it provides a longitudinal assessment of crime and victimization. Many studies have been limited to a single wave of data providing a limited scope of victimization experiences and offending behaviors across the life course. The longitudinal structure of the Add Health data also allows for an assessment of crime and victimization before,

during, and after the "crime prone" years (i.e., early adolescence to young adulthood). Additionally, this study includes measures on a variety of different types of crime and also takes into consideration the differences in seriousness within specific crime types. Previous studies have condensed similar crimes into a single measure (e.g., assault versus assault with a weapon or assault without a weapon), masking potential important differences based on severity.

The first goal of this study is the construction of distinct groups that represent different victim-offender overlap experiences. Using an extensive list of offending and victimization measures, over the course of four waves, latent class analysis will be used to statistically construct the victim-offender overlap groups. Consistent with the pathways to offending literature, it is expected that unique classes will emerge, reflecting different patterns of onset, persistence, and variety in offending and victimization experiences. The guiding research question of the first stage of this dissertation is:

1. Do unique victim-offender overlap taxonomies exist?
    a. What do these taxonomies look like? What does the variation between these groups say about the relationship between victims and offenders?

Second, this research tests the ability of factors, informed by three general theories of crime, to predict membership in the constructed victim-offender overlap taxonomies. The notion behind general theories is that they are able to accurately explain offending under a variety of different contexts and circumstances (e.g., crime type and offender characteristics). More recently, general theories of crime have been extended to explain victimization. This is largely due to the extensive overlap seen between victims and offenders. Consequently, truly general theories should also be able to explain the

victim-offender overlap. To test this, a series of multinomial logistic regressions will be estimated to determine the extent to which variables derived from three general theories (e.g., routine activity theory, low self-control theory, and general strain theory) predict group membership in the various victim-offender overlap groups. The research questions guiding the analyses are as follows:

2. Can variables derived from general theories of crime predict group membership in different victim-offender overlap taxonomies?
    a. Do the theoretical conditions of routine activity theory explain group membership for all victim-offender overlap taxonomies? Does routine activity theory explain membership in specific taxonomies rather than others?
    b. Do the theoretical conditions of low self-control theory explain group membership for all victim-offender overlap taxonomies? Does low self-control theory explain membership in specific taxonomies rather than others?
    c. Do the theoretical conditions of general strain theory explain group membership for all victim-offender overlap taxonomies? Does general strain theory explain membership in specific taxonomies rather than others?

A third question addressed in this dissertation concerns the invariance of the findings across gender and race. Historically, criminological theories have been criticized for focusing on crime committed by white males. Increased interest in feminist criminology and the disproportionate amount of minorities who come into contact with the criminal

justice system underscores the need to study these populations beyond simply controlling for gender and race in analyses. Employing models with split samples assesses the invariance of the theoretical explanations of the victim-offender overlap. The third research question(s) is:

3. Are the results from research question 2 invariant across social groupings?
    a. Do routine activity theory, low self-control theory, and general strain theory differ in their ability to predict group membership, in different victim-offender overlap taxonomies, for males and females?
    b. Do routine activity theory, low self-control theory, and general strain theory differ in their ability to predict membership, in different victim-offender overlap taxonomies, based on racial and/or ethnic characteristics?

Organization of Dissertation

This dissertation is organized as follows. Chapter Two will include a comprehensive overview of existing victim-offender overlap research. Additionally, a thorough discussion of routine activity theory, low self-control theory, and general strain theory will be presented, demonstrating their importance in explaining offending, victimization and the victim-offender overlap. Chapter Three provides an overview of the data, variables, and research design to be used in this dissertation. The fourth chapter of this dissertation consists of three sections. First, results from the latent class analysis will be presented. Next, a series of multinomial logistic regression models predicting victim-offender group membership will be assessed. Finally, using split samples based on gender and race, additional multinomial logistic regressions will be assessed to test for invariance. The final chapter, Chapter Five, will include a discussion on the key findings

from this project and will address implications of the results for theory, future research, and policy.

CHAPTER TWO

LITERATURE REVIEW

Victimization-Offending Overlap Studies

Extensive research has concluded that victimization remains one of the strongest and most reliable predictors of offending. By and large, studies have consistently shown significant correlations between victimization and offending (Berg, 2012). However, there has often been a misconception that offending and victimization are two separate factors, existing on opposite sides of the crime spectrum (Berg, 2012; Esbensen & Huizinga, 1991). However, more recently, research has confirmed that offender and victim populations often overlap.

Perhaps the earliest scholar to call attention to the victim-offender overlap was von Hentig (1948). He acknowledged that characteristics between victims and offenders are similar and that the two groups are not always separate. Specifically, von Hentig (1948) emphasized how many perpetrators seek out other offenders to victimize under the assumption that they are less likely to report the offense to the authorities due to their own offending behaviors. Additionally, he noted that some individuals might incite their own victimization by provoking offenders through their actions. Wolfgang (1958), with his Philadelphia homicide study, recognized that victims and offenders shared similar backgrounds and characteristics and found that about 50 percent of the homicide victims in his sample had a criminal arrest record. This early connection between victims and offenders led Wolfgang to develop the concept of victim precipitation. Put differently, Wolfgang concluded that among his sample of homicide victims, many of them likely engage in behaviors that in one way or another contributed to their untimely death. Since

Wolfgang's (1958) initial homicide study, several scholars have sought to empirically study the victim-offender overlap among homicide victims (Broidy et al., 2006; Crandall et al., 2004; Dobrin, 2001). Broidy and colleagues found that 57 percent of homicide offenders and 50 percent of homicide victims had a history of prior arrests, findings that mirrors those of Wolfgang. Similarly, Dobrin (2001) concluded that victims of homicide had a higher likelihood of having been arrested and that each additional arrest increased risk of homicide by up to 5.6 times. This connection between victims and offenders and their shared characteristics has continued to be studied extensively and the relationship between offending and victimization has been met with empirical support.

Overlap has been found among victims of and/or offenders in varying contexts. For example, the victim-offender overlap has been found across crime types including violent crimes (Heyman & Smith, 2001; Klevens, Duque, & Ramirez, 2002; Mulford et al., 2018; Silver et al., 2011), intimate partner violence (Linder, Crick, & Collins, 2002; Reingle et al., 2012; Richards, Tillyer, & Wright, 2017; Tillyer & Wright, 2014), bullying (Cho, 2017; Cullen et al., 2008; Walters & Espelage, 2017), and child abuse (Bunch, Iratzoqui, & Watts, 2017; Heyman & Smith, 2001). Evidence for the victim-offender overlap can also be found among juveniles (Fagan, Piper, & Cheng, 1973; Jennings et al., 2010; Lauritsen, Sampson, & Laub, 1991; Mulford et al., 2018; Reid & Sullivan, 2012) as well as adults (Daday et al., 2005; Hiday et al., 2001; Kuhlhorn, 1990; Reisig & Holtfreter, 2018). While differences may emerge in the frequency and type of victimization and crime, overlap persists for both males and females (Daday et al., 2005; Heyman & Smith, 2001; Marcum et al., 2014). Although most research has taken place in the United States, there has been a focus on studying whether the victim-overlap persists

internationally. The overlap has been found in studies conducted in the Netherlands (Wittebrood & Nieuwbeerta, 1999), Canada (Regoeczi, 2000), New Zealand (Paterson et al., 2007), and South Korea (Jennings et al., 2011). Despite the context in which the victim-offender overlap is assessed, studies consistently show an association between victims and offenders.

Pathways to Offending

Literature on pathways to offending have taken a longitudinal look at the life histories of offenders and established patterns in behaviors that influence criminal propensity. This body of research has largely been informed by life-course criminology and acknowledges that events throughout an individual's life have an impact on their criminality (Wattanaporn & Holtfreter, 2014). Scholars have studied pathways using several different sources of data including life-history narratives (Gilfus, 1993), child/caretaker surveys (Loeber et al., 1993), risk/need assessments of offenders (Brennan et al., 2012; Salisbury & Van Voorhis, 2009), and presentence investigation reports (Daly, 1992; Reisig, Holtfreter, Morash, 2006). These investigations of pathways to crime have led to the conclusion that victimization is commonly found among the histories of offenders, emphasizing the role of victimization in offending.

Early studies on pathways to offending concluded that while some offenders share commonalities there remains variability within offending populations. Loeber and colleagues (1993) identified that young boys engage in different types of behaviors that increase their levels of delinquency and serious offending. Specifically, Loeber et al. (1993) identified three pathways including *authority conflict, covert, and overt*. While these pathways do not directly indicate victimization experiences, many of the displayed

behaviors have been linked to victimization. For example, bullying victimization is significantly correlated with bullying perpetration as well as other forms of delinquency and substance abuse (Espelage & Swearer Napolitano, 2003; Cullen et al., 2008). Similarly, childhood abuse is predictive of future violent behavior (Heyman & Smith, 2002). As with much early criminological literature, Loeber and associates (1993) failed to consider the offending pathways of females.

Given the focus primarily on male criminality, a large portion of the pathways to crime literature has focused on the unique pathways to offending of women in an effort to overcome this limitation (Wattanaporn & Holtfreter, 2014). Most notable are the five female pathways to felony court identified by Daly (1992). The *street woman* pathway includes women who left home at an early age often because of sexual abuse, engage in petty crime and prostitution, and are drug addicted. The women in the *harmed and harming woman* pathway also experienced childhood abuse and abused substances, however their criminal involvement was more violent than the street woman. Daly's *battered woman* pathway and *drug-connected woman* pathway both involve crime as a product of a relationship with an intimate partner and typically do not experience abuse until adulthood. The battered woman engages in violent crime to act out against their abusive partner. Drug-connected women abuse substances and/or get involved with the selling of drugs through drug-involved family members or intimate partners. The fifth pathway, *economically motivated woman* (originally termed *other*) includes women who engage in financially motivated crimes (Daly, 1992; Morash & Schram, 2002; Reisig, Holtferter, & Morash, 2006). Many scholars continued to study female pathways in a variety of contexts.

Salisbury and Van Voorhis (2009) focused primarily on pathways to repeat offending. They conducted a path-analysis of risk/need assessment data on 313 women and developed three models of offending and repeat offending. The childhood victimization model acknowledges how early abuse leads to negative emotions such as depression and anxiety and influences offending indirectly. The relational model highlights how victimization in adulthood contributes to victimization, depression, and anxiety and increases offending behaviors. The third model, social capital, emphasizes the influence of unemployment and financial instability on criminal propensity. Consistent with previous studies on pathways to crime, the models identified by Salisbury and Van Voorhis (2009) consist not only of offending but experiences of victimization as well. Similarly, Brennan and colleagues (2012) identified four general pathways to crime using 718 risk/need assessments of incarcerated women. These pathways vary in offending and victimization experiences. For example women in the *normal functioning drug-dependent* pathway and the *socialized subculture* pathway experience little to no victimization. Women in the *victimized and battered* pathway and the *aggressive-antisocial* pathway, however, have high levels of childhood abuse and/or intimate partner violence.

These pathways to crime, however, do not apply exclusively to female offenders. Daly's pathways model has been applied to split samples of males and females (Belknap & Holsinger, 2006). Among a split sample of boys and girls, Daly's (1992) pathways were found to be strong predictors for delinquency among both males and females. Despite the differing samples and sources of data, there remains clear evidence of varying levels of victimization within the different pathways to crime.

In sum, the pathways to crime literature has highlighted the relationship between victimization and offending in several important ways. For example, it is clear that victimization plays a role in many pathways to offending for both men and women. A conclusion drawn from this body of scholarship is that offending and victimization rarely exist independent of each other. However, the role and presence of victimization is not routine across pathways. Accordingly, it is to be expected that variation within the victim-offender overlap will reflect many of the differences in victimization and offending identified by pathways scholars.

Victims, Offenders, and Victim-Offender Taxonomies

Several studies have attempted to create group-based classifications based on victimization and offending over time. Longitudinal research on victimization, offending, and their pathways have provided empirical support for the assumption of variability within the victim-offender overlap. However, past longitudinal studies on the victim-offender overlap are limited in their ability to explain this variation. Jennings and colleagues (2010) constructed independent delinquency and victimization trajectories in order to determine the relationship between offending and victimization frequencies. For example, those who were classified as low-rate victims were more likely to be assigned to the low-rate or moderate-rate delinquency trajectory. Additionally, high-rate victims were assigned to the moderate-rate delinquency trajectory. Hypothetically, it would be expected that high-rate victims would be assigned to the high-rate delinquency trajectory. This unanticipated finding indicates that collapsing all delinquent variables and victimization variables into a single group potentially masks a meaningful portion of the victim-offender relationship.

Using a similar methodological strategy, Mulford and colleagues (2018) created independent exposure to violence and self-reported offending trajectories. Taking the analysis one step further, the authors created victim-offender overlap groups based on exposure to violence experiences and the offending behaviors of 1,354 high-risk juvenile offenders. Not surprisingly, the largest group consists of individuals who report low levels of exposure to violence and low levels of offending (26.3 percent). Consistent with the victim-offender overlap perspective, the second largest group consisted of high reports of exposure to violence and persistent offending behaviors (10.13 percent). Theoretically derived variables were incorporated into the analyses to predict membership in the different victim-offender overlap groups. This strategy shows how theoretical explanations differ based on victim-offender overlap frequencies. For example, routine activities predicted membership in the high exposure to violence-persisting offending trajectory but not membership in the high exposure to violence-desisting offending trajectory. However, this study was limited in its generalizability due to its use of a high-risk offending sample of juvenile felony offenders.

Advancing the understanding of the victim-offender overlap further, Reid and Sullivan (2012) used latent class analysis to construct taxonomies of victims and offenders based on crime type rather than frequency or persistence/desistance. Their study established four subgroups of victim-offenders: general victim-offenders, bullied-combative, abused-substance use, and nonvictim-nonoffender. The *bullied-combative* group included individuals who experienced physical and psychological violence and engaged in peer assault but had relatively low rates of other types of offending. Individuals who experienced sexual abuse and psychological abuse and abused

substances comprised the *abused-substance abuse* group. The remaining victim-offender groups was constructed of generalized offenders who participate in a variety of different types of offenses and experience varying forms of victimization. While Reid and Sullivan (2012) certainly advance the concept of variability within the victim-offender overlap, their study is limited in scope and generalizability. The authors use a nationally representative sample of 1,000 juveniles aged 10-17 years old. The young age of the subjects could potential understate the relationship between victimization and offending or fail to capture variation within the overlap that may be more important for older subjects. While over 50 indicator variables were used to construct the victim-offender taxonomies, they were limited to a single time point and therefore unable to capture variation to assess the relationship of victimization and offending across time. As suggested by the findings of Mulford et al. (2018), patterns of desistance or persistence of offending and victimization significantly impact the victim-offender overlap. The results presented by Reid and Sullivan (2012) emphasize the need to further study variation within the victim-offender overlap. Studying the variation *within* victim-offenders is of continued importance and warrants further investigation that incorporates items that better capture victimization experiences and offending behaviors longitudinally, including before, during, and after crime prone years.

Theoretical Explanations of Offending, Victimization, and the Victim-Offender Overlap

The victim-offender overlap is one of the most consistent findings in criminology. Across varying contexts (e.g., crime type, age, and gender) research has provided persistent evidence in support of the relationship between victimization and offending

(Berg, 2012). Among the earliest literature, von Hentig (1948) explained the relationship between victims and offenders by identifying two types of victims: (1) those who do not contribute to their victimization and (2) those who do contribute to their victimization. Research on the victim-offender overlap is primarily concerned with the latter group. While von Hentig offered no formal theoretical explanation of the different groups, several general theories of crime have been applied to explain and understand the overlap. Scholars have attempted to explain the victim-offender overlap using a number of different criminological theories. In general, theoretical explanations of the overlap fall into two categories: causal or spurious (Berg, 2012). The causal view of the overlap assumes that victimization and offending are a consequence of one another. Put differently, those who engage in offending increase their vulnerability and risk of victimization. Another perspective suggests that there is an underlying factor that independently influences both victimization and offending, causing a spurious link between the two outcomes (Berg, 2012). These two views have been tested using various theories, however, results remain mixed.

Routine Activity Theory

Cohen and Felson (1979) posited that crime is a result of the convergence of three situational factors: a motivated offender, a suitable target, and the absence of a capable guardian. When these three elements converge in time and space they create the opportunity for crime to occur (see Figure 1). Originally, routine activity theory was meant to explain crime at the aggregate level. Changes in the presence of the routine activity theory elements were hypothesized to be a result of macro-level changes, which in turn influence crime rates. For example, a decrease in those living in poverty reduces

the number of motivated offenders, resulting in less crime. Subsequent studies have taken an individual-level approach to the application of routine activity theory that focuses on the daily routines people have that increase their likelihood of encountering a motivated offender (Cohen, Kluegel, & Land, 1981). Further, studies have begun to integrate features from lifestyle-exposure theory (Hindelang, Gottfredson, & Garofalo, 1978) to the existing routine activity theory elements. Lifestyle-exposure theory emphasizes activities and behaviors that increase exposure to high-risk people and places and reduce the ability of an individual to exert social control and provide guardianship. While these theories operate on different assumptions and measures, many studies have integrated the micro-level routine activity theory and lifestyle-exposure theory to provide a more comprehensive approach of focusing on opportunity and risk (Cohen, Kluegel, & Land, 1981; McNeely, 2015; Miethe, Stafford, & Long, 1987). This routine activity/lifestyle-

Figure 1. Routine Activity Theory

exposure theory (RAT/L) model of opportunity, exposure, and risk has been used to explain both offending and victimization as well as their overlap.

Riley (1987) was one of the first to test the relationship between routine activities and deviant behavior using a sample of 751 juveniles from England and Wales. The study emphasized how lifestyles and activity patterns such as leaving the house to go to school, work, or shopping, not going directly home after school, and meeting up with friends in public places increase offending behaviors. Building on the application of RAT/L to deviant behavior, Osgood and colleagues (1996) focused on the motive aspect and the behaviors and actions of the motivated offender. They argue for a distinction between structured and unstructured routines.

Traditionally, routine activity theory defined routine activities to be ordinary activities that are a result of everyday life. Osgood et al. (1996) argue that unstructured routines (i.e., activities that lack an organized agenda and have an absence of social control) are more conducive to deviance than structured activities (i.e., organized activities that may provide elements of social control). Across an array of offending and deviant behaviors, unstructured routines were found to account for a large portion of the variance within the activities. Following the initial application of RAT/L to deviance, researchers were quick to test the ability of the theory to explain other types of crimes.

The influence of structured and unstructured routines on crime has been met with varying support. Unstructured routines were found to increase violent crime (Hughes & Short, 2014; Miller, 2013). Structured routines, such as participating in youth clubs and sports did not significantly increase violence (Hughes & Short, 2014). Miller (2013) assessed the impact of both structured and unstructured routines on fare evasion,

shoplifting, vandalism, and drug use. Overall, at least one form of unstructured socializing increased at least one form of delinquency, however, consistently across delinquency was not found. Interestingly, structured routines had a significant negative impact on drug use, supporting Osgood et al.'s (1996) claim that unstructured socializing increases delinquency more than structured socializing. Unstructured socializing, measured by time spent hanging out with friends, among adolescents has been found to increase offending among males and substance use among girls (Augustyn & McGloin, 2013). RAT/L has successfully explained offending behaviors, however a larger body of research has emphasized the relationship between routine activities and victimization.

Routine activity/lifestyle-exposure theory has been used to explain victimization across types of crimes and contexts. Engagement in unstructured routines not only provides opportunity for offending but also increases exposure to potential offenders. Unstructured routines have been found to increase risk of a variety of different types of victimization: property crimes (Cohen, Kluegel, & Land, 1981; Miethe, Stafford, & Long, 1987; Sampson & Wooldredge, 1984), assault (Cohen, Kluegel, & Land, 1981; Gibson, Fagan, & Antle, 2014; Miethe, Stafford, & Long, 1987; Schreck & Fisher, 2004), and robbery (Kennedy & Forde, 1990; Miethe, Stafford, & Long, 1987). Schreck and Fisher (2004) found that routines such as driving a car and exercising significantly predicted assault victimization net of controlling for family contexts and peers. However, association with delinquent peers also increased victimization risk. Similarly, Kennedy and Forde (1990) found that unstructured routines such as driving around/walking in public and going to a bar increased an individual's risk of being robbed. Bunch, Clay-Warner, and McMahone-Howard (2014) investigated whether victimization changes

engagement in routines. Victimization was not found to influence future behaviors that may increase re-victimization, challenging the ability of the theory to explain poly-victimization. Given the emphasis on victims and offenders converging in time and space and the wide support in offending and victimization contexts, RAT/L is a natural contender when considering theoretical explanations for the victim-offender overlap.

A common strategy for assessing the influence of RAT/L on the victim-offender overlap is the use of delinquency/crime as a proxy for risky behaviors. Engaging in offending behaviors is a strong predictor of victimization (Chang, Chen, & Brownson, 2003; Chen, 2009b; Daday et al., 2005; Jenson & Brownfield, 1986; Lauritsen, Sampson, & Laub, 1991; Mustaine & Tewksbury, 2000; Sampson & Lauritsen, 1990). Lauritsen, Sampson, and Laub (1991) found that offenders were four times more likely to be assaulted than non-offenders. When comparing first-time offenders, recidivists, and non-offenders, repeat victimization is a strong predictor of delinquency. Using data on 3,200 juveniles from four waves of the Gang Resistance Education and Training (GREAT) program, between 1996 and 1999, Chen (2009a) found that delinquency over time is significantly correlated with changes in victimization over time. Specifically, changes in delinquency accounted for 80% of the variation within victimization. Repeat victims were 1.63 times more likely to be a first time offender and 2.77 times more likely to be a recidivist compared to non-offenders. This finding persists when comparing recidivists and first time offenders (1.75 times; Chang, Chen, & Brownson, 2003). While offending clearly is significantly associated with victimization, the use of criminal behaviors as a proxy for risky lifestyles fails to adequately capture several components of RAT/L such as non-criminal routines and risky behaviors.

Several studies have attempted to explain the victim-offender overlap using risky behaviors beyond delinquency/offending (Chang, Chen, & Brownson, 2003; Mulford et al., 2018; Singer, 1981). Of particular relevance to lifestyle theory's emphasis on risk is gang involvement. Prior studies have found that gang involvement is a strong predictor of both victimization and offending (Mulford et al., 2018; Singer, 1981). Using an offender sample, Mulford and colleagues (2018) statistically constructed groups based on exposure to violence (adolescent peak ETV, low decreasing ETV, low increasing ETV, and high ETV) and self-reported offending (moderate, low, desisting, adolescent-peak, and persisting). For those who had high exposure to violence and persistent offending, gang involvement significantly predicted their membership. Additional measures of risky lifestyles include carrying a gun (Mulford et al., 2018), frequent consumption of alcohol (Mustaine & Tewksbury, 2000), and propensity toward taking risks (Chang, Chen, & Brownson, 2003). Those who frequently consume alcohol are at an increased risk of assault (Mustaine & Tewksbury, 2000). Risk-taking increases one's likelihood of being a first time offender or recidivist when compared to non-offenders. Consequently, risk-taking is also a strong predictor in differentiating between first time offenders and recidivists. Compared to non-offenders, those who take risks are 1.32 times more likely to be a first time offender and 1.89 times more likely to be a recidivist (Chang, Chen, & Brownson, 2003). Less consistent findings, however, are found when observing the effects of structured and unstructured routines on the victim-offender overlap.

Routine activities also range in their level of guardianship, establishing an important distinction between structured and unstructured routines. Unstructured routines such as riding around in a car for fun, going to parties, and going to bars significantly

predict victimization and offending (Jenson & Brownfield, 1986). However, unstructured routines have also failed to explain the relationship between victimization and offending. For instance, unstructured routines had a significant negative effect on predicting trajectory membership in a group of individuals with high reports exposure to violence and desisting offending behaviors (Mulford et al., 2018). Comparatively, unstructured socializing was a significant predictor of Mulford et al.'s (2018) high-victimization/high-offending trajectory.

Low Self-Control Theory

Gottfredson and Hirschi's (1990) low self-control theory has received a great deal of scholarly attention. According to this framework, "people who lack self-control will tend to be impulsive, insensitive, physical (as opposed to mental), risk-taking, short-sighted, and nonverbal" (p. 90). Crime is believed to produce immediate gratification with minimal effort, making it appealing to individuals with low self-control. Gottfredson and Hirschi (1990) dismiss the role opportunity plays in crime and contest that opportunity for crime is ubiquitous. They posit that the important consideration is the varying levels of self-control that may influence whether an individual acts on the criminal opportunities they happen upon. Individuals with low self-control are more likely to give into their impulses and focus on the short-term benefits of the act (Hirschi, 2004; Hirschi & Gottfredson, 2008). Low self-control is argued to be a consequent of ineffective parenting and believed to be established and remain stable at an early age. To this day, low self-control theory remains one of the most popular and widely tested criminological theories.

Low self-control theory has been used to explain offending in a variety of contexts and its popularity within the field of criminology is not without merit. Countless studies have found significant empirical evidence to support the relationship between low self-control and crime (Britt & Gottfredson, 2003; de Ridder et al., 2012; Duckworth & Kern, 2011; Goode, 2008; Pratt & Cullen, 2000). By and large, low self-control is one of the most robust predictors of offending. Hay and Meldrum (2016) argue that low self-control across the life course is a result of the early development of low self-control, which influences behaviors and experiences later in life. These experiences, including offending, risky behaviors, and other criminogenic factors further exacerbate the lowered levels of self-control. Support for low self-control is found across contexts and crimes (Blackwell & Piquero, 2005; LaGrange & Silverman, 1999). For example, low self-control has been employed to explain specific crimes such as fraud (Holtfreter, Beaver, et al., 2010, Holtfreter, Reisig, et al., 2010), cybercrime (Baek, Lasavio, & Higgins, 2016; Donner et al., 2014; Holt, Bossler, & May, 2012), bullying (Chui & Chan, 2015; Moon & Alarid, 2015; Unnever & Cornell, 2003), and white-collar crime (Craig & Piquero, 2016; Craig & Piquero, 2017). These robust findings support the claim of low self-control theory to be a general theory of crime. However, in order to truly be a general theory, it must also apply to victimization.

Along these lines, Schreck (1999) recognized the impact low self-control has on vulnerability and extended Gottfredson and Hirschi's (1990) theory to also account for victimization. Individuals with low levels of self-control lack the ability to recognize and acknowledge the potential consequences of certain actions or behaviors. This may lead them to engage in certain opportunities that make them more vulnerable and at greater

risk of victimization. In an effort to better understand the mechanisms of self-control as they relate to victimization, Schreck identifies six components of self-control that may influence victimization risk: future orientation, empathy, tolerance for frustration, diligence, preference for mental rather than physical activity, and risk avoidance. The application of low self-control to victimization has been met with considerable empirical support. Several studies have found that low self-control is a significant predictor of victimization (Marcum et al., 2014; Piquero et al., 2005; Pratt et al., 2014; Turanovic & Pratt, 2013). Pratt and colleagues (2014) conducted a meta-analysis on the self-control victimization relationship. While they found a modest, yet significant, relationship between victimization and low self-control, they suggest that the importance lies in why self-control matters and what are the relevant causal mechanisms. Similar conclusions have been made by studies on self-control and the victim-offender overlap.

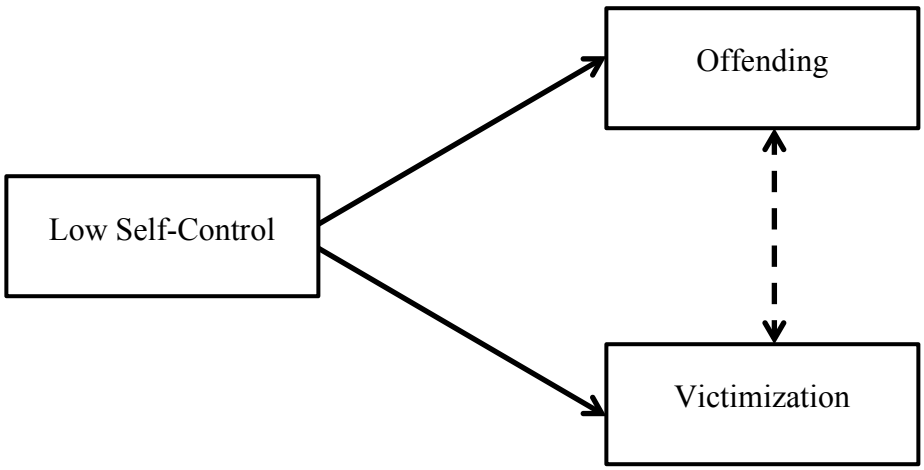

Figure 2. Low Self-Control Theory

From an analytic perspective, if low self-control explains the victim-offender overlap, the relationship between victimization and offending should be rendered null when controlling for low self-control (see Figure 2). In terms of the application of low self-control theory to the victim-offender overlap, findings have been mixed. Gottfredson and Hirschi (1990) confidently express that low self-control can explain criminality across crime type. The generalizability of low self-control theory has been expanded, at least in part, to the explanation of the victim-offender overlap across crime types. For example, using a South Korean sample, Jennings and colleagues (2011) use the Grasmick et al. (1993) low self-control scale to predict psychological dating violence. Consistent with the theory, low self-control significantly predicts both dating violence victimization and perpetration. Implementing the Tangney et al. (2004) low self-control scale, Holtfreter et al. (2010) concluded that low self-control is a significant predictor of both fraud offending and exposure to fraud victimization. Using more generalized victimization including assault, robbery, and theft, Schreck, Stewart, and Fisher (2006) established a link between low self-control and victimization. Their study found that low self-control significantly predicted victimization. Subsequently, individuals who had been victimized and also possess low levels of self-control were more likely to engage in delinquency.

While several studies have found support for the low self-control and victim-offender overlap link, others have met the theory with limited support. Consistent with previous studies, Piquero and colleagues (2005) found that low self-control significantly predicted violent offending. The relationship between low self-control and homicide victimization, however, is less prominent. While the authors do find a significant

relationship between victimization and low self-control, the estimate is moderate and would not reach statistical significant using a two-tailed test. Similarly, Flexon, Meldrum, and Piquero (2016) found independent significant effects of low self-control on victimization and offending. However, low self-control failed to account for the victim-offender overlap. In other words, the significant relationships between low self-control and victimization and offending remains despite consideration for the victim-offender overlap. Among a sample of 2,000 individuals 60 years and older, Reisig and Holtfreter (2018) found that while low self-control attenuates the association between victimization and offending, the relationship remains statistically significant. Despite the overwhelming support of the low self-control and offending link, support for the victim-offender overlap and low self-control relationship is less pronounced.

General Strain Theory

General strain theory posits that experiencing strains leads to negative emotions and ultimately crime (Agnew, 1992). Strains can be defined as "events or conditions that are disliked by individuals" (Agnew, 2006, p. 4). Agnew identifies three sources of strain: absence of positive stimuli, presence of negative stimuli, and failure to achieve desired goals. Experiencing one or more of these strains manifests in negative emotions such as anger, depression, or frustration. Crime enters the equation when an individual lacks the means or support to cope with these negative emotions prosocially (Agnew, 1992, 2006). Crime may temporarily alleviate negative emotions, encouraging offending as a fast acting coping mechanism (Brezina, 2000b). Much of the early research on general strain theory placed a large emphasis on the relationship between negative emotions and criminal coping.

Advancements of general strain theory have recognized the relationship between strain, negative emotions, and offending. In terms of offending, research on general strain theory has focused on maladaptive coping mechanisms (e.g., substance abuse, crime, and deviance) and contexts that influence whether one resorts to criminal coping. Overall, there has been wide support for the strain-crime relationship (Agnew & White, 1992; Brezina, 1996; Paternoster & Mazerolle, 1994; Piquero & Sealock, 2000). Offending is a way to immediately relieve the negative emotions associated with strains. Brezina (2000a) found that delinquency acted as a way to neutralize the negative emotions that result from experiences of strain. These results, however, are not lasting. In other words, delinquent coping may provide temporary relief from negative emotions, however in the long-term, this deviant coping may become the strain itself (Jang, Ferguson, & Rhodes, 2016). More recently, studies have begun to further investigate sources of strain and how they may contribute to the decision to cope criminally (Daniels & Holtfreter, 2018).

Agnew (2006) argues that stain can arise from a number of different stressful events (e.g., death of a parent, denied promotion, ending of a relationship). In addition to evaluating how individuals cope with negative emotions, general strain theory has also been employed to explain how victimization can be a source of strain that leads to negative emotions. Regardless of the type of victimization (e.g., violent, property, identity theft, bullying, intimate partner violence), victims may experience negative consequences including depression, fear, and anger (Golladay & Holtfreter, 2017; Langton & Truman, 2014; Macmillan, 2001; Shapland & Hall, 2007). In his reframing of general strain theory, Agnew (2013) identified violent victimization as being a severe strain (see Figure 3). It is important to note not only the application of general strain

theory to the consequences of victimization, but also the magnitude of the relationship. For example, Langton & Truman (2014) found that 68 percent of victims of violent offenses experienced moderate to severe socio-emotional distress such as problems at work and relationship problems. Similarly, Golladay and Holtfreter (2017) found that victims of identity theft also reported emotional and physical health symptomology.

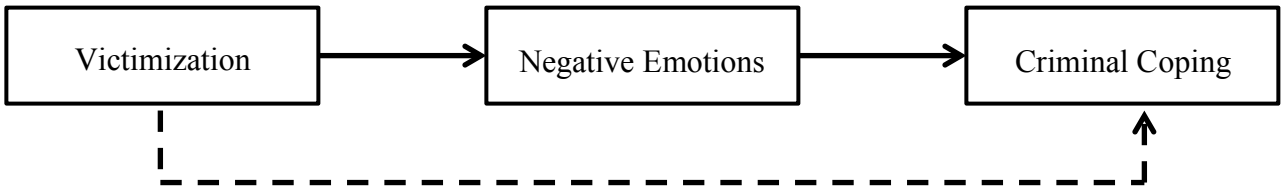

Figure 3. General Strain Theory

Drawing from the extant empirical support for victimization as a source of strain that leads to negative emotions followed by crime as a form of coping, general strain theory offers a time-ordered relationship between victimization and offending. Victimization serves as a source of strain that is often met with negative emotions such as depression and anger. For individuals who lack social support and/or means for coping with these negative emotions may turn to criminal coping (see Figure 3). Given this relationship, when controlling for negative emotions, the link between victimization and offending should be rendered null.

General strain theory has been particularly successful in explaining the victim-offender overlap in bullying and child maltreatment contexts. The concept of the "cycle of violence," commonly referred to in child abuse literature, helps display how general strain theory links victimization and offending. For example, exposure to violence as a child, by a parent, increases future child abuse perpetration (Heyman & Smith, 2002).

Family violence has also been found to increase intimate partner violence and dating violence in adulthood (Reingle et al., 2012; Widom, 1989). In addition to child abuse, bullying disproportionately influences juveniles and can be explained from a general strain theory perspective (Cullen et al., 2008; Espelage & Swearer Napolitano, 2013; Hinduja & Patchin, 2007). Similar to general victimization and offending, bullying perpetration and victimization have historically been treated as two separate dynamics. However, research has shown that this is likely false. Rather, bullying exists on a spectrum and ranges from bully-only to victim-only, with bully-victim falling on the continuum. Bystanders exist off the spectrum, being classified as non-bullies/non-victims (Espelage & Swearer Napolitano, 2003). Being a victim of bullying has been found to lead to negative emotions such as anger, depression, and anxiety; bullying perpetration may be a form of coping with these negative emotions. Bullying victimization can also lead to a number of other forms of delinquency such as substance use and aggression. For example, Cullen et al. (2008) found that bullying victimization is significantly associated with delinquency and substance abuse. This relationship was even stronger for individuals who expressed aggressive attitudes. Hinduja and Patchin (2007) found that strain mediates the relationship between cyberbully victimization and offline delinquency.

Similar to Flexon, Meldrum, and Piquero's (2016) study on victimization, offending, and low self-control, Posick and Zimmerman (2015) found that depression reduced the relationship between victimization and offending, however, depression alone did not fully account for the attenuated effect. Consistent results were found among a sample of individuals in late adulthood. While depression attenuated the victim-offender

overlap estimate, the relationship remained statistically significant (Reisig & Holtfreter, 2018). This implies that extenuating moderating factors exist beyond depression. Victimization has been linked to many negative emotions including depression, anger, fear, and hopelessness. Iratzoqui (2015) found that among these negative emotions, fear is not significantly associated with the victimization-offending link.

The application of general strain theory to the victim-offender overlap, however, has proven to be a bit more complicated than simply accounting for significant relationships between two related variables. The causal link between victimization, negative emotions, and crime is likely cyclically rather than linear. Agnew refers to this concept as "amplifying loops." Put differently, victimization, a strain, can lead to negative emotions and subsequent criminal coping. Offending puts an individual into situations that may increase their likelihood of experiencing additional strains, further setting forth the strain-negative emotions-coping loop (see Figure 4). The reciprocal nature of these relationships draw on the importance of considering time-order when studying victimization and offending, an element lost when relying on cross-sectional data. Iratzoqui (2015) touches on this concept by looking at how victimization (e.g., child maltreatment) increases negative emotions (e.g., depression, fear, and hopelessness), leading to delinquent coping (e.g., binge drinking, selling drugs, running away, and illegal drug use), and increasing risk of subsequent victimization (e.g., violent victimization and dating victimization). Several examples of these amplifying loops proved to be statistically significant. For example, the relationships between child maltreatment, depression, binge drinking, and violent victimization were significant.

Similarly, negative emotions such as depression and hopelessness, and deviant coping including running away and selling drugs led to dating victimization (Iratzoqui, 2015).

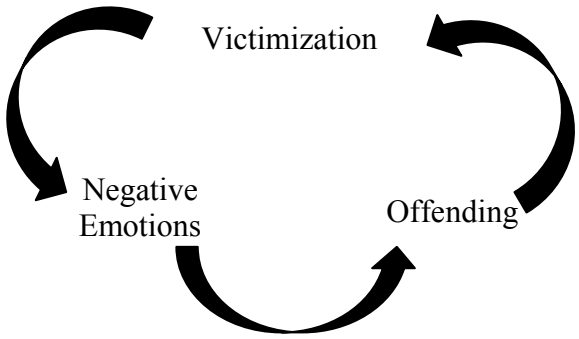

Figure 4. General Strain Theory – Amplifying Loops

Conclusion

The sum of research on the victim-offender overlap has shown considerable support for the existence of an overlap between victims and offenders. Thus far, much of the literature on the victim-offender overlap has failed to account for meaningful variation within the overlap. Using a monolithic operationalization of the link between victimization and offending has made it difficult to apply theoretical explanations. These limitations have left room for measuring variation within the victim-offender overlap and treating the concept more complex than previous research has done.

Given the limitations of previous studies, several questions remain unanswered. First, is there variation within the victim-offender overlap? Put differently, are all victim-offenders the same or are there different taxonomies within this population? More specifically, it is necessary to determine what these taxonomies look like and address how knowledge of the variation within the victim-offender overlap may help further

inform victimization and offending literature. Given this more complex operationalization of the victim-offender overlap, are theoretically derived variables able to explain membership in the different taxonomies? What is more, do certain theories do a better job of explaining membership in certain taxonomies over others? Answering this question will help inform researchers on the driving forces behind the overlap, something previous research has struggled with.

Given these gaps in the literature and remaining questions, this dissertation has three main objectives. First, latent class analysis will be employed to determine whether distinct victim-offender overlap groups exist. Establishing these different victim-offender overlap taxonomies will give greater insight into what the variation within the victimization-offending relationship looks like. Second, variables derived from three general theories of crime (e.g., routine activity/lifestyle theory, low self-control theory, and general strain theory) will be tested to see how well they predict membership in the constructed groups. Finally, given the assumption of generalizability among general theories of crime, these findings will be tested for invariance across gender and race.

CHAPTER THREE

DATA AND METHODS

National Longitudinal Study of Adolescent to Adult Health

Sample

This study uses the public-use data from four waves of the National Longitudinal Study of Adolescent to Adult Health (Add Health). The Add Health study is a nationally representative sample with respondents gathered from eighty high schools and fifty-two middle schools from access the United States (Harris et al., 2009). Data from the in-home interviews are used because these respondents were re-interviewed for subsequent waves of the study, allowing for a longitudinal assessment of the respondents' lives. The in-home interviews took between 60-120 minutes. Wave one interviews were conducted from April to December of 1995 consisting of respondents in 7th thru 12th grade. Wave two was conducted a year after wave one during April thru August of 1996. Again, respondents were in grades 7-12. Respondents who were in 12th grade during wave one, were not re-interviewed during the wave two interviews. In waves one and two, respondents ranged in age from 11 to 19. Wave three interviews were conducted from August 2001 to April 2002. At the time of wave three, respondents were between the ages of 18 to 26 years old. Wave four interviews were conducted in 2008 when respondents were ages 24 to 32 years old. The public-use data contains the same questions as the restricted-use data, however it contains a limited sample. The public-used data contains 50 percent of the respondents from the full wave one sample, with a sample size of 6,504. Waves two, three, and four have a slightly smaller sample size at 4,834, 4,882, and 5,114 respectively (Harris et al., 2009). Due to attrition rates across the

four waves, this study only includes respondents who were interviewed at each stage of the study (N = 3,341).

Procedure

The interviews were conducted in the homes of the respondents using both computer-assisted interviews and self-interviews. Interviewers administered the questionnaires verbally, however in the case of sensitive questions, respondents were administered the questions via a recording and headset. The Add Health questionnaire includes questions on topics such as general health, biological information, friendships/relationships, and decision-making. For the purpose of this dissertation, questions involving offending behaviors, victimization experiences, low self-control, mental health, and daily routines will be used. The questionnaire used for waves three and four were revised to reflect appropriate topics for the older sample (e.g., reduction in school-based questions and an increase in marriage and relationship questions). In the revised questionnaire, the relevant offending/victimization and theoretical independent variable questions remained (Harris et al., 2009).

Dependent Variables

In order to construct the victim-offender overlap taxonomies, an extensive set of offending and victimization measures will be included in the analysis (full list of offending and victimization variables can be found in Appendix A). The offending and victimization measures will be categorized under descriptive headings (e.g., violent victimization, intimate partner violence, property offending, etc.), however the measures will be treated as single variables in the latent class analysis (LCA). This is due to the varying severity levels within the different victimization and offending measures. For

example, being threatened with a knife is significantly less serious than being stabbed. Along the same lines, as suggested by pathways scholarship, these differences in severity may be vital for determining different victim-offender overlap taxonomies. This strategy has been used in previous studies employing LCA (Dhingra, Boduszek, & Sharratt, 2016; Edmond et al., 2015). Each of the variables is dichotomously coded (1 = *yes*, 0 = *no*) to indicate whether the respondent participated in each offending behavior and whether they experienced each form of victimization. Victimization and offending measures are derived from interviews at waves one, two, three, and four, of the Add Health study, in order to longitudinally capture experiences of the respondents.

Offending. *Violent offending* consists of twenty-six items from waves one, two, three, and four. These variables include items such as getting into a physical fight, being initiated into a gang, pull a knife or gun on someone, and rape. *Property offending* is measured with twenty-four items. The questions used to identify property offending at waves one and two are identical, however waves three and four uses a revised set of measures. In general, property offending includes items related to theft (e.g., steal something worth more than $50), vandalism (e.g., deliberately damage property that didn't belong to you), and burglary (e.g., go into a house or building to steal something). *Substance abuse* measures offending related to drugs and alcohol. At waves one and two, substance abuse is measured using eight items (four at each wave) and include used marijuana, used illicit drugs (e.g., cocaine, heroin, LSD), underage drinking, and drunk driving. Waves three and four include the same drug-use variables and drunk driving. At the time of the wave three and four interviews, many of the respondents were over the legal drinking age; therefore drinking at wave three is not included as a substance abuse

variable within the offending measures. *Drug offenses* were measured at all four waves and asked the respondents whether they had sold marijuana or other drugs. Wave three inquiries about child abuse perpetration. Three items are used to measure *child abuse*. Consistent with the Childhood Trauma Questionnaire (Dube et al., 2003), neglect is defined as responses of "3 times or more" to "left your child home alone, even when an adult should have been with them," or "not taken care of your child's basic needs, such as keeping them clean or providing food or clothing." A respondent is considered to have perpetrated physical child abuse if they answered, "3 or more times" to the question "slapped, hit, or kicked your child". This operationalization is consistent with the Conflict Tactics Scale and has been used in previous studies (Dube et al., 2003; Huang et al., 2011). Four items are included to measure *sex offenses*. At waves one and two, sex offenses includes exchanging sex for drugs. At wave three, sex offenses include paying someone to have sex with you or being paid to have sex with someone. Wave four assesses *intimate partner violence* perpetration. Respondents were asked if they ever threatened their partner with 'violence, pushing, or shoving," "slapped, hit, or kicked" their partner or if their partner ever "had an injury because of a fight" with the respondent. *Fraud offending* measures were included in wave three and four interviews. Respondents were asked if they had ever "used someone else's credit card, bank card, or automated teller card without their permission or knowledge" and "deliberately wrote a bad check." The final offending measures include *delinquency* at waves one and two. These measures represent status offenses that only apply to minors, eliminating them as measures in waves three and four. Six items (three at each wave) were used to measure delinquency: "lie to your parents about where you had been or whom you were with,"

"run away from home," and "spent the night away from home without permission." In total, eighty-six offending indicator variables are included.

Victimization. *Violent victimization* is measured using five items from waves one, two, and four and six items from wave three. The wave one, wave two, and wave four interviews measure violent victimization as: "someone pulled a knife or gun on you," "someone shot you," "someone cut or stabbed you," "you were jumped," and "you were raped." Wave three uses similar measures including "someone pulled a gun on you," "someone pulled a knife on you," "someone shot you," "someone stabbed you," "you were beaten up, but nothing was stolen from you," and "you were beaten up and something was stolen from you." *Childhood maltreatment* is measured similar to the child abuse offending variables. Respondents were asked retrospectively about child maltreatment that occurred before they started 6th grade. Childhood maltreatment items include "how often had your parents or other adult care-givers left you home alone when an adult should have been with you," "how often had your parents or other adult care-givers not taken care of your basic needs, such as keeping you clean or providing food or clothing," "how often had your parents or other adult care-givers slapped, hit, or kicked you," and "how often had one of your parents or other adult care givers touched you in a sexual way, forced you to touch him or her in a sexual way, or forced you to have sexual relations?" Consistent with the Conflict Tactics Scale (Dube et al., 2003; Huang et al., 2011) *physical abuse* is operationalized as answering "3 times or more" to being slapped, hit, or kicked. *Neglect* consists of answering "3 times or more" to either being left alone or not having your needs taken care of (Dube et al., 2003). *Sexual abuse* is defined as answering "1 or more times" to sexual assault at the hands of a parent or adult care-giver

(Huang et al., 2011). *Intimate partner violence* is operationalized as two types of abuse: verbal abuse and physical abuse. During wave two, respondents were asked about their three previous relationships and indicated whether any of their partners had "called them names," "insulted them," "threatened them with violence," "pushed or shoved them," or "threw something that could hurt them." If the respondent answered "yes" to any of the verbal abuse measures (calling names, insulting them, and threatening them with violence) and "no" to both of the physical violence measures (pushing or shoving them and throwing something that could hurt them), they were categorized as having experienced *verbal abuse*. *Physical abuse* was operationalized as having experienced any of the physical violence measures. This operationalization of intimate partner violence is consistent with studies by Halpern and colleagues (2001) and Roberts, Auinger, and Klein (2005, 2006). Wave four measures intimate partner violence using three physical abuse items: "threatened with violence, pushing, or shoving," "slapped, hit, or kicked you," and "had an injury because of a fight." *Property victimization* is measured using a single item at wave four: "property stolen worth more than $50." In total, twenty-nine victimization indicator variables were included in the latent class analysis.

Independent Variables

Routine activities are measured using three scales: *risky behavior*, *unstructured socializing*, and *structured socializing*. All scales are additive scales where higher scores reflect greater involvement in risky behaviors, unstructured socializing, or structured socializing. At waves one and two, risky behavior is measured using three items including risky sexual behavior and delinquent peers. The items used to construct the scale include "number of sexual partners," "number of friends that drink," and "number

of friends that use marijuana." The response set for the measures is 0 (*no friends*), 1 (*one friend*), 2 (*two friends*), and 3 (*three friends*). In addition to the risky behaviors scale, an item measuring use of birth control is also included. The birth control variable is considered separately from the risky behavior scale in order to maintain adequate internal consistency within the risky behavior scales. Since using birth control is considered "safe" behavior, use of birth control at all three waves is reverse-coded (0 = *most/all of the time* to 3 = *none of the* time) to reflect risky behavior. At wave three, risky behavior was measured using two items consisting of risky sexual behaviors. The items used include "number of sexual partners in past 12 months" and "use of birth control during sexual encounters (reverse-coded)." Number of sexual partners is coded 0 (*none*) to 5 (*five or more*). Responses for "sex with someone who uses street drugs" are coded 0 (*none*), 1 (*1-2 times*), 2 (*3-10 times*), and 3 (*more than 10 times*). The risky behavior scale at wave four includes two items measuring risky sexual behaviors: "number of sexual partners" and "having sex with multiple partners." Similar to waves one, two, and three, use of birth control is included as a separate risky variable and is reverse coded to reflect risky sexual practices. Structured socializing includes activities such as volunteering, attending religious services, and attending church activities. Three items are used to measure structured socializing at waves one, three, and four, "attend religious service," "attend church youth activities," and "volunteering." Volunteering was measured at wave three and asked respondents to reflect on volunteer work between the ages of 12 and 18 and their current participation in volunteer activities. The single item measuring previous volunteer work is incorporated into the wave 1 structured socializing scale. At wave two, structured socializing was measured using the two religion items. Each item is binary

coded (0 = *no*; 1 = *yes*). Unstructured socializing is measured the same in waves one, two, and three and consists of three items including "participating in individual sports or recreation," "participating in team sports," and "hanging out with friends." Wave four does not include the item measuring "hanging out with friends." Each item was coded 0 (*not at all*), 1 (*1-2 times*), 2 (*3-4 times*), and 3 (*5 or more times*). These scales are constructed to assess how the respondent spends their free time, consistent with the routine activity/lifestyle-exposure perspective. Table 1 presents the descriptive statistics for the independent and control variables scales of interest for this study.

Low self-control is measured using seven-item, five-item, nine-item, and six-item scales from waves one, two, three, and four respectively. While the Add Health data does not include items intended to measure low self-control, several items are consistent with Gottfredson and Hirschi's (1990) depiction of low self-control such as impulsivity ("when making decisions, you usually go with your 'gut feeling'" and "I often do things based on how I feel at the moment"), thrill seeking ("I often try new things just for fun or thrills" and "when nothing new is happening, I usually start looking for something exciting"), and risk taking ("I like to take risks"). A full list of items and scales can be found in Appendix B. These scales have been validated through confirmatory factor analyses, which indicates that the items all load on a single construct (Cronbach's α = 0.66, 0.49, 0.86, and 0.61). Previous studies have used similar items to measure low self-control (Cloninger, 1987; Jang & Rhodes, 2012; Lonardo et al., 2010; Turanovic, Reisig, & Pratt, 2015). Responses for the items ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). In other words, higher scores reflect lower levels of self-control.

Table 1. Descriptive Statistics (N = 3,341).

Scale	# of Items	Mean	SD	Range	Cronbach's α
Wave 1					
Risky Behaviors	3	2.22	2.74	0 - 11	0.66
Birth Control	1	0.22	0.56	0 - 2	--
Structured Socializing	3	3.48	2.35	0 - 7	0.59
Unstructured Socializing	3	5.73	2.53	0 - 12	0.43
Low Self-Control	7	14.60	4.43	0 - 34	0.66
Depression	10	16.48	4.57	10 - 40	0.81
Self-Esteem	4	7.70	2.52	4 - 20	0.80
Attachment to Parents	8	19.86	3.37	8 - 40	0.89
Attachment to School	6	22.18	4.30	6 - 30	0.79
Attachment to Friends	1	4.24	--	1 - 6	--
Wave 2					
Risky Behaviors	3	2.18	1.98	0 - 9	0.45
Birth Control	1	5.96	0.20	4 - 6	--
Structured Socializing	2	2.86	2.21	0 - 6	0.77
Unstructured Socializing	3	5.66	2.45	0 - 12	0.43
Low Self-Control	5	10.77	2.90	0 - 24	0.49
Depression	10	16.55	4.79	10 - 40	0.84
Self-Esteem	4	7.34	2.49	4 - 20	0.81
Attachment to Parents	8	19.49	3.32	8 - 40	0.88
Attachment to School	6	22.23	4.23	6 - 30	0.79
Attachment to Friends	1	4.31	--	1 - 6	--
Wave 3					
# Sexual Partners	1	2.14	1.69	0 - 5	--
Birth Control	1	0.94	1.39	0 - 4	--
Structured Socializing	3	3.09	3.16	0 - 13	0.61
Unstructured Socializing	3	7.98	6.27	0 - 48	0.39
Low Self-Control	9	22.59	8.58	0 - 45	0.86
Depression	9	13.56	4.06	9 - 36	0.81
Self-Esteem	4	7.12	2.25	4 - 20	0.78
Attachment to Parents	6	24.61	4.18	6 - 30	0.90
Marital Status	1	0.15	--	0 - 1	--
Job Satisfaction	1	3.94	--	1 - 5	--
Wave 4					
Risky Behaviors	2	0.36	0.63	0 - 2	0.50
Birth Control	1	1.94	1.78	0 - 4	--
Structured Socializing	3	2.57	2.68	0 - 11	0.63
Unstructured Socializing	2	2.21	1.68	0 - 9	0.41
Low Self-Control	6	14.68	3.35	0 - 30	0.91
Depression	13	21.01	5.51	12 - 48	0.84
Attachment to Parents	6	21.96	2.30	6 - 32	0.77
Marital Status	1	0.58	--	0 - 1	--
Job Satisfaction	1	3.85	--	1 - 5	--
Anger	1	3.44	--	1 - 5	--

Consistent with previous studies on general strain theory using the Add Health data, *depression* is used to capture negative emotions that may result from experiencing strains (Walker & Holtfreter, 2016). Depression is measured using between nine and thirteen items in waves one, two, three, and four. These items were derived from the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). The CES-D scale has been validated for use among both adolescents and adults (Boyd et al., 1982; Radloff, 1991; Rushton, Forcier, & Schechtman, 2002). Respondents were asked how many times, in the past 7 days, they experienced the symptoms including "were bothered by things that normally don't bother you," felt that you were just as good as other people (reverse-coded)," "you felt happy (reverse-coded)," "could not shake off the blues, even with help from family and friends," "enjoyed life (reverse-coded)," "were depressed," "had trouble keeping your mind on what you were doing," "felt that people disliked you," "felt sad," and "were too tired to do things." Several items are reverse-coded to reflect negative emotions. The response set ranges from 1 (*never*/*rarely*) to 4 (*most or all of the time*). Each scale displayed adequate internal consistency (Cronbach's alpha = 0.81, 0.84, 0.81, 0.84). The items are summated to create a scale where higher values indicate higher levels of negative emotions. Anger is also a commonly used to measure negative emotions in relation to strain. Wave four includes a single anger item: "I get angry easily." Anger is coded using a 5-point likert scale (1 = *strongly disagree* to 5 = *strongly agree*) where higher scores indicate more expressed anger.

Control Variables

Several demographic variables will also be included. *Age* reflects the age of the respondent at wave three. *Gender* is dichotomously coded: 1 (*male*) and 0 (*female*).

Education reflects the respondent's highest level of education and is coded 1 (*less than a high school diploma*), 2 (*high school diploma/GED*), 3 (*some technical/vocational education*), 4 (*technical/vocational degree*), 5 (*some college*), 6 (*college degree*), (*some graduate/advanced level education*) and 8 (*graduate/advanced degree*). Race/ethnicity will be measured with several dummy variables: *black* (1 = *black*, 0 = *other*), *Hispanic* (1 = *Hispanic*, 0 = *other*), *Asian* (1 = *Asian*, 0 = *other*), *Native American* (1 = *Native American*, 0 = *other*), and *other racial minority* (1 = *minority*, 0 = *other*). *White* will serve as the reference category. *Poverty* is dichotomously coded 1 (*yes*) and 0 (*no*). Poverty is determined using family income taken from the parent questionnaire in wave one. The U.S. Census Bureau estimated that the average family size in 1994 was 3.2 individuals (Rawlings & Saluter, 1995). Given that a qualification for participating in the Add Health study was having at least one child, an average household size of 4 was used to determine the poverty line. In 1994, the poverty line for a family of four was about $15,000 (Poverty Threshold, 1994); therefore, respondents who have a combined family income of $15,000 or less are considered to be living in poverty. Descriptive statistics for the demographic variables are presented in Table 2.

Agnew (2006) posits that several factors condition the effects strains have on coping (e.g., self-esteem and social support). While these factors themselves do not measure negative emotions, they may influence how an individual copes with negative emotions and should therefore be controlled for when studying strain, negative emotions, and crime. Consistent with this argument, *self-esteem*, at waves one, two, and three, will be controlled for. Low self-esteem is measured using four items from the Rosenberg (1965) self-esteem scale. The following measures are used: "you feel like you are doing

Table 2. Demographic Statistics (N = 3,341)

Variable	Percentage	Variable	Percentage
Gender		Marital Status (wave 4)	
Male	45.30%	Single	42.32%
Female	54.70%	Married	57.68%
Age (wave 4)		Education (wave 4)	
24 years	0.95%	Less than High School	7.80%
25 years	13.12%	High School Diploma	15.15%
26 years	18.77%	Some Technical/Vocational School	3.00%
27 years	18.77%	Technical/Vocational Degree	6.89%
28 years	20.43%	Some College	32.39%
29 years	17.79%	College Degree	21.68%
30 years	7.64%	Some Post College Education	6.11%
31 years	2.15%	Graduate Degree	6.99%
32 years	0.39%	Poverty (wave 1)	
Race		No	84.62%
White	69.68%	Yes	15.38%
Black	22.70%		
Hispanic	10.34%		
Native American	3.93%		
Asian	3.63%		
Other	6.04%		

things just about right," "you have a lot to be proud of," "you have many good qualities," and "you like yourself just the way you are." Responses range from 1 (*strongly agree*) to 5 (*strongly disagree*). Scales are summated and higher scores reflect lower levels of self-esteem. Each scale possesses good internal consistency (Cronbach's alpha = 0.80, 0.81, and 0.78). Self-esteem measures were not included in wave four interviews and therefore cannot be controlled for.

Additionally, three measures of social support will be controlled for at all four waves. Specifically, at waves one and two, social support will be measured by assessing attachment to parents, school, and friends. *Attachment to parents* is measured using eight dichotomously coded items including "you feel close to your mother/father," "your

mother/father is warm and loving to you," "you are satisfied with your relationship with your mother/father," and "you are satisfied with the way you communicate with your mother/father." The additive scale is coded to reflect higher scores indicating stronger attachments. *Attachment to school* is measured using six items assessing the respondent's attachment to their teachers, school, and classmates: "your teachers care about you," "your teachers treat students fairly," "you are happy to be at your school," "you feel safe at your school," "you feel like you are part of your school," and "you feel close to people at your school." Item responses ranged from 0 (*strongly agree*) to 4 (*strongly disagree*). Responses are summated and higher scores reflect greater attachment. *Attachment to friends* is measured using a single item: "how much do your friends care about you." Scores for this item range from 0 (*not at all*) to 4 (*very much*). These measures of social control are consistent with previous research on important ties among adolescents (Resnick et al., 1997; Schreck, Fisher, & Miller, 2004; Winfree & Jiang, 2010). Social support at wave three is measured differently than the previous two waves to account for changing social relationships as the respondents move into early adulthood. Three forms of social support will be measured at waves three and four: attachment to parents, job satisfaction, and marriage. Six dichotomously coded items are used to measure *attachment to parents*: "you enjoy doing things with your mother/father," "your mother/father is warm and loving toward you," and "you feel close to your mother/father." *Job satisfaction* is measured using a single dummy variable that reflects if the respondent is satisfied with their job. *Marital status* is dichotomously coded indicating whether or not the respondent was married at the time of the wave three and wave four interviews.

Data-Analytic Strategy

The analytic strategy for this proposed study is two-fold. The first stage consists of running a latent class analysis (LCA) to statistically develop unique taxonomies of victim-offenders. The goal of LCA is to construct distinct groups using heterogeneous patterns within the data. This technique is used to organize respondents into groups where each member is similar to the others in their group but qualitatively different from other categories. LCA constructs latent taxonomies that organize data into similar classifications using a collection of indicator variables (George, 2009; O'Rand, 2009; Vermunt & Magidson, 2004). The indicator variables used for this study will include offending behaviors and victimization experiences over the respondent's lifetime. For the proposed study, LCA will be implemented to disaggregate offending and victimization into unique groups of victim-offenders that reflect within-group differences in the victim-offender overlap. LCA is the appropriate methodological approach when the indicator variables and the latent constructs are assumed to be categorical or dummy rather than continuous (McCutcheon, 2011). This method is considered superior to other classification techniques for several reasons. First, LCA constructs statistically verified groups rather than using ad hoc classification, as in traditional cluster analyses. This more advanced statistical approach allows for detecting rare, but important, classes that may be missed when using an ad hoc method (Cleland, Rothschild, & Haslam, 2000; George, 2009; James, McField, & Montgomery, 2013; Vermunt & Magidson, 2004). Second, LCA allows for multiple trajectories to be statistically derived as opposed to developing multiple single classes. Third, while traditional cluster analysis models only allow for people to be assigned to a single class, LCA evaluates respondent's scores in every group

(George, 2009). Due to the unknown complexities within the victim-offender overlap, this is an important difference. Prior research suggests that offenders tend to not specialize in a single type of offense, but rather engage in a variety of different crimes (Piquero, Farrington, & Blumstein, 2003; Simon, 1997). This would imply that some individuals will likely score high in several different classes rather than a single classification. These individuals are important to identify because their general classification makes them different than other respondents who score high on a single class and low on another. This distinction allows for more sophisticated classifications. All latent class analyses will be conducted in Mplus 8 (Muthén & Muthén, 2017).

In order to determine the appropriate number of classes, the Bayesian Information Criteria (BIC; Raftery, 1995), adjusted Bayesian Information Criteria (AdjBIC), Akaike Information Criterion (AIC; Akaike, 1987), and entropy will be used. For BIC, AdjBIC and AIC, lower values reflect a better fit to the data. A significant LMR LR suggests that the inclusion of an additional class is a better fit (Nylund, Asparauhov, & Muthén, 2007). While there are several fit indices that are used to fit the proper number of groups, these criteria have been commonly used in social science research (Edmond et al., 2015; Jackson et al., 2014; James, McField, & Montgomery, 2013). To increase the validity of the number of classes selected, bootstrapping will be conducted. Bootstrapping is a technique that employs re-sampling with relaxed assumptions about the distribution of the indicator variables. Random iterations are performed to compare the models and determine whether additional cases would improve the model fit indices (Fox & Farrington, 2012; Van der Hiejden, Hart, & Dessens, 1997; Vaughn et al., 2009). Once

established, the created taxonomies (operationalized as a multinomial measure) will be used as the dependent variable in subsequent analyses.

The second stage of the proposed study consists of conducting multiple multinomial logistic regressions in Stata 13 (StataCorp, 2013). Multinomial logistic regression estimates multiple binary logistic regressions and compares them against a reference category (Long & Freese, 2006). For the purpose of this proposed study, the group of non-offenders/non-victims (termed "safe and compliant") will serve as the reference category. This will allow for the comparison of the predictability of the covariates on the "safe and compliant" group against the constructed victim-offender taxa. Given the nominal nature of the constructed dependent variables, multinomial logistic regression lends itself well to predicting membership within these categories (George, 2009; Long & Freese, 2006; Vermunt & Magison, 2004). This methodological duplex (i.e., LCA and multinomial logistic regression) has been used and validated by previous studies (Dhingra, Boduszek, & Sharratt, 2016; Edmond et al., 2015; Jackson et al., 2014; Salom, et al., 2016; Yan, 2017).

The theoretically derived covariates from routine activity theory, low self-control theory, and general strain theory will be used to predict group membership. First, a baseline logistic regression will be estimated that includes a monolithic victim-offender measure as the dependent variable (1 = *yes*, 0 = *no*). This will serve as a comparison reference when testing membership in the constructed groups. Doing so further validates any differences found in how accurately theories predict group membership and will eliminate potential speculation that may arise about the relevance of the findings. Next, several multinomial logistic regressions will be run for each theory independently to

evaluate how well they predict membership in the distinct taxa. The results from these analyses will then be compared to findings from the extant victim-offender overlap literature. This approach will address the limitations of previous methodological strategies. For example, do the attenuated estimates of theoretical explanations, found in current victim-offender overlap research, remain when using a more complex victim-offender overlap dependent variable? In an effort to compare the accuracy of the theories, a regression will be run that includes all theoretically relevant variables. This will serve as a way to "pit" the theoretically-derived variables against each other to truly test their ability to predict group membership in the different victim-offender overlap taxonomies.

In a subsequent analysis, additional multinomial logistic regressions will be conducted on subsample populations to test the invariance of the findings across sociodemographic categories (e.g., race and gender). Invariance testing is important for both theory and policy. As demonstrated through scholarship on gender and crime, women commit different crimes than men and for different reasons. The nature of their victimization also varies compared to men, therefore we should also expect to see differences in how the theoretically derived independent variables predict membership in the victim-offender overlap taxonomies based on gender (Daly, 1992; Kruttschnitt, 2013; Lauritsen, Heimer, & Lynch, 2009). Additionally, in an effort to thoroughly test the generalizability of the three theories of interest, examining their predictability for female victim-offenders is theoretically important. Previous studies have downplayed the importance of testing theory by simply controlling for gender rather than using a split sample approach (Belknap & Holsinger, 2006; Holtfreter & Cupp, 2007; Wattanaporn & Holtfreter, 2014).

Race is another commonly observed correlate of crime. Minorities typically live in disadvantaged neighborhoods that provide a greater opportunity for criminal activity and victimization (Krivo & Peterson, 1996; Sampson & Wilson, 1995; Wilson, 1987). It is also important to note that a majority of crime/victimization is intra-racial (i.e., offenders victimize those of the same race; U.S. Department of Justice, 2011). Given this intra-racial relationship between offenders and victims, assessing the invariance of the findings based on race can also provide evidence for generalizability. Specific analytic procedures will be presented in the following chapter.

CHAPTER FOUR

RESULTS

Overview

This chapter proceeds in three stages. The first section presents the findings from the latent class analysis and identifies six unique victim-offender overlap taxonomies. Second, a series of analyses are presented using variables derived from routine activity/lifestyle theory, low self-control theory, and general strain theory to predict the likelihood of membership in each class over the reference class of non-offenders/non victims. In an effort to examine the generalizability of the theoretically informed variables, additional analyses are presented testing the invariance of the findings across gender and race.

Latent Class Analysis

LCA Model Fit

Several fit indices are examined as a means of selecting the adequate number of classes in a latent class analysis. For this dissertation, the Bayesian Information Criteria (BIC), adjusted Bayesian Information Criteria (Adj. BIC), Akaike Information Criterion (AIC), and entropy will be used to determine the appropriate number of classes. Additionally, the Lo-Mendel-Rubin LR (LMR LR) will provide further statistical guidance for class selection. In addition to statistical fit indices, qualitative assessment of the constructed classes is also used to further distinguish the appropriate fit. Table 3 provides the fit indices for a range of possible taxonomies from one to seven classes. While the values for the BIC, Adj. BIC, and AIC continue to get smaller, the minimal

Table 3. Fit Statistics

Class Solution	1 Class		2 Classes	3 Classes	4 Classes	5 Classes	6 Classes	7 Classes
	196,325	AIC	179,204	174,995	172,542	170,991	169,657	168,707
	197,029	BIC	180,616	177,117	175,373	174,531	173,907	173,666
	196,663	Adj. BIC	179,882	176,014	173,902	172,691	171,699	171,089
		Entropy	0.91	0.89	0.89	0.89	0.90	0.90
		N = 3,341	C1 = 2,144	C1 = 1,593	C1 = 1,008	C1 = 342	C1 = 457	C1 = 1,265
			C2 = 1,197	C2 = 487	C2 = 365	C2 = 420	C2 = 356	C2 = 470
				C3 = 1,261	C3 = 528	C3 = 693	C3 = 441	C3 = 259
					C4 = 1,440	C4 = 1,390	C4 = 395	C4 = 345
						C5 = 496	C5 = 1,368	C5 = 436
							C6 = 324	C6 = 360
								C7 = 206

Note. Akaike Information Criterion (AIC); Bayesian Information Criterion (BIC); Adjusted Bayesian Information Criterion (Adj. BIC).

differences between classes four, five, six, and seven can be considered negligible. Note that a large jump in the values of fit indices occurs between three classes and four classes. The LMR LR indicates that a four-class structure is a better fit for the data than a five-class structure and seven-classes represent a better fit over a six-class model. The entropy values remain similar across models. However, the six and seven-class models have a higher entropy value.

Given the similarities of the fit indices for the four, five, six, and seven-class structures, the established classes were assessed qualitatively. While statistically one class structure may appear superior, the constructed classes do not always make theoretical sense (McCutcheon, 2002). Therefore, looking at the classes qualitatively is often used in conjunction with the statistical fit indices to determine the best fitting class structure. Using both the fit indices and a qualitative assessment of the classes, a seven-class model was identified to be the best fit for the current data.

Class Profiles

Class one consists of individuals who experienced little to no victimization across the four waves. Additionally, these respondents did not engage in any offending. Due to the lack of victimization and offending within this group, this class has been named *Safe & Compliant* and comprises about 37.86 percent of the total sample. While these individuals did not engage in offending, they did report minor occurrences of rule breaking such as lying to their parents during the first two waves. A summary of the class profiles can be found in Table 4. As a whole, the *safe & compliant* individuals had a higher level of education (at least some college) and were primarily female (about 68 percent). About 30 percent of the class was raised by a single parent. Less than 10 percent

of the class members have a history of arrest and about 12 percent had a parent who was incarcerated. Table 5 provides descriptive statistics for each of the classes.

Moffitt (1993) identified a group of individuals referred to as adolescence limited offenders. This possessed little continuity in their criminal careers and lacked consistency in their antisocial behaviors. For example, adolescence limited offenders may engage in some crimes but remain law abiding in other aspects of their life. Adolescence limited offenders are also classified by their desistance in crime upon entering young adulthood. Class two is constructed of respondents who reported offending and victimization during adolescence (i.e., during waves one and two) consistent with Moffitt's adolescence limited taxonomy. Accordingly these individuals have been classified as *Adolescence Limited* victim-offenders. Approximately 14.07 percent of the sample consists of *adolescence limited* victim-offenders. Primarily, these individuals engaged in violent offending such as getting into physical fights. Additionally, these individuals reported drug use and underage drinking throughout waves one and two in addition to committing acts of theft and vandalism. In terms of victimization, the adolescence limited victim-offender's experience consists of childhood neglect and violent victimization during wave one. On average, the respondents in this group have a technical/vocational degree, are evenly split by gender (51.70 percent male), and over 50 percent of the class identifies as a racial/ethnic minority. Additionally, over 57 percent of the group is married and just under 40 percent of the sample comes from a single-parent household. About 28 percent of the class members have been previously arrested and over 19 percent have a parent who served time in jail or prison.

Table 4. Descriptive profiles of victim-offender overlap classes.

Class 1 37.86% Safe & Compliant - No victimization and no offending across all four waves
Class 2 14.07% Adolescence Limited - Engages in deviance and offending primarily during waves 1 and 2 - Commit violent and property offenses - Violently victimized during waves 1 and 2 - Drug use and underage drinking during waves 1 and 2
Class 3 7.75% Abused-Substance Abusers - Engages in violent offenses during waves 1 and 2 - Commit vandalism and theft during waves 1 and 2 - Drug use across all four waves - Victim of child neglect and abuse - Victim of intimate partner violence
Class 4 10.39% Abused-Abusers - Engages in fighting during wave 1 - Drug use during waves 3 and 4 - Victim of childhood maltreatment - Intimate partner violence perpetrator - Victim of intimate partner violence
Class 5 13.05% Safe-Substance Abusers - Drug use and underage drinking during waves 1 and 2 - Continued drug use through waves 3 and 4 - No victimization across all four waves
Class 6 10.84% Late Onset Substance Abusers - Drug use during waves 3 and 4 - Engages in theft during waves 1, 2, and 3 - Victim of child neglect
Class 7 6.17% Aggressive & Violently Victimized - Engages in violent offenses across all four waves - Drug use during all four waves - Commit property offenses during waves 1 and 2 - Violently victimized across all four waves - Victim of child neglect and abuse - Victim of intimate partner violence

Table 5. Class descriptive statistics.

	Safe & Compliant		Adolescence Limited		Abused-Substance Abusers		Abused-Abusers		Safe-Substance Abusers		Late Onset Substance Abusers		Aggressive & Violently Victimized	
	n = 1,265		*n* = 470		*n* = 259		*n* = 345		*n* = 436		*n* = 360		*n* = 206	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age	27.30	1.67	27.46	1.57	27.84	1.45	27.30	1.73	28.18	1.33	26.58	1.36	27.68	1.64
Education	5.06	1.92	4.14	1.95	4.30	1.88	4.04	1.87	5.06	1.80	4.88	1.73	3.49	1.88
	Percent		Percent		Percent		Percent		Percent		Percent		Percent	
Male	32.09%		51.70%		52.51%		51.01%		29.13%		65.56%		77.67%	
White	61.90%		46.60%		70.27%		51.59%		73.17%		73.61%		45.15%	
Black	22.45%		30.00%		6.18%		33.04%		8.26%		9.17%		26.70%	
Non-White Hispanic	8.62%		12.77%		12.36%		9.28%		9.40%		8.33%		18.45%	
Other	15.57%		22.98%		23.55%		15.04%		18.12%		16.94%		27.18%	
Married	49.29%		57.05%		70.32%		60.25%		52.49%		72.45%		68.29%	
History of Arrest	9.32%		27.66%		54.44%		42.90%		23.17%		38.89%		63.27%	
Incarcerated Parent	11.86%		19.15%		18.15%		24.35%		12.39%		12.50%		32.52%	
Single Parent Home	30.12%		39.36%		41.77%		46.38%		32.57%		23.61%		53.98%	

The third class, consisting of 7.75 percent of the sample, is the *Abused-Substance Abusers*. The members in this class engage in violent offending during waves one and two, commit vandalism and theft at waves one and two, and have persistent drug use across all four waves. In addition to their reported offending behaviors respondents in this class also experience mild child neglect and abuse, measured at wave two, as well as intimate partner violence, measured at waves 2 and 4. This class resembles the *street woman* pathway identified by Daly (1992) and other pathways scholars (Reisig, Holtfreter, & Morash, 2006. Members of both groups experience childhood abuse and engage in substance abuse. Note, however, that the *abused-substance abusers* class does not exclusively consist of females (47.49 percent), which is consistent with Belknap and Holsinger's (2006) finding that this pathway to also applies to males. Members of the *abused-substance abusers* class have an average level of education equivalent to slightly more than a technical/vocational degree. A majority of the members identify as white (70.27 percent white). Over half of the members of the *abused-substance abusers* class have been arrested and over 18 percent have a parent who was incarcerated. Similar to the *adolescence limited* victim-offenders, about 40 percent grew up with a single parent.

By and large, members of the *Abused-Abusers* class primarily engage in intimate partner violence and are also victims of intimate partner violence. The abused-abusers class makes up about 10.39 percent of the sample. This class is consistent with the large body of pathways literature that finds that some types of offending and victimization are largely constrained to between intimate partners (Brennan et al., 2012; Daly, 1992; Salisbury & Van Voorhis, 2009). The class is evenly split by gender (51.01 percent male) and over 60 percent of the class members are married. In addition to intimate partner

violence, those in the *abused-abusers* class participated in fighting during wave one and drug use during waves two and three and were victims of childhood maltreatment. About 43 percent of the class has a history of arrest and over 24 percent have a parent who has served time in jail or prison. Slightly less than 50 percent of the group's members grew up in a single parent household.

Brennan and colleagues (2012) identified a pathway, *normal functioning drug-dependent*, which included individuals who abuse substances but experience little to no victimization. Similar to the *normal functioning drug-dependent* pathway, the fifth class in this analysis has been labeled the *Safe-Substance Abusers*. The individuals within this class use drugs and participate in underage drinking during waves one and two, and continue to use drugs through waves three and four. The safe-substances abusers report no victimization experiences across all four waves of data. This group consists of 13.05% of the total sample and are primarily female (70.87 percent). On average, the members of this group have an education level that consists of some college and just over 50 percent are married. Prior to wave four interviews, about 23 percent of the respondents have a history of arrest and about 12 percent have parents with a history of incarceration. A majority of the sample grew up in a two-parent household (67.43 percent).

The sixth class – termed *Late Onset Substance Abusers* – comprises 10.84 percent of the total sample. Individuals within this group engage in theft during waves one, two, and three and have late onset substance abuse at waves three and four. In terms of victimization, the individuals in this class experienced mild childhood neglect. Compared to the extant literature on pathways, this class is fairly unique in that it does not perfectly mirror established pathways. Daly's (1992) *drug connected woman* is also primarily

engaged in drug-related offenses during adulthood, but the resemblance to the current group ends there. The class consists primarily of males (65.56 percent) and a majority of the respondents are married (72.45 percent). Over 76 percent of the respondents were raised by two parents. Less than 40 percent of the class had a history of arrest and about 12 percent have a parent who was incarcerated.

The seventh class is the smallest at 6.17 percent of the total sample. This class has been named *Aggressive & Violently Victimized* due to the offending behaviors and victimization experiences present across all four waves of data. Specifically, the individuals in this class engage in violent offenses across all four waves, report drug use at all four waves, and commit property offenses during waves one and two. Additionally, group members are violently victimized across all four waves, experience childhood neglect, and abuse and are victims of intimate partner violence. A majority of the group is male (77.67 percent) and 68.29 percent of the sample is married. This group also has the lowest average level of education, reporting some technical/vocational education. Over half of the *aggressive & violently victimized* class has been arrested and over 30 percent have a parent who served time in jail or prison. A majority of the respondents grew up in a single parent household (53.98 percent). With the exception of the *aggressive & violently victimized* class consisting primarily of males, the characteristics of the class closely align themselves with the *harmed and harming* pathway identified by Daly (1992). While the established victim-offender overlap classes may not be identical replications of existing offending pathways, the similar shared characteristics between them provide further merit for the current latent class analysis findings. Thus far, the composition of at least some of the classes is also consistent with theoretical expectations

in that victimization (a strain) appears to be linked to maladaptive coping in the forms of substance abuse and offending.

Additional LCA Models

As a robustness check of the full latent class analysis (which relies on indicator variables from all four waves) additional latent class analyses were run for each wave independently. Overall, results confirmed the established classes in the full model. Table 6 shows the fit indices for the latent class analyses run on waves one, two, three, and four. For wave one, a total of twenty-eight indicator variables were included (twenty-three offending variables and five victimization variables). Wave two included child maltreatment variables not available in wave one for a total of thirty indicator variables (twenty-three offending measures and seven victimization measures). Child maltreatment measures were also included in wave three for a total of twenty-nine indicator variables (twenty offending variables and nine victimization variables). In total, twenty-eight indicator variables were used for the wave four latent class analysis (twenty offending variables and eight victimization variables).

Due to the inconsistent offending and victimization measures used across the waves, the best fitting model differed depending on the wave. Specifically, a four-class model was the best fit for the wave one data. Items including childhood maltreatment and intimate partner violence are not measured during wave one, which eliminates classes characterized by these two forms of abuse. The wave one latent class analysis however, was able to replicate the *aggressive & violently victimized*, *adolescence limited*, *safe-substance abusers*, and *safe & compliant* classes. Since the single wave analyses are not able to capture longitudinal patterns of victimization and offending, the adolescence

Table 6. Fit Statistics for waves 1, 2, 3, and 4.

Wave 1 Class Solution	4 Classes	5 Classes	6 Classes
AIC	49,752	49,103	48,799
BIC	50,455	49,983	49,857
Adj. BIC	50,089	49,526	49,308
Entropy	0.83	0.83	0.82
Wave 2 Class Solution	**4 Classes**	**5 Classes**	**6 Classes**
ACI	47,580	47,153	46,907
BIC	48,332	48,095	48,038
Adj. BIC	47,941	47,605	47,450
Entropy	0.84	0.85	0.83
Wave 3 Class Solution	**4 Classes**	**5 Classes**	**6 Classes**
AIC	33,664	33,479	33,304
BIC	34,392	34,391	34,398
Adj. BIC	34,014	33,917	33,830
Entropy	0.84	0.80	0.83
Wave 4 Class Solution	**4 Classes**	**5 Classes**	**6 Classes**
AIC	36,273	35,763	35,520
BIC	36,976	36,644	36,578
Adj. BIC	36,611	36,186	36,028
Entropy	0.84	0.86	0.86

Note. Akaike Information Criterion (AIC); Bayesian Information Criterion (BIC); Adjusted Bayesian Information Criterion (Adj. BIC).

limited class is categorized by less serious forms of offending and victimization when compared to the aggressive and violently victimized class. This characterization is consistent with the offending and victimization observed among the adolescence limited victim-offenders established in the latent class analysis that relied on all four waves of data. Similarly, a four-class model was the best fit for the latent class analysis using indicator variables from wave two. The same four classes established for the wave 1 data were replicated using the wave two data.

Waves 3 and 4 included a larger variety of offending and victimization variables allowing for a more thorough replication of the seven-classes established in table 5. A five-class model was determined to be the best fitting model for the wave 3 latent class

analysis. Consistent with the previous two waves, several of the full model classes were replicated: *aggressive & violently victimized*, *safe-substance abusers*, *late onset substance abusers*, *abused-substance abusers*, and *safe & compliant*. A six-class model is the best fit for wave four of the current data. The established classes match those found in the full latent class analysis with the exception of the adolescence limited victim-offender class. This is likely due to the profile of the adolescence limited class consisting exclusively of offending and victimization in waves one and two.

Bivariate Analysis

Table 7 provides the bivariate correlations for the theoretically relevant dependent and independent variables. When examining at the relationships between the variables at the bivariate level, many of the theoretically derived variables emerge as significant in both expected and unexpected directions. For example, routine activity/lifestyle theory suggests that participation in risky routines should increase victim-offender status. At the bivariate level, risky behaviors are negatively correlated with the late onset substance abuse class. Similarly, higher levels of low self-control should increase the likelihood of an individual being a victim-offender in all groups that reflect both experiences. Table 7 shows low self-control to be negatively correlated with both the safe-substance abusers and late onset substance abusers classes. While the bivariate correlations suggest theoretically relevant relationships, further analyses are warranted to confirm these relationships in a multivariate context. Before doing so, it is important to note that the zero-order correlations between the dependent and independent variables do not exceed

Table 7. Bivariate correlations.

		Y_1	Y_2	Y_3	Y_4	Y_5	Y_6	Y_7	Y_8	X_1	X_2	X_3	X_4	X_5	X_6
Y_1	Monolithic Victim-Offender Overlap	--													
Y_2	Safe & Compliant	-0.40***	--												
Y_3	Adolescence Limited	0.15***	-0.32***	--											
Y_4	Abused-Substance Abusers	0.14***	-0.23***	-0.17***	--										
Y_5	Abused-Abusers	0.21***	-0.26***	-0.14***	-0.10***	--									
Y_6	Safe-Substance Abusers	0.00	-0.30***	-0.16***	-0.11***	-0.13***	--								
Y_7	Late Onset Substance Abusers	-0.00	-0.27***	-0.14***	-0.10***	-0.12***	-0.13***	--							
Y_8	Aggressive & Violently Victimized	0.16***	-0.20***	-0.10***	-0.07***	-0.09***	-0.10***	-0.09***	--						
X_1	Risky Behaviors - Wave 1	0.27***	-0.29***	0.09***	0.30***	-0.01	0.19***	-0.16***	0.28***	--					
X_2	Birth Control - Wave 1	0.17***	-0.19***	0.06***	0.11***	0.04*	0.07***	-0.09***	0.14***	0.37***	--				
X_3	Risky Behaviors - Wave 2	0.20***	-0.40***	-0.05**	0.29***	-0.03	0.15***	-0.00	0.25***	0.48***	0.19***	--			
X_4	Birth Control - Wave 2	0.17***	0.05**	-0.02	-0.05**	0.01	-0.02	0.03	-0.05**	-0.04*	-0.04**	0.37***	--		
X_5	Number of Sexual Partners - Wave 3	-0.05**	0.07***	-0.03*	-0.02	0.02	-0.10***	0.02	0.02	-0.07***	-0.07***	-0.10***	0.05**	--	
X_6	Birth Control - Wave 3	0.14***	-0.16***	0.05**	0.05**	0.09***	0.01	-0.03	0.09***	0.15***	0.16***	0.08***	-0.03	-0.14***	--
X_7	Risky Behaviors - Wave 4	0.11***	-0.12***	0.03*	0.01	0.11***	-0.00	-0.05**	0.10***	0.14***	0.09***	0.06***	-0.05**	0.04*	0.11***
X_8	Birth Control - Wave 4	0.07***	-0.07***	0.04*	-0.01	0.06***	0.00	-0.05**	0.07***	0.09***	0.12***	0.02	-0.00	-0.05**	0.17***
X_9	Structured Routines - Wave 1	-0.11***	0.19***	-0.01	-0.11***	0.00	-0.10***	-0.02	-0.09***	-0.22***	-0.13***	-0.19***	0.02	0.10***	-0.08***
X_{10}	Structured Routines - Wave 2	-0.11***	0.16***	-0.00	-0.11***	0.03	-0.10***	-0.02	-0.08***	-0.21***	-0.12***	-0.18***	0.03*	0.09***	-0.06***
X_{11}	Structured Routines - Wave 3	-0.15***	0.25***	0.01	-0.13***	-0.03	-0.09***	-0.11***	-0.07***	-0.19***	-0.09***	-0.21***	0.02	0.12***	-0.08***
X_{12}	Structured Routines - Wave 4	-0.15***	0.22***	0.01	-0.09***	-0.04*	-0.08***	-0.09***	-0.06***	-0.13***	-0.05**	-0.16***	0.02	0.07***	-0.06***
X_{13}	Unstructured Routines - Wave 1	0.05**	-0.13***	0.04*	0.03	0.02	-0.02	0.06***	0.09***	0.00	-0.08***	0.11***	-0.01	0.02	-0.02
X_{14}	Unstructured Routines - Wave 2	-0.00	-0.07***	0.01	-0.02	0.02	-0.05**	0.10***	0.06***	-0.07***	-0.09***	0.03	-0.01	0.01	-0.06***
X_{15}	Unstructured Routines - Wave 3	0.02	-0.03	0.03	-0.05**	0.03	-0.02	0.03*	0.02	-0.04**	-0.06***	0.00	-0.02	-0.08***	-0.06***
X_{16}	Unstructured Routines - Wave 4	0.03	-0.04**	0.01	-0.02	0.00	-0.01	0.03	0.05**	0.01	-0.03	0.05**	-0.02	0.03	-0.04*
X_{17}	Low Self-Control - Wave 1	0.11**	-0.21***	0.04*	0.14***	0.01	-0.03	0.04**	0.11***	0.16***	0.09***	0.13***	0.00	-0.02	0.05**
X_{18}	Low Self-Control - Wave 2	0.20***	-0.30***	0.06***	0.19***	-0.00	0.05**	0.06***	0.15***	0.19***	0.11***	0.24***	-0.05**	-0.02	0.08***
X_{19}	Low Self-Control - Wave 3	0.21***	-0.27***	0.03	0.10***	0.08***	-0.07***	0.01	0.15***	0.09***	0.04*	0.19***	0.00	0.10***	0.07***
X_{20}	Low Self-Control - Wave 4	0.20***	-0.21***	0.05**	0.09***	0.13***	-0.06***	-0.08***	0.14***	0.15***	0.10***	0.11***	-0.01	0.01	0.12***
X_{21}	Depression - Wave 1	0.21***	-0.20***	0.11***	0.13***	0.04*	0.04**	-0.08***	0.10***	0.28***	0.21***	0.11***	-0.03	-0.06***	0.14***
X_{22}	Depression - Wave 2	0.24***	-0.20***	0.10***	0.12***	0.03	0.05**	-0.07***	0.10***	0.21***	0.17***	0.13***	-0.02	-0.06***	0.12***
X_{23}	Depression - Wave 3	0.17***	-0.13***	0.05**	0.07***	0.06***	-0.03	-0.02	0.11***	0.11***	0.10***	0.04*	-0.00	0.03	0.13***
X_{24}	Depression - Wave 4	0.21***	-0.16***	0.03*	0.07***	0.15***	-0.04*	-0.03	0.10***	0.12***	0.09***	0.04*	-0.02	-0.01	0.14***
X_{25}	Anger - Wave 4	0.15***	-0.12***	0.03*	0.05**	0.12***	-0.06**	-0.02	0.09***	0.10***	0.07***	0.03	-0.04**	-0.03	0.12***

*p<0.05, **p<0.01, ***p<0.001

Table 6. Continued.

		X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}	X_{14}	X_{15}	X_{16}	X_{17}	X_{18}	X_{19}	X_{20}	X_{21}	X_{22}	X_{23}	X_{24}	X_{25}
Y_1	Monolithic Victim-Offender Overlap																			
Y_2	Safe & Compliant																			
Y_3	Adolescence Limited																			
Y_4	Abused-Substance Abusers																			
Y_5	Abused-Abusers																			
Y_6	Safe-Substance Abusers																			
Y_7	Late Onset Substance Abusers																			
Y_8	Aggressive & Violently Victimized																			
X_1	Risky Behaviors - Wave 1																			
X_2	Birth Control - Wave 1																			
X_3	Risky Behaviors - Wave 2																			
X_4	Birth Control - Wave 2																			
X_5	Number of Sexual Partners - Wave 3																			
X_6	Birth Control - Wave 3																			
X_7	Risky Behaviors - Wave 4	--																		
X_8	Birth Control - Wave 4	0.06***	--																	
X_9	Structured Routines - Wave 1	-0.04*	-0.03	--																
X_{10}	Structured Routines - Wave 2	-0.03	-0.02	0.69***	--															
X_{11}	Structured Routines - Wave 3	-0.02	0.01	0.46***	0.45***	--														
X_{12}	Structured Routines - Wave 4	-0.02	0.02	0.37***	0.36***	0.55***	--													
X_{13}	Unstructured Routines - Wave 1	-0.01	-0.02	0.02	0.03	-0.03	-0.04*	--												
X_{14}	Unstructured Routines - Wave 2	-0.02	-0.03	0.03*	0.04*	-0.02	-0.06***	0.46***	--											
X_{15}	Unstructured Routines - Wave 3	-0.05**	-0.06***	0.07***	0.03	0.12***	0.05**	0.22***	0.25***	--										
X_{16}	Unstructured Routines - Wave 4	0.01	-0.05**	0.03	0.01	0.04*	0.03	0.16***	0.19***	0.35***	--									
X_{17}	Low Self-Control - Wave 1	0.06***	0.05**	-0.15***	-0.12***	-0.15***	-0.11***	-0.01	-0.01	-0.05**	-0.00	--								
X_{18}	Low Self-Control - Wave 2	0.05**	0.03	-0.13***	-0.12***	-0.15***	-0.13***	0.04*	0.02	-0.04**	-0.00	0.32***	--							
X_{19}	Low Self-Control - Wave 3	0.07***	0.04*	-0.11***	-0.07***	-0.15***	-0.15***	0.16***	0.16***	0.10***	0.09***	0.13***	0.22***	--						
X_{20}	Low Self-Control - Wave 4	0.16***	0.12***	-0.12***	-0.09***	-0.17***	-0.19***	0.04**	0.05**	-0.02	-0.03	0.17***	0.20***	0.26***	--					
X_{21}	Depression - Wave 1	0.13***	-0.10***	-0.12***	-0.11***	-0.08***	-0.05**	-0.12***	-0.15***	-0.11***	-0.09***	0.28***	0.26***	0.05**	0.17***	--				
X_{22}	Depression - Wave 2	0.10***	0.08***	-0.12***	-0.10***	-0.08***	-0.04**	-0.08***	-0.11***	-0.10***	-0.07***	0.18***	-0.41***	0.06***	0.17***	0.58***	--			
X_{23}	Depression - Wave 3	0.10***	0.07***	-0.09***	-0.06***	-0.08***	-0.05**	-0.07***	-0.07***	-0.07***	-0.06***	0.11***	0.20***	0.17***	0.21***	0.37***	0.42***	--		
X_{24}	Depression - Wave 4	0.12***	0.12***	-0.09***	-0.08***	-0.12***	-0.11***	-0.06***	-0.06***	-0.07***	-0.09***	0.11***	0.18***	0.12***	0.50***	0.34***	0.37***	0.43***	--	
X_{25}	Anger - Wave 4	0.11***	0.09***	-0.07***	-0.08***	-0.11***	-0.13***	-0.02	-0.03*	-0.05**	-0.07**	0.11***	0.11***	0.10***	0.56***	0.18***	0.15***	0.21***	0.51***	--

*p<0.05, **p<0.01, ***p<0.001

0.30, falling below the threshold of 0.70, indicating that collinearity is not an issue (Licht, 1995).

Baseline Regressions

Previous studies on the victim-offender overlap have relied on two primary methodological strategies to empirically establish the overlap and to subsequently explain it. First, offending is regressed onto victimization (or vice versa). Next, the dependent variable (victimization or offending) is regressed onto the independent variable (victimization or offending), with the inclusion of various theoretical independent variables, in an attempt to reduce or "knock out" the association between victimization and offending. Another approach used to measure the victim-offender overlap relies on grouping respondents as non-offenders/non-victims, victims-only, offenders-only, or victim-offenders. Efforts are then made to explain group membership based on theoretical indicators (Mustaine & Tewksbury, 2000). This approach lumps all victim-offenders together, ignoring any potential variation among the overlap itself.

In order to compare the findings of a more complex operationalization of the victim-offender overlap (i.e., the latent class analysis), a baseline logistic regression was run regressing offending at wave four onto victimization and theoretically derived independent variables from wave three[1]. This strategy attempts to render the victimization-offending relationship null when controlling for theoretically derived

[1] Wave 4 provides the most diverse selection of offending and victimization variables; therefore, data from the fourth wave of the Add Health dataset is used as the dependent variable in the baseline logistic regression and baseline multinomial logistic regression. In order to establish causal relationships, independent variables from wave 3 are also included.

variables. Table 8 provides the results from the logistic regression of offending on victimization and the theoretically derived variables. While several theoretically derived

Table 8. Logistic regression of victimization, structured routines, unstructured routines, risky behaviors, low self-control, depression, and anger on offending (N = 3341)

	Offending		
	b	OR	*z*
Victimization	0.45 (0.09)	1.57	5.07***
Structured Routines - Wave 3	-0.12 (0.01)	0.89	-9.00***
Unstructured Routines - Wave 3	0.00 (0.01)	1.00	0.40
# of Sexual Partners - Wave 3	-0.04 (0.03)	0.96	-1.66
Birth Control - Wave 3	0.08 (0.03)	1.09	2.37*
Low Self-Control - Wave 3	0.04 (0.01)	1.04	7.20***
Depression - Wave 3	0.02 (0.01)	1.02	1.41
Constant	0.22 (0.78)	--	0.28
Model χ^2	357.01***		

Note. Entries are in unstandardized coefficients (*b*), standard errors are in parentheses, odds ratios (OR), and *z*-tests (*z*); control variables (e.g., attachment to parents, education, sex, and marital status) were included in the analysis but not presented in the table
*$p<0.05$, **$p<0.01$, ***$p<0.001$.

variables emerge as significant (e.g., structured routines, risky lifestyles in the form of reduced birth control, and low self-control), victimization remains significantly associated with offending. Despite the inclusion of variables testing theoretical explanations of the victim-offender overlap, the association between victimization and offending persists. This finding is consistent with previous studies that have failed to fully explain the existence of the victim-offender overlap when using a basic logistic regression (Flexon, Meldrum, & Piquero, 2016; Piquero et al., 2005; Posick & Zimmerman, 2015; Vogel & Keith, 2015).

Table 9. Multinomial logistic regression for offender-only, victim-only, and victim-offenders.

	Model 1 (n = 988)			Model 2 (n = 403)			Model 3 (n = 1,141)		
	Offender-Only			Victim-Only			Victim-Offender		
	b	RRR	*z*	*b*	RRR	*z*	*b*	RRR	*z*
Structured Routines - Wave 3	-0.14 (0.02)	0.87	-8.19***	0.01 (0.02)	1.01	0.49	-0.09 (0.02)	0.91	-5.68***
Unstructured Routines - Wave 3	0.01 (0.01)	1.01	0.67	0.01 (0.01)	1.01	0.96	0.01 (0.01)	1.01	1.74
# of Sexual Partners - Wave 3	-0.12 (0.03)	0.88	-3.98***	-0.10 (0.04)	0.91	-2.48**	-0.10 (0.03)	0.91	-3.12
Birth Control - Wave 3	0.07 (0.04)	1.07	1.61	0.04 (0.05)	1.04	0.85	0.16 (0.04)	0.17	4.13***
Low Self-Control - Wave 3	0.04 (0.01)	1.04	5.98***	0.03 (0.01)	1.03	2.94**	0.06 (0.01)	1.06	8.87***
Depression - Wave 3	0.02 (0.02)	1.02	1.56	0.05 (0.02)	1.06	3.01**	0.05 (0.01)	1.05	3.44***
Constant	0.48 (0.97)	--	0.50	-2.99 (1.20)	--	- 2.49**	-1.66 (0.95)	--	-1.75
Model χ^2				630.61***					

Note. Entries are in unstandardized coefficients (b), standard errors are in parentheses, relative risk ratios (RRR), and z-tests (z); control variables (e.g., attachment to parents, education, sex, and marital status) were included in the analysis but not presented in the table *p<0.05, **p<0.01, ***p<0.001; Model χ2 for racial/ethnic minority sample = 275.26***

As noted above, several studies have used group-based modeling strategies where respondents are placed into groups based on their offending and victimization experiences (non-offender/non-victim, offender-only, victim-only, and victim-offender). Table 9 provides the results from the multinomial logistic regression predicting membership in three different groups: offender-only, victim-only, and victim-offenders. The non-offender/non-victim group is used as the reference category. Overall, the findings lend some support to theoretical expectations. According to the original formulation of RAT, routine activities increase criminal opportunity and exposure to offenders (Cohen & Felson, 1979). Osgood and colleagues (1996) explored the difference between structured routines and unstructured routines. Structured routines reduce opportunity for crime and increase social control, reducing victimization risk. When evaluating routine activity/lifestyle theory independently, a single unit increase in structured routines reduced the likelihood of being a victim-offender over non-offender by 9 percent. The likelihood of membership in the offender-only group is reduced by 13 percent for every single-unit increase in structured routines. Structured routines, however, do not significantly influence membership in the victim-only group. Reduced use of birth control, an indicator of lifestyle theory, also increases the likelihood of a respondent being a victim-offender (17 percent). Low self-control significantly increases membership in all three groups (offender-only: 4 percent; victim-only: 3 percent; victim-offender: 6 percent), in line with a large body of literature. Depression is statistically significant in predicting membership among the victim-offender group (5 percent) and the victim-offender group (6 percent). The results from these two baseline regressions highlight the differences in findings based on which methodological strategy is used;

further emphasizing the importance of capturing variation within the victim-offender overlap.

Multinomial Logistic Regression

Several multinomial logistic regressions were performed to predict membership in the established victim-offender overlap classes. The findings of the regressions indicate whether variables emerge as statistically significant in predicting membership in a class over the reference class. For the following analyses, the safe & compliant class will serve as the reference class.

Routine Activity Theory

Table 10 includes the findings for the multinomial logistic regression using variables derived from routine activity/lifestyle theory to predict membership in the different victim-offender overlap taxonomies. Overall, independent variables derived from routine activity/lifestyle theory adequately predict membership in each of the groups. Model 1 shows the results for predicting membership in the adolescence limited class. Unstructured routines at wave one and risky behaviors at waves one and two increase the likelihood that a respondent would be labeled as an adolescence limited victim-offender. More specifically, every additional unit in the unstructured routines scale increases membership to class two by 8 percent. Single unit increases in risky behaviors, however, have an even larger effect on whether an individual is an adolescence victim-offender (45 percent and 40 percent at waves one and two). These findings reflect the offending activities and victimization experiences by the members of the adolescence limited class that occur primarily at waves one and two. These results are in line with Loeber et al.'s (1993) authority conflict and covert pathways, which were

Table 10. Multinomial logistic regression testing structured routines, unstructured routines, and risky behaviors as predictors of victim-offender overlap class membership.

	Model 1 (n = 470)			Model 2 (n = 259)			Model 3 (n = 345)			Model 4 (n = 436)			Model 5 (n = 360)			Model 6 (n = 206)		
	Adolescence Limited			Abused-Substance Abusers			Abused-Abusers			Safe-Substance Abusers			Late Onset Substance Abusers			Aggressive & Violently Victimized		
	b	RRR	z	b	RRR	z	b	RRR	z	b	RRR	z	b	RRR	z	b	RRR	z
Structured Routines - Wave 1	0.01 (0.04)	1.01	0.23	0.06 (0.06)	1.06	0.97	0.03 (0.04)	1.03	0.70	-0.03 (0.05)	0.97	-0.69	0.03 (0.04)	1.02	0.61	0.03 (0.07)	1.03	0.45
Structured Routines - Wave 2	0.00 (0.04)	1.01	0.11	-0.02 (0.06)	0.99	-0.30	0.07 (0.05)	1.07	1.44	0.01 (0.05)	1.01	0.17	0.01 (0.05)	1.01	0.19	-0.04 (0.07)	0.95	-0.66
Structured Routines - Wave 3	-0.00 (0.03)	1.00	-0.16	-0.13 (0.05)	0.88	-2.77**	-0.06 (0.03)	0.94	-2.17*	-0.06 (0.03)	0.94	-2.08*	-0.17 (0.03)	0.84	-5.31***	-0.02 (0.05)	0.98	-0.35
Structured Routines - Wave 4	-0.02 (0.03)	0.98	-0.71	-0.03 (0.05)	0.97	-0.74	-0.06 (0.03)	0.94	-1.73	-0.10 (0.04)	0.90	-2.87**	-0.04 (0.04)	0.96	-1.31	-0.05 (0.05)	0.96	-0.85
Unstructured Routines - Wave 1	0.08 (0.03)	1.08	2.60**	0.14 (0.04)	1.16	3.29***	0.05 (0.03)	1.05	1.48	0.07 (0.03)	1.07	2.10*	0.04 (0.03)	1.04	1.21	0.18 (0.05)	1.20	3.49***
Unstructured Routines - Wave 2	0.02 (0.03)	1.02	0.62	-0.01 (0.05)	0.99	-0.25	0.04 (0.04)	1.05	1.25	0.00 (0.04)	1.00	0.01	0.02 (0.03)	1.02	0.54	0.10 (0.05)	1.10	1.78
Unstructured Routines - Wave 3	0.01 (0.01)	1.01	0.47	-0.05 (0.02)	0.96	-2.36*	0.01 (0.01)	1.01	0.58	0.00 (0.01)	1.00	0.12	-0.00 (0.01)	1.00	-0.17	-0.01 (0.02)	0.99	-0.48
Unstructured Routines - Wave 4	0.01 (0.02)	1.01	0.54	0.01 (0.03)	1.01	0.31	0.02 (0.03)	1.02	0.82	-0.01 (0.03)	0.99	-0.28	0.01 (0.02)	1.01	0.56	0.03 (0.04)	1.03	0.75
Risky Behaviors - Wave 1	0.37 (0.04)	1.45	9.58***	0.53 (0.05)	1.70	11.73***	0.22 (0.04)	1.25	4.83***	0.40 (0.04)	1.49	9.98***	0.04 (0.05)	1.05	0.86	0.54 (0.05)	1.71	10.89***
Birth Control - Wave 1	0.30 (0.15)	1.35	2.00*	0.35 (0.18)	1.42	1.97*	0.31 (0.16)	1.36	1.96*	0.21 (0.16)	1.23	1.37	0.21 (0.20)	1.25	1.13	0.39 (0.20)	1.49	2.05*
Risky Behaviors - Wave 2	0.34 (0.04)	1.40	7.75***	0.66 (0.06)	1.92	11.77***	0.26 (0.05)	1.29	5.28***	0.43 (0.05)	1.54	9.45***	0.38 (0.05)	1.46	7.93***	0.64 (0.06)	1.90	10.12***
Birth Control - Wave 2	-0.26 (0.34)	0.78	-0.79	-0.57 (0.42)	0.57	-1.36	0.12 (0.42)	1.13	0.28	-0.32 (0.36)	0.73	-0.90	0.06 (0.46)	1.08	0.17	-1.13 (0.42)	0.32	-2.67**
Number of Sexual Partners - Wave 3	-0.06 (0.04)	0.94	-1.36	-0.01 (0.06)	0.98	-0.13	0.05 (0.05)	1.06	0.24	-0.09 (0.05)	0.91	-1.92	-0.01 (0.04)	0.99	-0.19	0.03 (0.07)	1.02	0.31
Birth Control - Wave 3	0.16 (0.05)	1.17	3.16**	0.18 (0.07)	1.20	2.60**	0.24 (0.06)	1.27	4.34***	0.13 (0.06)	1.14	2.24*	0.18 (0.06)	1.20	3.16***	0.25 (0.08)	1.28	3.06**
Risky Behaviors - Wave 4	0.17 (0.12)	1.19	1.49	0.59 (0.15)	1.83	4.06***	0.78 (0.11)	2.18	6.86***	0.38 (0.12)	1.49	3.10***	0.39 (0.12)	1.49	3.27***	0.68 (0.16)	1.98	4.25***
Birth Control - Wave 4	0.06 (0.04)	1.06	1.56	0.03 (0.04)	1.03	0.14	0.09 (0.04)	1.10	2.19*	0.07 (0.04)	1.07	1.60	0.04 (0.04)	1.04	1.02	0.15 (0.07)	1.17	2.39*
Constant	5.71 (2.62)	--	2.18	0.59 (3.46)	--	0.17	2.56 (3.11)	--	0.82	-8.57 (2.83)	--	-3.03***	5.85 (3.27)	--	1.82	13.06 (3.73)	--	3.30***
Model χ^2	2451.51***																	

Note. Entries are in unstandardized coefficients (b), standard errors are in parentheses, relative risk ratios (RRR), and z-tests (z); control variables (e.g., attachment to parents, education, sex, and marital status) were included in the analysis but not presented in the table *p<0.05, **p<0.01, ***p<0.001.

also characterized by deviance and delinquency primarily occurring in adolescence. According to Loeber and colleagues, membership in these pathways is defined by the lifestyles and peer influences of the other males. Thus far, the significance of risky lifestyles predicting membership in the adolescence limited class is consistent with prior pathways analyses.

Similar to the adolescence limited class, the abused-substance abusers class engages in offending during waves one and two. Recall that this class includes individuals who report persistent drug use across all four waves. The likelihood that a respondent is a member of the abused-substance abusers class increases by 16 percent for every one-point increase in the unstructured routines scale at wave one (see Table 10 Model 2). Similarly, engaging in risky behaviors increases class membership by 70 percent at wave one and 93 percent at wave two.

Risky behavior at waves one and two includes measures of peer drinking and peer drug use which may help explain why risky behavior is significantly predicts membership in the abused-abusers class at waves one and two (RRR = 1.25 and 1.29). Similarly, risky behavior at waves one and two also increases membership in the safe-substance abusers class (RRR = 1.49 and 1.54). These consistent findings (see Table 10, Models 2-4) are likely due to the presence of substance abuse among the members of many of the classes (e.g., abused-substance abusers, abused-abusers, and safe-substance abusers). Additionally, risky behaviors at waves two, three, and four increase the likelihood of a late onset substance abusers status. A single unit increase in the risky behavior scale increases the likelihood of membership by 45 percent at wave two and 49 percent at wave four. For every one-unit increase in reduced of birth control use, the likelihood of being a

member of the late onset substance abusers class increases by 20 percent at wave three. When it comes to comparing membership in the aggressive & violently victimized class relative to the safe & compliant class, risky behaviors are significant at all four waves. Engaging in risky behaviors increases the probability of membership in the aggressive & violently victimized class by 71 percent at wave one, 90 percent at wave two, and 98 percent at wave four for every unit increase in the risky behavior scale. Inconsistent relationships are found with respect to the impact of reduced birth control use on class membership. At wave two, a reduction in the use of birth control decreases class membership (RRR = 0.32). However, at wave three use of birth control increases class membership (RRR = 1.28). The inconsistent findings regarding the use of birth control may reflect differences in what is considered "risky" behaviors for different groups at different times. Failure to use birth control is intended to reflect risky sexual practices, however, it is inconsistently correlated with other forms of risky behavior. For example, at wave three, not using birth control is negatively correlated with one's number of sexual partners. Therefore, not using birth control may not be adequately measuring inherently risky behavior, but is more reflective of one's relationship status. For example, Bailey and colleagues (2012) found that use of birth control decreases in relation to the length of romantic relationship. Put differently, those who are in long-term committed relationships use birth control less than those who are in short-term or casual relationships.

While risky behaviors play a role in predicting membership in all classes, the measures of structured and unstructured routines perform less consistently. An increase in structured routines decreases the likelihood of membership in the abused-abusers and late onset substance abusers class at wave three (RRR = 0.94 and 0.84) and the safe-substance

abusers class at wave four (RRR = 0.90). Participating in unstructured routines at wave one increases membership in the aggressive & violently victimized class (RRR = 1.20). While risky behaviors play a role in predicting membership in all classes, structured and unstructured routines perform less consistently. The inconsistent findings among structured and unstructured routines are likely reflecting the nature of the offending and victimization measured within the different classes. For example, classes such as the abused-abusers and abused-substance abusers include victimization and offending that typically occurs within the house (e.g., childhood maltreatment and intimate partner violence). Engaging in structured and/or structured routines outside of the home would likely have little impact on crimes occurring inside of the home. Risky behaviors, on the other hand, reflect propensity toward associating with deviant individuals, which would impact victimization risk and criminal opportunity both inside and outside of the home. In sum, routine activity/lifestyle theory has unique influences on membership in the distinct victim-offender overlap taxonomies relative to the reference group. Of considerable importance are the different influences of structured and unstructured routines on the classes based on the types of crime and victimization characteristic of the class (e.g., inside versus outside of the home).

Low Self-Control

Results from the multinomial logistic regression for low self-control are presented in Table 9. Similar to routine activity/lifestyle theory, low self-control predicts membership in all of the classes. Low self-control significantly predicts membership in the adolescence limited victim-offender taxonomy at wave two (Table 11, Model 1). A single unit increase in low self-control increases the likelihood of membership in the

adolescence limited taxonomy by 16 percent. Inconsistent with the theory, however, is that low self-control is not significant at wave one when much of the offending and victimization is occurring.

Low self-control significantly predicted membership in the abused-substance abusers class at all four waves (see Table 11, Model 2). A single unit increase in the low self-control scale increased class membership by 11 percent, 33 percent, 6 percent, and 9 percent at waves one, two, three, and four, respectively. The significance of low self-control at all four waves is consistent with the offending behaviors and/or the victimization experiences of the class members across the four waves of data. Similarly, low self-control is a statistically significant predictor of membership in the aggressive & violently victimized class at all four waves (see Table 11, Model 6). Membership in the late onset substance abusers class increases with lower levels of self-control at waves one, two, and four (see Table 11, Model 5). While a significant predictor of membership in the safe-substance abusers class, low self-control is only statistically significant at wave four (see Table 11, Model 4). This suggests that low self-control is more important for other types of crimes and victimization (e.g., violent offending and intimate partner violence). These types of crimes are not as prevalent in the safe-substance abusers class. Other theoretically derived explanations such as depression may help explain membership in the safe-substance abusers class better than low self-control.

Table 11. Multinomial logistic regression testing low self-control as a predictor of victim-offender overlap class membership.

	Model 1 (n = 470)			Model 2 (n = 259)			Model 3 (n = 345)			Model 4 (n = 436)			Model 5 (n = 360)			Model 6 (n = 206)		
	Adolescence Limited			Abused-Substance Abusers			Abused-Abusers			Safe-Substance Abusers			Late Onset Substance Abusers			Aggressive & Violently Victimized		
	b	RRR	*z*	*b*	RRR	*z*	*b*	RRR	*z*	*b*	RRR	*z*	*b*	RRR	*z*	*b*	RRR	*z*
Low Self-Control																		
Wave 1	0.04 (0.02)	1.04	1.90	0.10 (0.03)	1.11	4.08***	0.03 (0.02)	1.03	1.33	0.05 (0.02)	1.05	2.42*	0.05 (0.02)	1.05	2.34*	0.08 (0.03)	1.09	2.93**
Wave 2	0.15 (0.03)	1.16	5.69***	0.28 (0.03)	1.33	8.38***	0.06 (0.03)	1.06	1.83	0.16 (0.03)	1.17	5.85***	0.17 (0.03)	1.18	5.72***	0.25 (0.04)	1.29	6.56***
Wave 3	0.04 (0.01)	1.04	4.34***	0.06 (0.01)	1.06	5.17***	0.05 (0.01)	1.05	5.10***	0.02 (0.01)	1.02	2.22*	0.08 (0.01)	1.08	8.23***	0.07 (0.01)	1.08	5.75***
Wave 4	0.07 (0.02)	1.07	3.35***	0.08 (0.03)	1.09	3.07**	0.13 (0.02)	1.15	5.86***	0.02 (0.02)	1.02	0.92	0.03 (0.02)	1.03	1.45	0.16 (0.03)	1.18	5.22***
Constant	-4.41 (1.54)	--	-2.87***	-18.32 (2.14)	--	-8.54***	-1.95 (1.72)	--	-1.14	-18.01 (1.70)	--	-10.58***	-0.96 (1.72)	--	-0.55	-9.68 (2.36)	--	-4.11***
Model χ^2	1707.57***																	

Note. Entries are in unstandardized coefficients (*b*) and standard errors are in parentheses; control variables were included in the analysis but not presented in the table *p<0.05, **p<0.01, ***p<0.001.

General Strain Theory

Membership in the adolescence limited class can also be explained by negative emotionality in the form of depression (Table 12, Model 1). For each one-unit increase in depression at waves one and two, the likelihood of being an adolescence limited victim-offender increases by 8 percent. Again, similar to routine activity/lifestyle theory and low self-control theory, the significance of depression at waves one and two is indicative of the offending and victimization patterns of the adolescence limited victim-offenders across waves one and two.

At waves one and two, depression significantly predicts membership in the abused-substance abusers class (RRR = 1.07 and 1.06). The significant findings with regards to depression may be driven by the childhood neglect experienced by the group's members. Depression may also account for the substance abuse seen among the abused-substance abusers, in that that they are self-medicating as a potential coping mechanism. This overlap between victimization, offending, and negative emotions is consistent with several of the pathways to crime identified by Daly (1992). Specifically, street women experienced childhood neglect and use substances to cope with their victimization. A similar pattern is observed here among the abused-substance abusers class. The significance of depression in predicting membership in the abused-substance abusers class is consistent with previous pathways studies and also lends some support to general strain theory. Parallels between Daly's female pathways to crime and the findings from the general strain theory model are also evident when examining the abused-abusers class. Consistent with the presence of intimate partner violence perpetration and victimization at wave four, depression and anger are both significant predictors of

Table 12. Multinomial logistic regression testing depression and anger as predictors of victim-offender class membership.

	Model 1 (n = 470)			Model 2 (n = 259)			Model 3 (n = 345)			Model 4 (n = 436)			Model 5 (n = 360)			Model 6 (n = 206)		
	Adolescene Limited			Abused-Substance Abusers			Abused-Abusers			Safe-Substance Abusers			Late Onset Substance Abusers			Aggressive & Violently Victimized		
	Estimate	RRR	Wald	Estimate	RRR	Wald	Estimate	RRR	Wald	Estimate	RRR	Wald	Estimate	RRR	Wald	Estimate	RRR	Wald
Depression																		
Wave 1	0.08 (0.02)	1.08	4.39***	0.07 (0.02)	1.07	2.88**	0.04 (0.02)	1.04	2.07*	0.02 (0.02)	1.02	1.10	0.01 (0.02)	1.01	0.33	0.08 (0.03)	1.08	3.07**
Wave 2	0.07 (0.02)	1.08	4.27***	0.06 (0.02)	1.06	2.49**	0.02 (0.02)	1.03	1.20	0.07 (0.02)	1.07	3.69***	0.02 (0.02)	1.02	1.13	0.04 (0.03)	1.04	1.60
Wave 3	0.01 (0.02)	1.01	0.61	0.02 (0.02)	1.02	0.75	0.00 (0.02)	1.01	0.21	-0.02 (0.02)	0.98	-1.00	0.03 (0.02)	1.03	1.61	0.07 (0.03)	1.08	2.85**
Wave 4	0.00 (0.02)	1.00	0.16	0.03 (0.02)	1.03	1.66	0.07 (0.02)	1.07	4.62***	0.00 (0.02)	1.00	0.13	0.03 (0.02)	1.03	1.72	0.03 (0.02)	1.03	1.52
Anger	0.12 (0.07)	1.12	1.71	0.17 (0.09)	1.19	1.90	0.22 (0.07)	1.25	3.01**	0.00 (0.08)	1.00	0.01	0.07 (0.08)	1.08	0.96	0.32 (0.10)	1.38	3.23***
Constant	-1.96 (1.44)	--	-1.36	-11.85 (1.97)	--	-6.02***	0.02 (1.62)	--	0.01	-14.99 (1.60)	--	-9.35***	4.02 (1.61)	--	2.49**	-2.94 (2.15)	--	-1.37
Model χ^2	1535.07***																	

Note. Entries are in unstandardized coefficients (b) and standard errors are in parentheses; control variables were included in the analysis but not presented in the table *p<0.05, **p<0.01, ***p<0.001.

membership in the abused-abusers class (see Table 12, Model 3). These findings are similar to the characteristics of Daly's (1992) battered woman pathway.

The explanatory power of general strain theory tells a bit of a different story when looking at membership in the aggressive & violently victimized class. Depression is statistically significant at waves one and three. The likelihood of membership in the aggressive & violently victimized class increases by 8 percent at wave one and 8 percent at wave three, for every one-unit increase in the depression scale. Anger, however, is associated with a 38 percent increase in likelihood of class membership (see Table 12, Model 6). Taken together, these findings conform to theoretical expectations. While general strain theory is purported to account for a variety of crimes, it has been particularly successful in explaining certain crime types (e.g., bullying, child abuse, and intimate partner violence; Cicchetti & Toth, 2005; Cullen et al., 2008; Fagan, 2001; Widom, 1989). Depression and anger are associated with membership in classes that reflect the types of crime and victimization that have been widely studied in general strain theory research. For example, depression significantly predicts membership in the abused-abusers class. Consistent with previous studies on intimate partner violence, depression increases the likelihood of being a victim and/or perpetrator of intimate partner violence (Tillyer & Wright, 2016). Similarly, members of the abused-substance abusers and aggressive & violently victimized classes also experience violence early in life, leading to negative emotions, which likely influences future offending and/or victimization.

Table 13. Multinomial logistic regression testing structured routines, unstructured routines, risky behaviors, low self-control, depression, and anger as predictors of victim-offender overlap class membership.

	Model 1 (n = 470)			Model 2 (n = 259)			Model 3 (n = 345)		
	Adolescence Limited			Abused-Substance Abusers			Abused-Abusers		
	b	RRR	*z*	*b*	RRR	*z*	*b*	RRR	*z*
Structured Routines - Wave 1	0.03 (0.04)	1.02	0.56	0.09 (0.06)	1.09	1.45	0.04 (0.04)	1.05	0.94
Structured Routines - Wave 2	-0.01 (0.04)	0.99	-0.14	-0.06 (0.06)	0.94	-0.89	0.06 (0.05)	1.06	1.26
Structured Routines - Wave 3	-0.00 (0.03)	1.00	-0.14	-0.11 (0.05)	0.89	-2.35*	-0.06 (0.03)	0.94	-1.93*
Structured Routines - Wave 4	-0.02 (0.03)	0.98	-0.60	-0.03 (0.05)	0.97	-0.66	-0.05 (0.04)	0.95	-1.44
Unstructured Routines - Wave 1	0.07 (0.03)	1.07	2.20*	0.14 (0.05)	1.15	3.03**	0.05 (0.03)	1.05	1.34
Unstructured Routines - Wave 2	0.01 (0.03)	1.01	0.24	-0.02 (0.05)	0.98	-0.47	0.04 (0.04)	1.04	0.95
Unstructured Routines - Wave 3	0.01 (0.01)	1.01	0.70	-0.04 (0.02)	0.96	-1.92	0.01 (0.01)	1.01	0.63
Unstructured Routines - Wave 4	0.02 (0.02)	1.02	0.66	-0.01 (0.04)	0.99	-0.33	0.01 (0.03)	1.01	0.53
Risky Behaviors - Wave 1	0.36 (0.04)	1.43	8.97***	0.53 (0.05)	1.70	11.33***	0.21 (0.05)	1.23	4.51***
Birth Control - Wave 1	0.28 (0.15)	1.32	1.88	0.33 (0.18)	1.39	1.78	0.31 (0.17)	1.36	1.86
Risky Behaviors - Wave 2	0.32 (0.05)	1.37	7.07***	0.62 (0.06)	1.85	10.60***	0.24 (0.05)	1.27	4.62***
Birth Control - Wave 2	-0.27 (0.34)	0.76	-0.80	-0.62 (0.43)	0.53	-1.45	0.27 (0.45)	1.31	0.60
Number of Sexual Partners - Wave 3	-0.08 (0.44)	0.92	-1.78	-0.06 (0.06)	0.94	-0.94	0.03 (0.05)	1.03	0.65
Birth Control - Wave 3	0.13 (0.05)	1.14	2.43**	0.14 (0.07)	1.16	1.97*	0.20 (0.06)	1.22	3.44***
Risky Behaviors - Wave 4	0.19 (0.12)	1.20	1.54	0.58 (0.15)	1.79	3.80***	0.74 (0.12)	2.10	6.35***
Birth Control - Wave 4	0.06 (0.04)	1.06	1.44	0.03 (0.06)	1.03	0.48	0.08 (0.04)	1.08	1.79
Low Self-Control									
Wave 1	0.03 (0.02)	1.03	1.32	0.10 (0.03)	1.11	3.52***	0.02 (0.02)	1.02	0.97
Wave 2	0.09 (0.03)	1.10	3.03**	0.23 (0.04)	1.26	5.71***	0.04 (0.03)	1.03	1.07
Wave 3	0.03 (0.01)	1.03	2.63**	0.05 (0.01)	1.05	3.35***	0.04 (0.01)	1.05	4.14***
Wave 4	0.05 (0.03)	1.06	1.93*	0.04 (0.04)	1.04	1.01	0.02 (0.03)	1.02	0.74
Depression									
Wave 1	0.06 (0.02)	1.06	2.80**	0.02 (0.03)	1.02	0.74	0.02 (0.02)	1.02	0.71
Wave 2	0.05 (0.02)	1.05	2.33*	-0.01 (0.03)	0.99	-0.30	0.01 (0.02)	1.01	0.55
Wave 3	0.00 (0.02)	1.00	0.15	0.02 (0.03)	1.02	0.75	-0.01 (0.02)	0.99	-0.41
Wave 4	-0.00 (0.02)	1.00	-0.06	0.04 (0.02)	1.04	1.70	0.05 (0.02)	1.06	3.05**
Anger	0.01 (0.08)	1.01	0.12	-0.00 (0.12)	1.00	-0.02	0.18 (0.09)	1.19	1.92
Constant	1.45 (2.74)	--	0.53	-7.66 (3.69)	--	-2.08*	-2.72 (3.40)	--	-0.80
Model χ^2	2700.18***								

Note. Entries are in unstandardized coefficients (b) and standard errors are in parentheses; control variables were included in the analysis but not presented in the table *p<0.05, **p<0.01, ***p<0.001.

Table 13. Continued.

	Model 4 (n = 436)			Model 5 (n = 360)			Model 6 (n = 206)		
	Safe-Substance Abusers			Late Onset Substance Abusers			Aggressive & Violently Victimized		
	b	RRR	z	b	RRR	z	b	RRR	z
Structured Routines - Wave 1	-0.02 (0.05)	0.98	-0.47	0.04 (0.05)	1.04	0.89	0.06 (0.07)	1.06	0.87
Structured Routines - Wave 2	-0.00 (0.05)	1.00	-0.01	-0.00 (0.05)	1.00	-0.02	-0.07 (0.07)	0.93	-1.01
Structured Routines - Wave 3	-0.07 (0.030	0.94	-2.04*	-0.17 (0.03)	0.84	-5.18***	-0.01 (0.05)	0.99	-0.11
Structured Routines - Wave 4	-0.10 (0.04)	0.90	-2.86**	-0.04 (0.04)	0.96	-1.09	-0.04 (0.05)	0.96	-0.69
Unstructured Routines - Wave 1	0.07 (0.03)	1.07	1.83	0.03 (0.03)	1.03	0.91	0.17 (0.05)	1.18	3.13**
Unstructured Routines - Wave 2	-0.00 (0.04)	1.00	-0.11	0.00 (0.04)	1.00	0.08	0.06 (0.06)	1.06	1.09
Unstructured Routines - Wave 3	0.01 (0.01)	1.00	0.41	-0.00 (0.01)	1.00	-0.12	-0.00 (0.02)	1.00	-0.23
Unstructured Routines - Wave 4	-0.01 (0.03)	0.99	-0.43	-0.00 (0.03)	1.00	-0.08	0.03 (0.04)	1.03	0.77
Risky Behaviors - Wave 1	0.40 (0.04)	1.48	9.70***	0.04 (0.05)	1.04	0.77	0.52 (0.05)	1.69	10.30**
Birth Control - Wave 1	0.24 (0.16)	1.27	1.54	0.26 (0.20)	1.29	1.31	0.39 (0.20)	1.48	1.97*
Risky Behaviors - Wave 2	0.40 (0.05)	1.50	8.58***	0.33 (0.05)	1.40	6.78***	0.60 (0.07)	1.82	9.22***
Birth Control - Wave 2	-0.27 (0.36)	0.76	-0.77	0.06 (0.47)	1.06	0.12	-1.14 (0.44)	0.32	-2.61**
Number of Sexual Partners - Wave 3	-0.08 (0.05)	0.93	-1.55	-0.04 (0.04)	0.96	-0.84	-0.03 (0.07)	0.97	-0.45
Birth Control - Wave 3	0.11 (0.06)	1.12	1.86	0.13 (0.06)	1.14	2.15*	0.20 (0.08)	1.23	2.41**
Risky Behaviors - Wave 4	0.40 (0.13)	1.50	3.24***	0.40 (0.13)	1.50	3.19**	0.68 (0.17)	1.97	4.06***
Birth Control - Wave 4	0.07 (0.04)	1.07	1.57	0.04 (0.04)	1.02	0.70	0.13 (0.07)	1.14	1.97
Low Self-Control									
Wave 1	0.05 (0.02)	1.06	2.34*	0.05 (0.02)	1.05	2.19*	0.09 (0.03)	1.09	2.65**
Wave 2	0.12 (0.03)	1.13	3.71***	0.16 (0.03)	1.17	4.71***	0.18 (0.05)	1.20	3.80***
Wave 3	0.01 (0.01)	1.01	0.83	0.07 (0.01)	1.07	6.87***	0.05 (0.02)	1.05	3.34***
Wave 4	0.00 (0.03)	1.00	0.13	-0.00 (0.03)	1.00	-0.07	0.07 (0.04)	1.08	1.68
Depression									
Wave 1	-0.01 (0.02)	0.99	-0.44	-0.00 (0.02)	1.00	-0.03	0.04 (0.03)	1.04	1.33
Wave 2	0.04 (0.02)	1.04	1.79	-0.02 (0.02)	0.98	-0.64	-0.01 (0.03)	0.99	-0.27
Wave 3	-0.01 (0.02)	0.99	-0.58	0.01 (0.02)	1.01	0.21	0.06 (0.03)	1.06	1.97*
Wave 4	0.01 (0.02)	1.01	0.32	0.03 (0.02)	1.03	1.56	0.01 (0.03)	1.01	0.43
Anger	-0.08 (0.09)	0.92	-0.85	-0.02 (0.09)	0.98	-0.25	0.12 (0.13)	1.12	0.80
Constant	-11.82 (2.93)	--	-4.03***	0.96 (3.46)	--	0.28	4.26 (4.02)	--	1.06
Model χ^2				2700.18***					

Note. Entries are in unstandardized coefficients (b) and standard errors are in parentheses; control variables were included in the analysis but not presented in the table $^{*}p<0.05$, $^{**}p<0.01$, $^{***}p<0.001$.

Full Model

The variables drawn from each theory – when assessed independently – hold some explanatory power in predicting membership in the different victim-offender classes. However, when considered together a different picture is revealed. Risky behaviors at all four waves are predictive of membership in the adolescence limited class (see Table 13, Model 1). Specifically, those who engage in risky behaviors at wave one are 43 percent more likely (per one-unit increase) to be a member of the adolescence limited class compared to the safe & compliant class. At wave two, the impact decreases slightly to 37 percent. Low self-control and depression also emerge as statistically significant predictors of group membership; however, the relative impact is noticeably smaller than the impact of engaging in risky behaviors. For example, compared to the safe & compliant class, for every one-unit increase in low self-control respondents are 10 percent more likely to be a member of the adolescence limited class at wave two and three percent more likely at wave three. Depression increases the likelihood of membership by 6 percent at wave 1. Members of the adolescence limited class are categorized by their victimization and offending occurring primarily during waves one and two. Consistent with this classification, many of the variables that emerge as significant predictors of membership in the adolescence limited class are also drawn from the first two waves of data. Additionally, engaging in risky behaviors has the strongest impact on membership because risky lifestyles, as measured in the current study, include association with deviant peers and risky sexual activities, both of which are empirically supported as correlates of offending and victimization (Roberts et al., 2012; Tyler, Schmitz, & Adams, 2017; Tyler et al., 2017).

Both routine activity/lifestyle theory and low self-control are strong predictors of membership in the abused-substance abusers class (see Table 13, Model 2). Relative to the safe & compliant class, those who participate in unstructured routines are 16 percent more likely to be a member of the abused-substance abusers class. Risky behaviors are even stronger predictors at waves one, two, and four (RRR = 0.70, 1.85, and 1.80, respectively). Individuals with lower levels of self-control at waves one, two, and three are also more likely to fall into the abused-substance abusers class. At wave one, for every one-unit increase in the low self-control scale, respondents are 11 percent more likely to be classified as an abused-substance abusers when compared to those who are safe & compliant. Similar findings emerge for low self-control at wave two (26 percent) and wave three (5 percent).

Model 3 (Table 13) shows the results for the full multinomial logistic regression predicting membership in the abused-abusers class. Similar to the previous two models, risky behaviors at waves one, two, three, and four increase the probability of being an abused-abusers (RRR = 1.23, 1.27, and 2.10). Not using birth control, a risky behavior, also increases membership in the abused-abusers class (RRR = 1.22). The influence of risky behaviors is likely due to the drug use among the respondents in this class across the four waves of data. Specifically, risky behaviors at waves one and two consist of items measuring peer substance abuse, which would increase the likelihood of the respondents' own substance abuse. Additionally, these early measures of association with deviant peers may reflect propensity towards engaging in relationships with similar deviant individuals later in life, increasing risk of potential intimate partner violence. Depression at wave four is also significant. This is likely due to the intimate partner

violence perpetration and victimization reported at wave four. For every singe-unit increase in the depression scale, a respondent is 6 percent more likely to be a member of the abused-abusers class compared to the safe & compliant class.

When controlling for variables derived from all three theories, structured routines, risky behaviors, and low self-control remain significant predictors of membership in the safe-substance abusers class when compared to the safe & compliant class (see Table 13, Model 4). The structured routines scale emerges as statistically significant in the expected direction. A single-unit increase in participation in structured routines decreases the likelihood of being assigned to the safe-substance abusers class by 10 percent. Again, due to risky behaviors being measured using peer drug use and drinking, it is likely that individuals within this class are associating with deviant, drug using peers and not engaging in other activities that would increase their risk of being victimized and their opportunity to offend (RRR = 1.48, 1.50, and 1.50 at waves one, two, and four). Low self-control, significant at wave two, may limit the respondent's ability to resist peer pressured drug use. A one-unit increase in low self-control increases the probability of assignment to the safe-substance abusers class by 13 percent.

The theoretically relevant predictors for membership in the late onset substance abuse are similar to those found in Model 4, but they are limited to later waves due to the late onset of the substance abuse. Model 5 (see Table 13) shows that participation in structured routines again conforms to theoretical expectations in that it negatively associated with membership in the late onset substance abuse category (RRR = 0.84). Risky behaviors at wave two (40 percent), not using birth control at wave three (49 percent), and low self-control at waves two and three (17 percent and 7 percent) are all

statistically significant in the positive direction. Those who engage in risky behaviors and have low self-control at waves two and three are more likely to be classified into the late onset substance abuse group.

The final class, aggressive & violently victimized, is comprised of individuals who reported offending behaviors and victimization experiences across all four waves. At wave one, participation in unstructured routines (18 percent), engaging in risky behaviors (69 percent), and low self-control (9 percent) are all significant predictors of membership in this class compared to the safe & compliant class (see Table 13, model 6). Waves two, three, and four show similar findings. Risky behaviors (Wave two-RRR = 1.82; Wave four-RRR = 1.97) and low self-control (Wave two-RRR = 1.20; Wave three-RRR = 1.05) are both statistically significant predictors. Not using birth control at waves two and three is statistically significant; however, the effects at the two waves are in opposite directions. Again, these findings could be a result of using birth control serving as either a risk or a protective depending on the individual and their relationship status. For example, not using birth control could be associated with risky sexual behaviors as well as being in a committed relationship (Bailey et al., 2012). At wave two, engaging in risky birth control practices reduces the likelihood of being assigned to the aggressive & violently victimized class. However, at wave three, engaging in this same risky behavior increases a respondent's likelihood of being a member of the aggressive & violently victimized class over the safe & compliant class.

Table 14. Multinomial logistic regression for wave 4 latent classes.

	Model 1 (n = 83)			Model 2 (n = 482)			Model 3 (n = 695)			Model 4 (n = 98)			Model 5 (n = 141)		
	Abused-Substance Abusers			Abused-Abusers			Safe-Substance Abusers			Late Onset Substance Abusers			Aggressive & Violently Victimized		
	b	RRR	*z*	*b*	RRR	*z*	*b*	RRR	*z*	*b*	RRR	*z*	*b*	RRR	*z*
Structured Routines - Wave 3	-0.07 (0.04)	0.93	-1.67	-0.05 (0.02)	0.95	-2.55**	-0.18 (0.02)	0.83	-9.13***	-0.02 (0.07)	0.98	-0.44	-0.07 (0.03)	0.93	-1.98*
Unstructured Routines - Wave 3	-0.00 (0.02)	1.00	-0.13	-0.00 (0.01)	1.00	-0.52	0.01 (0.01)	1.01	0.86	-0.01 (0.02)	0.99	-0.62	0.02 (0.01)	1.02	1.47
Number of Sexual Partners - Wave 3	0.05 (0.07)	1.05	0.68	-0.08 (0.03)	0.93	-2.14*	-0.06 (0.03)	0.95	-1.80	0.03 (0.07)	1.03	0.44	0.15 (0.06)	1.16	2.74**
Birth Control - Wave 3	0.11 (0.08)	1.12	1.29	0.16 (0.04)	1.18	4.29***	0.07 (0.04)	1.08	1.95*	0.22 (0.07)	1.25	3.05**	0.21 (0.06)	1.24	3.35***
Low Self-Control - Wave 3	0.09 (0.02)	1.10	6.20***	0.03 (0.01)	1.03	4.74***	0.05 (0.01)	1.05	7.05***	0.05 (0.01)	1.05	3.32***	0.07 (0.01)	1.07	5.68***
Depression - Wave 3	0.04 (0.03)	1.04	1.44	0.04 (0.01)	1.04	3.01**	0.02 (0.01)	1.02	1.36	0.03 (0.03)	1.03	0.95	0.04 (0.02)	1.04	1.60
Constant	-5.73 (2.24)	--	-2.56**	-3.20 (1.02)	--	-3.14**	-0.80 (0.94)	--	-0.85	-6.27 (1.99)	--	3.15**	-7.02 (1.73)	--	-4.08***
Model χ^2							838.69***								

Note. Entries are in unstandardized coefficients (*b*) and standard errors are in parentheses; control variables were included in the analysis but not presented in the table $^{*}p<0.05$, $^{**}p<0.01$, $^{***}p<0.001$.

Further Analyses

Since the latent class analysis was performed using all four waves of data and predictor variables were derived from four waves of data, time ordering becomes an issue. Put differently, using independent and dependent variables from multiple waves of data to predict membership in groups constructed of multiple waves of data does not easily allow for causality to be inferred. In an effort to address this limitation, an additional multinomial logistic regression was run using theoretically derived independent variables from wave three to predict the latent classes established using wave four data. Using independent variables from wave three to predict membership in a victim-offender class at wave four allows for a causal relationship to be established.

A multinomial logistic regression was run using independent variables derived from routine activity/lifestyle theory, low self-control theory, and general strain theory at wave three. The findings for this analysis (see Table 14) are consistent with Gottfredson and Hirschi's (1990) low self-control theory and Schreck's (1999) theoretical extension of the theory to explain victimization. Low self-control significantly predicts membership in all five-classes. An increase in low self-control increases the probability of being a member of a victim-offender class ranging from 3 percent to 10 percent (see Table 14, Models 1-5). Routine activity/lifestyle theory and general strain theory fail to predict membership in every class. Engaging in structured routines reduces the likelihood of being a member of the abused-abusers (RRR = 0.95), the safe-substance abusers (RRR = 0.83), and the aggressive & violently victimized class (RRR = 0.93). Given that the offending and victimization present within the abused-abusers class primarily occurs inside the home, structured routines should not influence membership in this class.

Similarly, safe-substance abusers are likely offending inside their home or with a trusted group of friends. Participating in structured routines would also not likely influence offending and/or victimization risk for these individuals. Unstructured routines do not significantly influence class membership for any of the wave four victim-offender groups. Risky behavior at wave three is measured using two variables: number of sexual partners and failure to use birth control. A reduction in a respondent's use of birth control increases the likelihood of being a member of the abused-abusers, safe-substance abusers, late onset substance abusers, and aggressive & violently victimized classes (RRR = 1.18, 1.08, 1.25, and 1.24, respectively). The influence of the number of sexual partners a respondent has on class membership performs differently for different classes. More specifically, for every one-unit increase in the number of sexual partners, respondents are 7 percent less likely to be a member of the abused-abusers class, however the same one-unit increases the likelihood of being a member of the aggressive & violently victimized class. This finding helps corroborate the hypothesis that variation exists within the victim-offender overlap and that theoretical explanations may also vary accordingly. Depression only significantly predicts membership in the abused-abusers class. For each one-point increase in the depression scale, the likelihood of being a member of the abused-abusers class increases by 4 percent. In sum, low self-control consistently predicts membership across victim-offender classes. Negative emotionality – a component of general strain theory – has limited support in that it only predicts membership in the abused-abusers taxonomy. Routine activity/lifestyle theory also differs in its explanatory power across classes.

When comparing the findings from the multinomial logistic regression using a more complex conceptualization of the victim-offender overlap with the baseline logistic regression and multinomial logistic regressions several notable differences emerge. For example, the baseline logistic regression (Table 8) suggests that depression does not explain the victim offender overlap. However, depression does predict membership in the victim-offender group (see Table 9, Model 3). When considering the variation within the victim-offender overlap, depression does not predict membership in all classes. This suggests that theoretically derived variables used to explain victimization and offending may have unique effects on the victim-offender overlap. Similar findings emerge for the effects of structured routines, unstructured routines, and risky behaviors. In sum, when examining the causal relationships established in table 14, it shows that variation within the victim-offender overlap influences the ability of certain theoretically derived variables to explain membership in different taxonomies. Put differently, this model highlights the need to consider the variation within the victim-offender overlap.

Invariance Testing

General theories operate under the assumption that they are able to explain crime across different populations (Vold, Bernard, & Snipes, 2002). Several correlates of crime are commonly assessed when testing the invariance of a study's findings. For the purpose of this dissertation, invariance across gender and race will be tested. More specifically, multinomial logistic regressions will be performed on subsamples of the data to assess differences in the findings across the subsamples.

Table 15. Multinomial logistic regression for male and female subsamples.

	Model 1						Difference of Coefficients	Model 2						Difference of Coefficients
	Adolescence Limited							Abused-Substance Abusers						
	Female (n = 227)			Male (n = 243)				Female (n = 123)			Male (n = 136)			
	b	RRR	z	b	RRR	z		b	RRR	z	b	RRR	z	
Structured Routines - Wave 1	0.08 (0.06)	1.08	1.27	-0.04 (0.06)	0.96	-0.57	1.41	0.14 (0.09)	1.15	1.47	0.03 (0.09)	1.03	0.33	0.39
Structured Routines - Wave 2	-0.08 (0.06)	0.92	-1.30	0.08 (0.07)	1.08	1.11	-1.74 *	-0.14 (0.10)	0.87	-1.38	0.07 (0.10)	1.07	0.67	-1.70 *
Structured Routines - Wave 3	-0.01 (0.04)	0.99	-0.23	0.02 (0.04)	1.02	0.61	-0.53	-0.14 (0.10)	0.88	-1.90	-0.10 (0.07)	0.91	-1.35	-1.72 *
Structured Routines - Wave 4	0.02 (0.04)	1.02	0.36	-0.07 (0.05)	0.93	-1.54	1.41	-0.06 (0.07)	0.95	-0.77	-0.01 (0.07)	0.99	-0.17	-1.31
Unstructured Routines - Wave 1	0.09 (0.04)	1.08	1.92	0.07 (0.05)	1.07	1.51	0.31	-0.13 (0.07)	1.14	1.92	0.14 (0.07)	1.15	2.16*	-2.02 *
Unstructured Routines - Wave 2	0.05 (0.05)	1.05	1.11	-0.03 (0.05)	0.97	-0.63	1.13	-0.07 (0.07)	0.93	-0.99	0.03 (0.07)	1.03	0.45	-1.41
Unstructured Routines - Wave 3	-0.03 (0.02)	1.09	-1.77	0.05 (0.02)	1.04	2.81**	-2.83 *	-0.01 (0.03)	0.99	-0.39	-0.04 (0.03)	0.96	-1.32	-0.94
Unstructured Routines - Wave 4	0.06 (0.04)	1.05	1.58	-0.03 (0.03)	0.97	-0.81	1.80 *	0.04 (0.06)	1.04	0.77	-0.07 (0.05)	0.93	-1.44	-0.13
Risky Behaviors - Wave 1	0.30 (0.05)	1.35	5.66***	0.47 (0.07)	1.60	6.75***	-1.98 *	0.57 (0.07)	1.74	8.36***	0.59 (0.08)	1.80	7.47***	4.61 *
Birth Control - Wave 1	0.19 (0.20)	1.21	0.94	0.43 (0.25)	1.54	1.72	-0.75	0.27 (0.25)	1.30	1.05	0.40 (0.31)	1.49	1.26	-0.10
Risky Behaviors - Wave 2	0.36 (0.06)	1.43	5.70***	0.29 (0.07)	1.33	4.06***	0.76	0.66 (0.08)	1.93	7.82***	0.62 (0.09)	1.85	6.87***	4.73 *
Birth Control - Wave 2	-0.35 (0.46)	0.70	-0.76	-0.01 (0.55)	0.99	-0.02	-0.47	-0.52 (0.64)	0.60	-0.80	-0.70 (0.69)	0.50	-1.01	-1.29
Number of Sexual Partners - Wave 3	0.01 (0.06)	1.01	0.20	-0.16 (0.06)	0.85	-2.56**	2.00 *	0.08 (0.10)	1.09	0,85	-0.20 (0.09)	0.82	-2.13*	-0.07
Birth Control - Wave 3	0.17 (0.07)	1.19	2.42*	0.10 (0.08)	1.10	1.20	0.66	0.27 (0.11)	1.30	2.51**	0.05 (0.12)	1.05	0.45	0.92
Risky Behaviors - Wave 4	0.31 (0.16)	1.37	1.94*	-0.07 (0.20)	0.93	1.83	1.48	0.74 (0.22)	2.20	3.44***	0.46 (0.24)	1.58	1.92*	1.54
Birth Control - Wave 4	0.02 (0.06)	1.02	0.32	0.11 (0.06)	1.12	1.83	-1.06	0.01 (0.08)	1.01	0.09	0.10 (0.09)	1.10	1.16	-0.66
Low Self-Control														
Wave 1	0.03 (0.03)	1.03	1.02	0.01 (0.03)	1.01	0.47	0.47	0.13 (0.04)	1.14	2.85**	0.06 (0.04)	1.06	1.39	1.59
Wave 2	0.08 (0.04)	1.09	1.92	0.11 (0.05)	1.11	2.30*	-0.47	0.21 (0.06)	1.23	3.58***	0.32 (0.06)	1.37	4.90***	1.77 *
Wave 3	0.04 (0.01)	1.04	2.60**	0.01 (0.01)	1.01	1.02	2.12 *	0.05 (0.02)	1.05	2.28*	0.05 (0.02)	1.05	2.37*	1.06
Wave 4	0.10 (0.04)	1.11	2.57**	-0.00 (0.04)	1.00	-0.00	1.77 *	0.04 (0.06)	1.04	0.72	0.00 (0.06)	1.00	0.07	-0.24
Depression														
Wave 1	0.04 (0.03)	1.04	1.55	0.08 (0.04)	1.08	2.21*	-0.80	0.06 (0.04)	1.06	1.56	-0.03 (0.05)	0.97	-0.52	0.16
Wave 2	0.05 (0.03)	1.05	1.68	0.04 (0.04)	1.04	1.18	0.20	-0.00 (0.04)	1.00	-0.09	-0.01 (0.05)	0.99	-0.23	-0.78
Wave 3	0.01 (0.03)	1.01	0.22	-0.00 (0.04)	1.00	-0.09	0.20	0.01 (0.40)	1.01	0.19	0.03 (0.05)	1.04	0.70	-0.10
Wave 4	-0.02 (0.02)	0.98	-0.82	0.03 (0.03)	1.03	0.88	-1.39	0.02 (0.03)	1.02	0.46	0.09 (0.04)	1.09	2.19*	-0.40
Anger	-0.01 (0.12)	0.99	-0.05	0.03 (0.13)	1.03	0.24	-0.23	0.12 (0.17)	1.13	0.68	-0.12 (0.18)	0.88	-0.70	-0.24
Constant	-0.66 (3.85)	--	-0.17	0.77 (4.20)	--	0.19	-0.25	-10.17 (5.61)	--	-1.81	-7.16 (5.70)	--	-1.26	-1.98 *

Note. Entries are in unstandardized coefficients (b), standard errors are in parentheses, relative risk ratios (RRR), and z-tests (z); control variables (e.g., attachment to parents, education, sex, and marital status) were included in the analysis but not presented in the table $^{*}p<0.05$, $^{**}p<0.01$, $^{***}p<0.001$; Model $\chi 2$ for female sample = 1462.62***; Model $\chi 2$ for male sample = 1273.54***.

Table 15. Continued.

	Model 3						Difference of Coefficients	Model 4						Difference of Coefficients
	Abused-Abusers							Safe-Substance Abusers						
	Female (n = 169)			Male (n = 176)				Female (n = 309)			Male (n = 127)			
	b	RRR	z	b	RRR	z		b	RRR	z	b	RRR	z	
Structured Routines - Wave 1	0.05 (0.07)	1.05	0.71	0.03 (0.07)	1.03	0.47	0.07	0.03 (0.06)	1.03	0.54	-0.15 (0.09)	0.86	-1.78	1.66 *
Structured Routines - Wave 2	0.08 (0.07)	1.08	1.17	0.05 (0.08)	1.05	0.65	0.10	-0.04 (0.06)	0.96	-0.69	0.11 (0.09)	1.11	1.14	-1.39
Structured Routines - Wave 3	-0.10 (0.04)	0.91	-2.20*	0.00 (0.04)	1.00	0.05	-0.49	-0.09 (0.04)	0.91	-2.16*	-0.04 (0.06)	0.97	-0.60	-0.69
Structured Routines - Wave 4	0.02 (0.05)	1.02	0.43	-0.17 (0.06)	0.85	-2.82**	0.76	-0.14 (0.05)	0.87	-2.98**	-0.05 (0.06)	0.96	-0.77	-1.15
Unstructured Routines - Wave 1	0.05 (0.05)	1.05	0.96	0.08 (0.05)	1.08	1.46	-0.13	0.08 (0.04)	1.08	1.76	0.06 (0.06)	1.06	0.91	0.28
Unstructured Routines - Wave 2	0.04 (0.05)	1.04	0.89	0.02 (0.06)	1.02	0.27	0.08	0.01 (0.05)	1.01	0.27	-0.02 (0.07)	0.98	-0.25	0.35
Unstructured Routines - Wave 3	-0.02 (0.02)	0.98	-1.03	0.04 (0.02)	1.04	1.94*	-0.42	-0.01 (0.02)	0.99	-0.51	0.03 (0.02)	1.08	1.28	-1.41
Unstructured Routines - Wave 4	0.03 (0.04)	1.03	0.60	-0.02 (0.04)	0.98	-0.44	0.25	0.04 (0.04)	1.05	1.24	-0.08 (0.05)	0.93	-1.68	1.87 *
Risky Behaviors - Wave 1	0.14 (0.06)	1.15	2.17*	0.31 (0.08)	1.37	4.12***	-0.59	0.41 (0.05)	1.52	8.29***	0.42 (0.08)	1.53	5.37***	-0.11
Birth Control - Wave 1	0.18 (0.23)	1.20	0.82	0.46 (0.28)	1.58	1.63	-0.49	0.24 (0.19)	1.28	1.28	0.21 (0.32)	1.23	0.66	0.08
Risky Behaviors - Wave 2	0.24 (0.07)	1.26	3.23***	0.24 (0.08)	1.28	3.10**	0.00	0.40 (0.06)	1.49	6.69***	0.44 (0.08)	1.55	5.25***	-0.40
Birth Control - Wave 2	-0.14 (0.53)	0.98	-0.26	1.51 (1.09)	4.52	1.39	-1.41	-0.26 (0.43)	0.77	-0.61	-0.51 (0.70)	0.60	-0.73	0.30
Number of Sexual Partners - Wave 3	0.04 (0.07)	1.04	0.52	0.03 (0.07)	1.03	0.42	0.04	-0.00 (0.06)	1.00	-0.03	-0.17 (0.08)	0.84	-2.07*	1.70 *
Birth Control - Wave 3	0.21 (0.08)	1.24	2.68**	0.18 (0.09)	1.19	1.94*	0.10	0.12 (0.07)	1.13	1.66	0.15 (0.10)	1.16	1.42	-0.25
Risky Behaviors - Wave 4	0.90 (0.16)	2.46	5.68***	0.54 (0.19)	1.72	2.92**	0.78	0.49 (0.16)	1.64	3.19***	0.28 (0.23)	1.32	1.20	0.75
Birth Control - Wave 4	0.12 (0.06)	1.12	1.89	0.08 (0.07)	1.09	1.25	0.15	0.03 (0.05)	1.03	0.55	0.14 (0.08)	1.15	1.81	-1.17
Low Self-Control														
Wave 1	0.05 (0.03)	1.05	1.36	-0.01 (0.03)	0.99	-0.34	0.34	0.06 (0.03)	1.06	2.02*	0.04 (0.04)	1.04	1.00	0.40
Wave 2	0.05 (0.05)	1.05	1.06	0.02 (0.05)	1.02	0.40	0.13	0.11 (0.04)	1.12	2.68**	0.14 (0.06)	1.15	2.27*	-0.42
Wave 3	0.03 (0.02)	1.03	1.95*	0.06 (0.02)	1.07	3.88***	-0.21	0.01 (0.01)	1.01	0.57	0.01 (0.02)	1.01	0.32	0.00
Wave 4	0.03 (0.04)	1.03	0.78	0.01 (0.05)	1.01	0.11	0.09	0.03 (0.04)	1.04	0.88	-0.04 (0.05)	0.96	-0.74	1.09
Depression														
Wave 1	0.02 (0.03)	1.02	0.59	0.04 (0.04)	1.04	0.90	-0.10	0.00 (0.03)	1.00	0.09	-0.04 (0.05)	0.96	-0.93	0.69
Wave 2	0.02 (0.03)	1.02	0.80	-0.03 (0.04)	0.98	-0.48	0.25	0.05 (0.03)	1.05	1.85	0.02 (0.05)	1.02	0.34	0.51
Wave 3	-0.06 (0.03)	0.99	-0.41	0.00 (0.04)	1.00	0.10	-0.30	-0.03 (0.03)	0.97	-1.12	0.02 (0.05)	1.02	0.45	-0.86
Wave 4	0.05 (0.02)	1.05	2.32*	0.05 (0.03)	1.05	1.70	0.00	0.00 (0.02)	1.00	0.15	0.01 (0.04)	1.01	0.33	-0.22
Anger	0.15 (0.13)	1.16	1.13	0.23 (0.14)	1.26	1.70	-0.20	-0.04 (0.12)	0.96	-0.36	-0.17 (0.17)	0.85	-0.96	0.62
Constant	0.33 (4.34)	--	0.08	-10.21 (7.17)	--	-1.43	2.07 *	-12.34 (3.58)	--	-3.45	-12.68 (5.56)	--	-2.28	0.05

Note. Entries are in unstandardized coefficients (b), standard errors are in parentheses, relative risk ratios (RRR), and z-tests (z); control variables (e.g., attachment to parents, education, sex, and marital status) were included in the analysis but not presented in the table $^{*}p<0.05$, $^{**}p<0.01$, $^{***}p<0.001$; Model $\chi 2$ for female sample = 1462.62^{***}; Model $\chi 2$ for male sample = 1273.54^{***}.

Table 15. Continued.

	Model 5			Model 5			Difference of Coefficients	Model 6			Model 6			Difference of Coefficients
	Late Onset Substance Abuses							Aggressive & Violently Victimized						
	Female (n = 124)			Male (n = 236)				Female (n = 46)			Male (n = 160)			
	b	RRR	z	b	RRR	z		b	RRR	z	b	RRR	z	
Structured Routines - Wave 1	-0.02 (0.07)	0.98	-0.30	0.04 (0.06)	1.04	0.60	-0.65	0.13 (0.13)	1.14	1.00	-0.00 (0.09)	1.00	-0.01	0.82
Structured Routines - Wave 2	0.07 (0.07)	1.08	1.01	-0.02 (0.07)	0.98	-0.34	0.91	-0.20 (0.13)	0.82	-1.50	0.06 (0.09)	1.06	0.66	-1.64 *
Structured Routines - Wave 3	-0.19 (0.06)	0.82	-3.42***	-0.15 (0.05)	0.86	-3.21***	-0.51	-0.05 (0.09)	0.94	-0.65	0.02 (0.07)	1.02	0.30	-0.61
Structured Routines - Wave 4	-0.06 (0.06)	0.94	-0.95	0.04 (0.05)	0.96	-0.74	-1.28	0.10 (0.10)	1.10	1.01	-0.12 (0.07)	0.89	-1.66	1.80 *
Unstructured Routines - Wave 1	-0.02 (0.05)	0.98	-0.37	0,04 (0.04)	1.04	0.81	-0.94	0.17 (0.10)	1.19	1.64	0.19 (0.07)	1.21	2.79**	-0.16
Unstructured Routines - Wave 2	-0.00 (0.06)	1.00	-0.06	0.00 (0.05)	1.00	0.05	0.00	0.21 (0.12)	1.23	1.76	-0.01 (0.07)	0.99	-0.14	1.58
Unstructured Routines - Wave 3	0.01 (0.02)	1.01	0.59	-0.00 (0.02)	1.00	-0.15	0.35	-0.02 (0.04)	0.98	-0.46	0.02 (0.02)	102	0.80	-0.89
Unstructured Routines - Wave 4	0.07 (0.04)	1.08	1.74	-0.06 (0.04)	0.94	-1.78	2.30 *	0.07 (0.08)	1.07	0.79	-0.02 (0.05)	0.98	-0.31	0.95
Risky Behaviors - Wave 1	-0.00 (0.09)	1.00	-0.00	0.13 (0.08)	1.14	1.64	-1.08	0.43 (0.09)	1.53	4.52***	0.62 (0.08)	1.86	7.91***	-1.58
Birth Control - Wave 1	-0.18 (0.36)	0.84	-0.47	0.53 (0.23)	1.70	1.86	-1.66 *	0.57 (0.36)	1.76	1.58	0.55 (0.30)	1.73	1.84	0.04
Risky Behaviors - Wave 2	0.33 (0.08)	1.40	4.18***	0.34 (0.07)	1.40	4.70***	-0.09	0.67 (0.13)	1.96	5.29***	0.61 (0.09)	1.84	6.72***	0.38
Birth Control - Wave 2	-0.15 (0.64)	0.86	-0.23	0.28 (0.77)	1.32	0.36	-0.43	0.44 (1.11)	1.55	0.39	-1.62 (0.61)	0.20	-2.63**	1.63
Number of Sexual Partners - Wave 3	0.02 (0.07)	1.02	0.31	-0.09 (0.06)	0.92	-1.44	1.19	0.15 (0.15)	1.16	1.00	-0.16 (0.09)	0.85	-1.69	1.77 *
Birth Control - Wave 3	0.11 (0.10)	1.12	1.15	0.15 (0.08)	1.17	1.83	-0.31	0.32 (0.15)	1.38	2.15*	0.17 (0.11)	1.19	1.51	0.81
Risky Behaviors - Wave 4	0.44 (0.20)	1.56	2.27*	0.37 (0.06)	1.45	2.01*	0.34	0.50 (0.33)	1.65	1.53	0.69 (0.23)	2.00	3.00**	-0.47
Birth Control - Wave 4	0.01 (0.07)	1.01	0.22	0.07 (0.06)	1.07	1.12	-0.65	0.05 (0.13)	1.05	0.38	0.19 (0.09)	1.21	2.10*	-0.89
Low Self-Control														
Wave 1	0.06 (0.04)	1.06	1.72	0.04 (0.03)	1.04	1.44	0.40	0.07 (0.07)	1.07	1.06	0.06 (0.04)	1.06	1.38	0.12
Wave 2	0.21 (0.05)	1.23	4.11***	0.13 (0.05)	1.14	2.72**	1.13	0.33 (0.09)	1.39	3.79***	0.12 (0.07)	1.13	1.79	1.84 *
Wave 3	0.08 (0.05)	1.09	5.10***	0.07 (0.01)	1.07	4.49***	0.20	0.06 (0.03)	1.07	2.17*	0.05 (0.02)	1.05	2.31*	0.28
Wave 4	0.01 (0.03)	1.01	0.17	-0.02 (0.04)	0.98	-0.53	0.60	0.06 (0.08)	1.06	0.74	0.06 (0.06)	1.06	1.02	0.00
Depression														
Wave 1	0.02 (0.04)	1.02	0.60	-0.02 (0.04)	0.98	-0.47	0.71	0.10 (0.05)	1.11	1.96*	0.00 (0.05)	1.00	0.06	1.41
Wave 2	0.00 (0.03)	1.00	0.00	-0.04 (0.04)	0.96	-1.01	0.80	-0.04 (0.06)	0.96	-0.75	-0.01 (0.05)	0.99	-0.28	-0.38
Wave 3	-0.02 (0.03)	0.98	-0.68	0.03 (0.04)	1.03	0.67	-1.00	0.01 (0.05)	1.01	0.19	0.13 (0.05)	1.14	2.70**	-1.70 *
Wave 4	0.02 (0.03)	1.02	0.82	0.04 (0.03)	1.04	1.30	-0.47	-0.04 (0.05)	0.97	-0.71	0.06 (0.04)	1.06	1.52	-1.56
Anger	0.07 (0.14)	1.07	0.47	-0.06 (0.12)	0.94	-0.50	0.71	0.47 (0.25)	1.60	1.85	-0.08 (0.18)	0.92	-0.46	1.79 *
Constant	-3.32 (5.12)	--	-0.65	5.31 (5.36)	--	0.99	-1.16	-7.78 (9.21)	--	-0.84	10.76 (5.44)	--	1.98*	-1.73 *

Note. Entries are in unstandardized coefficients (b), standard errors are in parentheses, relative risk ratios (RRR), and z-tests (z); control variables (e.g., attachment to parents, education, sex, and marital status) were included in the analysis but not presented in the table $^{*}p<0.05$, $^{**}p<0.01$, $^{***}p<0.001$; Model $\chi 2$ for female sample = 1462.62***; Model $\chi 2$ for male sample = 1273.54***.

Gender Invariance

Table 15 shows the findings for the multinomial logistic regression run for a subsample of females and males. Several empirical differences emerged between the two subsamples. The scales measuring participation in unstructured routines do not reach statistical significance for females. Unstructured routines are hypothesized to increase an individual's contact with potential offenders. Females are more likely to be victimized by an acquaintance rather than a stranger, which may account for this difference.

Low self-control is not statistically significant for females at wave one or two. For males, low self-control is significant at wave two. This difference in findings is of interest because it implies that females who are classified as adolescence limited victim-offenders are more heavily influenced by other factors, particularly engaging in risky behaviors rather than low self-control. It is important to note, however, that low self-control has been associated with engaging in risky behaviors (Hay & Meldrum, 2016). Thus, the effects of low self-control may be operating indirectly through engagement in risky behaviors.

Depression predicts membership in victim-offender overlap classes for both men and women. However, depression reaches statistical significance for different classes based on gender. For females, depression is statistically significant in predicting membership in the abused-abusers class. Males are more likely to be classified in the adolescence limited and abused-substance abusers classes. The varied impact on class memberships based on gender implies that negative emotions influence males and females differently. Depression significantly predicts membership in the aggressive & violently victimized class for both men and women, though it is significant at different

Table 16. Multinomial logistic regression for racial/ethnic minority and white subsamples.

	Model 1							Model 2						
	Adolescence Limited						Difference of Coefficients	Abused-Substance Abusers						Difference of Coefficients
	Racial/Ethnic Minority (n = 251)			White (n = 219)				Racial/Ethnic Minority (n = 77)			White (n = 182)			
	b	RRR	z	b	RRR	z		b	RRR	z	b	RRR	z	
Structured Routines - Wave 1	0.03 (0.06)	1.03	0.54	0.03 (0.06)	1.04	0.57	0.00	-0.04 (0.11)	0.96	-0.39	0.18 (0.08)	1.20	2.24*	-1.62
Structured Routines - Wave 2	0.00 (0.06)	1.00	0.05	-0.02 (0.06)	0.98	-0.33	0.24	-0.00 (0.11)	1.00	-0.00	-0.14 (0.09)	0.87	-1.65	0.99
Structured Routines - Wave 3	-0.04 (0.04)	0.96	-1.10	0.03 (0.04)	1.03	0.87	-1.24	-0.17 (0.08)	0.84	-2.08*	-0.06 (0.06)	0.94	-0.97	-1.10
Structured Routines - Wave 4	0.07 (0.04)	1.07	1.57	-0.11 (0.05)	0.90	-2.32*	2.81 *	0.13 (0.07)	1.14	1.75	-0.17 (0.07)	0.84	-2.53**	3.03 *
Unstructured Routines - Wave 1	0.06 (0.05)	1.06	1.23	0.08 (0.04)	1.08	1.86	-0.31	0.23 (0.09)	1.25	2.57**	0.12 (0.06)	1.13	2.05*	1.02
Unstructured Routines - Wave 2	-0.00 (0.05)	1.00	-0.06	0.02 (0.05)	1.02	0.48	-0.28	0.01 (0.09)	1.01	0.14	-0.01 (0.06)	0.99	-0.13	0.18
Unstructured Routines - Wave 3	0.01 (0.02)	1.01	0.35	0.00 (0.02)	1.00	0.25	0.35	-0.06 (0.04)	0.94	-1.59	-0.03 (0.03)	0.97	-1.36	-0.60
Unstructured Routines - Wave 4	0.01 (0.04)	1.01	0.25	0.02 (0.03)	1.02	0.68	-0.20	-0.02 (0.06)	0.98	-0.35	0.01 (0.05)	1.01	0.31	-0.38
Risky Behaviors - Wave 1	0.36 (0.06)	1.43	6.08***	0.37 (0.06)	1.45	6.37***	-0.12	0.40 (0.08)	1.49	5.09***	0.59 (0.06)	1.80	9.38***	-1.90 *
Birth Control - Wave 1	0.49 (0.21)	1.62	2.30*	0.05 (0.24)	1.05	0.23	1.38	0.52 (0.31)	1.69	1.70	0.24 (0.25)	1.27	0.96	0.70
Risky Behaviors - Wave 2	0.29 (0.07)	1.34	4.35***	0.34 (0.06)	1.41	5.36***	-0.54	0.55 (0.10)	1.73	5.26***	0.69 (0.08)	1.99	9.15***	-1.09
Birth Control - Wave 2	-0.07 (0.45)	0.93	-0.16	-0.46 (0.56)	0.63	-0.83	0.54	0.06 (0.79)	1.06	0.07	-0.83 (0.60)	0.46	-1.38	0.90
Number of Sexual Partners - Wave 3	-0.08 (0.07)	0.92	-1.16	-0.07 (0.06)	0.93	-1.11	-0.11	0.06 (0.12)	1.06	0.49	-0.09 (0.08)	0.91	-1.16	1.04
Birth Control - Wave 3	0.04 (0.08)	1.04	0.49	0.24 (0.08)	1.27	3.13**	-1.77 *	0.04 (0.13)	1.04	0.29	0.21 (0.10)	1.23	2.19*	-1.04
Risky Behaviors - Wave 4	0.36 (0.16)	1.44	2.23*	-0.19 (0.20)	0.82	-0.95	2.15 *	0.57 (0.25)	1.76	2.26*	0.52 (0.21)	1.69	2.53**	0.15
Birth Control - Wave 4	0.11 (0.06)	1.12	1.81	0.01 (0.06)	1.01	0.17	1.18	0.09 (0.11)	1.09	0.78	0.02 (0.07)	1.02	0.23	0.54
Low Self-Control														
Wave 1	0.01 (0.03)	1.01	0.31	0.05 (0.03)	1.05	1.67	-0.94	0.14 (0.05)	1.16	2.70**	0.11 (0.04)	1.11	2.76**	0.47
Wave 2	0.13 (0.05)	1.14	2.75**	0.08 (0.04)	1.08	1.87	0.78	0.30 (0.08)	1.36	4.01***	0.21 (0.05)	1.23	3.97***	0.95
Wave 3	0.02 (0.01)	1.02	1.40	0.03 (0.01)	1.03	2.23*	-0.71	0.06 (0.02)	1.06	2.27*	0.06 (0.02)	1.06	3.20***	0.00
Wave 4	0.11 (0.04)	1.11	2.43*	0.02 (0.04)	1.02	0.39	1.59	0.09 (0.07)	1.09	1.30	0.01 (0.05)	1.01	0.13	0.93
Depression														
Wave 1	0.05 (0.03)	1.05	1.82	0.04 (0.03)	1.05	1.49	0.24	-0.07 (0.05)	0.93	-1.38	0.04 (0.04)	1.05	1.21	-1.72 *
Wave 2	0.01 (0.03)	1.01	0.46	0.08 (0.03)	1.08	2.56**	-1.65 *	0.04 (0.05)	1.04	0.81	-0.04 (0.04)	0.96	-0.94	1.25
Wave 3	0.03 (0.03)	1.03	0.94	-0.02 (0.03)	0.98	-0.55	1.18	0.08 (0.05)	1.09	1.68	-0.01 (0.04)	0.99	-0.19	1.41
Wave 4	-0.02 (0.03)	0.98	-0.88	0.03 (0.02)	1.03	1.09	-1.39	0.02 (0.05)	1.02	0.46	0.03 (0.03)	1.03	1.10	-0.17
Anger	-0.08 (0.13)	0.92	-0.66	0.07 (0.12)	1.07	0.54	-0.85	0.33 (0.21)	1.39	1.57	-0.11 (0.16)	0.90	-0.69	1.67 *
Constant	0.22 (3.80)	--	0.06	-0.44 (4.20)	--	-0.11	0.12	-28.00 (6.96)	--	-4.02***	-1.44 (4.99)	--	-0.29	-3.10 *

Note. Entries are in unstandardized coefficients (b), standard errors are in parentheses, relative risk ratios (RRR), and z-tests (z); control variables (e.g., attachment to parents, education, sex, and marital status) were included in the analysis but not presented in the table *p<0.05, **p<0.01, ***p<0.001; Model $\chi 2$ for racial/ethnic minority sample = 1010.85***; Model $\chi 2$ for white sample = 1832.28***.

Table 16. Continued.

	Model 3						Difference of Coefficients	Model 4						Difference of Coefficients
	Abused-Abusers							Safe-Substance Abusers						
	Racial/Ethnic Minority (n = 167)			White (n = 178)				Racial/Ethnic Minority (n = 117)			White (n = 319)			
	b	RRR	z	b	RRR	z		b	RRR	z	b	RRR	z	
Structured Routines - Wave 1	0.07 (0.07)	1.08	1.01	0.05 (0.07)	1.05	0.80	0.20	-0.14 (0.08)	0.87	-1.72	0.04 (0.06)	1.04	0.66	-1.80 *
Structured Routines - Wave 2	0.20 (0.07)	1.23	2.81**	-0.06 (0.07)	0.94	-0.86	2.63 *	-0.03 (0.08)	0.97	-0.31	-0.01 (0.07)	0.99	-0.20	-0.19
Structured Routines - Wave 3	-0.13 (0.05)	0.87	-2.84**	-0.00 (0.04)	1.00	-0.04	-2.03 *	-0.04 (0.06)	0.96	-0.75	-0.06 (0.04)	0.94	-1.49	0.28
Structured Routines - Wave 4	-0.06 (0.05)	0.94	-1.17	-0.04 (0.05)	0.96	-0.72	-0.28	-0.08 (0.06)	0.92	-1.41	-0.15 (0.05)	0.86	-3.23***	0.90
Unstructured Routines - Wave 1	0.06 (0.06)	1.06	1.05	0.05 (0.05)	1.05	1.12	0.13	0.02 (0.06)	1.02	0.29	0.10 (0.04)	1.10	2.25*	-1.11
Unstructured Routines - Wave 2	0.08 (0.06)	1.08	1.34	-0.01 (0.05)	0.99	-0.12	1.15	0.02 (0.07)	1.02	0.27	-0.00 (0.05)	1.00	-0.08	0.23
Unstructured Routines - Wave 3	0.00 (0.02)	1.00	0.09	0.01 (0.02)	1.01	0.76	-0.35	0.01 (0.02)	1.01	0.47	0.00 (0.02)	1.00	0.19	0.35
Unstructured Routines - Wave 4	0.02 (0.04)	1.02	0.41	0.01 (0.04)	1.01	0.22	0.18	-0.01 (0.05)	0.99	-0.21	-0.01 (0.03)	0.99	-0.21	0.00
Risky Behaviors - Wave 1	0.23 (0.07)	1.25	3.43***	0.19 (0.07)	1.21	2.78*	0.40	0.33 (0.07)	1.39	4.73***	0.44 (0.05)	1.55	8.07***	-1.28
Birth Control - Wave 1	0.54 (0.23)	1.71	2.29*	0.22 (0.26)	1.25	0.84	0.92	0.32 (0.26)	1.38	1.24	0.14 (0.21)	1.15	0.70	0.54
Risky Behaviors - Wave 2	0.18 (0.08)	1.19	2.19*	0.29 (0.07)	1.33	3.99***	-1.03	0.37 (0.08)	1.44	4.43***	0.45 (0.06)	1.57	7.54***	-0.80
Birth Control - Wave 2	1.01 (0.70)	2.75	1.44	-0.43 (0.66)	0.65	-0.65	1.50	-0.09 (0.54)	0.92	-0.16	-0.38 (0.52)	0.68	-0.73	0.39
Number of Sexual Partners - Wave 3	0.08 (0.07)	1.08	1.04	-0.01 (0.07)	0.99	-0.20	0.91	-0.13 (0.09)	0.88	-1.39	-0.05 (0.06)	0.95	-0.90	-0.74
Birth Control - Wave 3	0.14 (0.09)	1.16	1.63	0.25 (0.08)	1.29	3.11**	-0.91	0.04 (0.10)	1.04	0.41	0.17 (0.08)	1.19	2.31*	-1.02
Risky Behaviors - Wave 4	0.91 (0.17)	2.48	5.38***	0.62 (0.17)	1.86	3.55***	1.21	0.23 (0.21)	1.25	1.08	0.43 (0.16)	1.53	2.63**	-0.76
Birth Control - Wave 4	0.09 (0.07)	1.09	1.20	0.10 (0.06)	1.11	1.69	-0.11	0.07 (0.08)	1.08	0.96	0.06 (0.05)	1.06	1.20	0.11
Low Self-Control														
Wave 1	-0.00 (0.04)	1.00	-0.01	0.04 (0.03)	1.04	1.36	-0.80	0.04 (0.04)	1.04	0.97	-0.07 (0.03)	1.07	2.35*	2.20 *
Wave 2	0.04 (0.05)	1.05	0.85	0.04 (0.05)	1.04	0.74	0.00	0.09 (0.06)	1.09	1.48	0.14 (0.04)	1.15	3.28***	-0.69
Wave 3	0.02 (0.02)	1.02	1.53	0.06 (0.02)	1.06	3.79***	-1.41	0.00 (0.06)	1.00	0.22	0.01 (0.01)	1.01	0.88	-0.16
Wave 4	-0.02 (0.05)	0.98	-0.44	0.05 (0.04)	1.05	1.15	-1.09	0.06 (0.06)	1.06	1.02	-0.04 (0.04)	0.96	1.08	1.39
Depression														
Wave 1	0.02 (0.03)	1.02	0.49	0.00 (0.04)	1.00	0.05	0.40	0.01 (0.04)	1.01	0.29	-0.02 (0.03)	0.98	- 0.63	0.60
Wave 2	0.04 (0.03)	1.04	1.01	-0.01 (0.04)	0.99	-0.40	1.00	0.02 (0.04)	1.02	0.60	0.04 (0.03)	1.04	1.45	-0.40
Wave 3	0.02 (0.03)	1.02	0.55	-0.02 (0.03)	0.98	-0.49	0.94	0.00 (0.04)	1.00	0.06	-0.02 (0.03)	0.98	- 0.64	0.40
Wave 4	0.07 (0.03)	1.07	2.48**	0.05 (0.03)	1.05	1.77	0.47	-0.07 (0.04)	0.93	-1.88	0.04 (0.02)	1.04	1.70	-2.46 *
Anger	0.20 (0.14)	1.22	1.43	0.16 (0.13)	1.17	1.20	0.21	0.02 (0.17)	1.02	0.14	-0.14 (0.12)	0.87	-1.16	0.77
Constant	-10.53 (5.10)	--	-2.06*	4.60 (4.91)	--	0.84	-2.14 *	-11.49 (4.75)	--	-2.42*	-13.88 (3.99)	--	-3.47***	0.39

Note. Entries are in unstandardized coefficients (b), standard errors are in parentheses, relative risk ratios (RRR), and z-tests (z); control variables (e.g., attachment to parents, education, sex, and marital status) were included in the analysis but not presented in the table *p<0.05, **p<0.01, ***p<0.001; Model $\chi 2$ for racial/ethnic minority sample = 1010.85***; Model $\chi 2$ for white sample = 1832.28***.

Table 16. Contibued.

	Model 5						Difference of Coefficients	Model 6						Difference of Coefficients
	Late Onset Substance Abusers							Aggressive & Violently Victimized						
	Racial/Ethnic Minority (n = 95)			White (n = 265)				Racial/Ethnic Minority (n = 113)			White (n = 93)			
	b	RRR	z	b	RRR	z		b	RRR	z	b	RRR	z	
Structured Routines - Wave 1	0.00 (0.09)	1.00	0.00	0.07 (0.06)	1.07	1.28	-0.65	0.18 (0.11)	1.20	1.70	0.04 (0.11)	1.04	0.35	0.90
Structured Routines - Wave 2	-0.02 (0.09)	0.98	-0.25	-0.03 (0.06)	0.97	-0.50	0.09	-0.07 (0.10)	0.94	-0.66	-0.08 (0.11)	0.92	-0.70	0.07
Structured Routines - Wave 3	-0.21 (0.07)	0.81	-3.16**	-0.16 (0.04)	0.86	-3.72***	-0.62	0.00 (0.07)	1.00	0.01	-0.05 (0.08)	0.95	-0.67	0.47
Structured Routines - Wave 4	-0.01 (0.06)	0.99	-0.21	-0.08 (0.05)	0.92	-1.69	0.90	0.01 (0.08)	1.01	0.09	-0.11 (0.09)	0.89	-1.25	1.00
Unstructured Routines - Wave 1	-0.07 (0.07)	0.94	-0.99	0.07 (0.04)	1.07	1.76	-1.74 *	0.17 (0.09)	1.18	1.95*	0.16 (0.08)	1.18	2.12*	0.08
Unstructured Routines - Wave 2	0.01 (0.07)	1.01	0.13	0.00 (0.04)	1.00	0.07	0.12	0.13 (0.09)	1.14	1.51	-0.00 (0.08)	1.00	-0.01	1.08
Unstructured Routines - Wave 3	-0.00 (0.02)	1.00	-0.09	-0.00 (0.02)	1.00	-0.23	0.00	-0.02 (0.03)	0.98	-0.65	0.02 (0.03)	1.02	0.56	-0.94
Unstructured Routines - Wave 4	0.02 (0.05)	1.02	0.44	-0.01 (0.03)	0.99	-0.24	0.51	0.01 (0.06)	1.01	0.19	0.06 (0.06)	1.07	1.14	-0.59
Risky Behaviors - Wave 1	0.09 (0.09)	1.10	1.00	0.02 (0.07)	1.02	0.30	0.61	0.49 (0.08)	1.64	6.24***	0.58 (0.08)	1.79	7.66***	-0.80
Birth Control - Wave 1	0.23 (0.33)	1.26	0.69	0.27 (0.26)	1.31	1.05	-0.10	0.52 (0.29)	1.67	1.75	0.26 (0.32)	1.29	0.81	0.60
Risky Behaviors - Wave 2	0.30 (0.09)	1.35	3.29***	0.37 (0.06)	1.44	5.88***	-0.65	0.61 (0.10)	1.85	6.12***	0.61 (0.10)	1.84	6.28***	0.00
Birth Control - Wave 2	0.66 (0.82)	1.94	0.81	-0.34 (0.62)	0.71	-0.56	0.97	-0.55 (0.61)	0.58	-0.90	-1.56 (0.70)	0.21	-2.22*	1.09
Number of Sexual Partners - Wave 3	-0.00 (0.09)	1.00	-0.03	-0.05 (0.05)	0.95	-0.86	0.49	-0.07 (0.11)	0.93	-0.63	0.01 (0.10)	1.01	0.06	-0.54
Birth Control - Wave 3	0.09 (0.11)	1.10	0.85	0.16 (0.08)	1.18	2.19*	-0.51	0.19 (0.12)	1.21	1.56	0.19 (0.13)	1.21	1.45	0.00
Risky Behaviors - Wave 4	0.20 (0.22)	1.22	0.89	0.40 (0.16)	1.49	2.44**	-0.74	0.72 (0.25)	2.05	2.91**	0.72 (0.26)	2.06	2.80**	0.00
Birth Control - Wave 4	0.03 (0.08)	1.03	0.40	0.03 (0.05)	1.03	0.62	0.00	0.30 (0.11)	1.35	2.65**	0.09 (0.10)	1.09	0.90	1.41
Low Self-Control														
Wave 1	0.03 (0.04)	1.03	0.74	0.06 (0.03)	1.06	2.09*	-0.60	0.07 (0.05)	1.07	1.33	0.09 (0.05)	1.09	1.72	-0.28
Wave 2	0.18 (0.06)	1.20	2.99**	0.16 (0.04)	1.17	3.84***	0.28	0.30 (0.07)	1.35	4.06***	0.11 (0.07)	1.11	1.48	1.92 *
Wave 3	0.07 (0.02)	1.07	3.35***	0.08 (0.01)	1.08	6.16***	-0.45	0.02 (0.02)	1.02	0.96	0.08 (0.02)	1.08	3.24***	-2.12 *
Wave 4	0.03 (0.06)	1.03	0.51	-0.02 (0.04)	0.98	-0.47	0.69	0.09 (0.07)	1.09	1.28	0.09 (0.07)	1.10	1.42	0.00
Depression														
Wave 1	- 0.07 (0.05)	0.93	-1.64	0.03 (0.03)	1.03	0.90	-1.71 *	-0.01 (0.05)	0.99	-0.21	0.13 (0.05)	1.14	2.64**	-1.98 *
Wave 2	0.02 (0.04)	1.02	0.51	-0.04 (0.03)	0.96	-1.29	1.20	0.08 (0.05)	1.08	1.53	-0.12 (0.06)	0.89	-2.14*	2.56 *
Wave 3	0.03 (0.04)	1.03	0.67	-0.01 (0.03)	0.99	-0.19	0.80	0.12 (0.05)	1.13	2.38*	0.05 (0.05)	1.06	1.13	0.99
Wave 4	0.01 (0.04)	1.01	0.20	0.04 (0.02)	1.04	1.70	-0.67	-0.03 (0.05)	0.97	-0.71	0.02 (0.04)	1.02	0.40	-0.78
Anger	0.16 (0.16)	1.18	1.03	-0.12 (0.11)	0.88	-1.09	1.44	0.21 (0.20)	1.24	1.05	-0.03 (0.21)	0.97	-0.16	0.83
Constant	-2.41 (6.12)	--	-0.39	4.04 (4.51)	--	0.90	-0.85	-4.33 (6.02)	--	-0.72	7.39 (6.20)	--	1.19	-1.36

Note. Entries are in unstandardized coefficients (b), standard errors are in parentheses, relative risk ratios (RRR), and z-tests (z); control variables (e.g., attachment to parents, education, sex, and marital status) were included in the analysis but not presented in the table *p<0.05, **p<0.01, ***p<0.001; Model $\chi 2$ for racial/ethnic minority sample = 1010.85***; Model $\chi 2$ for white sample = 1832.28***.

waves. For females, depression is significant at wave one, which may suggest that negative emotions play an important role in the onset of crime and victimization for females. Depression at wave three is significant for males. Contrary to the findings for the female subsample, negative emotions may be more influential in the persistence of offending and victimization for males rather than the onset of crime and victimization.

Race Invariance

Unlike the differences observed between the male and female subsamples, the multinomial logistic regressions for subsamples of racial/ethnic minorities and whites (see Table 16) reveal more similarities than differences. Noteworthy is the failure of low self-control to reach statistical significance for the abused-abusers and safe-substance abusers classes for the minority subsample. Similar to the subsample of females, depression at wave four is statistically significant for the abused-abusers class among minorities. Therefore, it is likely that membership in the abused-abusers class can be partially attributed to depression rather than low self-control. Overall, risky behaviors at wave two are consistently significant predictor of membership in all six classes for both racial subgroups.

Further Analyses

As previously mentioned, constructing latent classes using indicator variables from all four waves of data does not allow for time-ordering to be established. Additional multinomial logistic regressions on subsamples (waves three and four) were run to test the invariance of the models presented in Table 14. Several differences emerge when assessing the association between theoretically derived variables from wave 3 and the victim-offender overlap classes established at wave four. Table 17 shows the findings for

the wave four multinomial logistic regressions for the subsample of the females and male subsample. Consistent with the findings from the full model, unstructured routines do not reach statistical significance for the subsample of females. The failure of unstructured routines reaching statistical significance for females may reflect not adequately capturing gendered routines and risky behaviors. For the male subsample, participation in unstructured routines reaches statistical significance for the aggressive & violently victimized class. This finding may reflect greater engagement in risky behaviors and friendships with deviant individuals among males (Augustyn & McGloin, 2011; Novak & Crawford, 2010).

While low self-control is significant for all classes in the full model, low self-control does not emerge as statistically significant for women in the late onset substance abuse class. Among the subsample of women, the only significant predictor of membership in the late onset substance abuse class is not using birth control. A potential explanation for this difference in findings among males and females could be related to Daly's (1992) drug-connected pathway. The class profile suggests that the individuals in the late onset substance abuse class do not engage in dangerous violent offending but rather they are primarily engaging in substance abuse later in life. This late onset of substance abuse may be connected to a relationship with a drug-involved partner.

Depression fails to provide much explanatory power for most of the victim-offender overlap classes. However, it does significantly predict membership in the abused-abusers class using the full sample. The subsample multinomial logistic regression does not indicate that depression is a statistically significant predictor of membership in the abused-abusers class for males. This finding suggests that men are

Table 17. Multinomial logistic regression for wave 3 and wave 4 female and male subsamples.

	Model 1						Difference of Coefficients	Model 2						Difference of Coefficients	Model 3					
	Abused-Substance Abusers							Abused-Abusers							Safe-Substance Abusers					
	Female (n = 29)			Male (n = 54)				Female (n = 286)			Male (n = *196)*				Female (n = 316)			Male (n = 379)		
	b	RRR	*z*	*b*	RRR	*z*		*b*	RRR	*z*	*b*	RRR	*z*		*b*	RRR	*z*	*b*	RRR	*z*
Structured Routines - Wave 3	-0.08 (0.08)	0.92	-1.06	-0.08 (0.06)	0.93	-1.38	-1.40	-0.05 (0.02)	0.95	-2.24*	-0.04 (0.03)	0.96	-1.28	-0.06	-0.19 (0.03)	0.82	-6.84***	-0.18 (0.03)	0.84	-6.08***
Unstructured Routines - Wave 3	0.01 (0.04)	1.01	0.30	-0.00 (0.02)	1.00	-0.01	-0.22	-0.01 (0.01)	0.99	-1.01	0.00 (0.01)	1.00	0.22	-0.10	0.00 (0.01)	1.00	0.27	0.01 (0.01)	1.01	1.05
Number of Sexual Partners - Wave 3	0.09 (0.13)	1.09	0.68	0.02 (0.09)	1.02	0.23	0.00	-0.11 (0.05)	0.89	-2.32*	-0.03 (0.05)	0.97	-0.64	-0.35	-0.05 (0.05)	0.95	-1.10	-0.06 (0.04)	0.94	-1.43
Birth Control - Wave 3	0.13 (0.14)	1.14	0.93	0.07 (0.11)	1.08	0.66	0.11	0.14 (0.05)	1.15	2.91**	0.19 (0.06)	1.21	3.10**	-0.20	0.11 (0.05)	1.12	2.08*	0.05 (0.05)	1.05	0.91
Low Self-Control - Wave 3	0.11 (0.02)	1.12	4.51***	0.09 (0.02)	1.09	4.31***	3.18 *	0.02 (0.01)	1.02	2.50**	0.05 (0.01)	1.05	4.31***	-0.30	0.04 (0.01)	1.04	4.61***	0.05 (0.01)	1.05	5.42***
Depression - Wave 3	0.04 (0.05)	1.04	0.79	0.04 (0.04)	1.04	0.88	0.00	0.07 (0.02)	1.07	4.04***	-0.01 (0.03)	0.99	-0.38	0.46	0.02 (0.02)	1.02	0.98	0.02 (0.02)	1.02	0.89
Constant	-9.10 (0.78)	--	-2.41*	-2.91 (2.82)	--	-1.03	-4.07 *	-3.22 (1.34)	--	-2.41*	-3.29 (1.62)	--	-2.03*	0.04	-2.14 (1.34)	--	-1.59	0.71 (1.34)	--	0.54

Note. Entries are in unstandardized coefficients (b), standard errors are in parentheses, relative risk ratios (RRR), and z-tests (z); control variables (e.g., attachment to parents, education, sex, and marital status) were included in the analysis but not presented in the table $^{*}p<0.05$, $^{**}p<0.01$, $^{***}p<0.001$; Model $\chi 2$ for female sample = 398.67***; Model $\chi 2$ for male sample =368.03***.

Table 17. Continued.

	Model 4						Difference of Coefficients	Model 5						Difference of Coefficients
	Late Onset Substance Abusers							Aggressive & Violently Victimized						
	Female (n = 38)			Male (n = *60)*				Female (n = 35)			Male (n = 106)			
Structured Routines - Wave 3	*b*	RRR	*z*	*b*	RRR	*z*		*b*	RRR	*z*	*b*	RRR	*z*	
Unstructured Routines - Wave 3	-0.02 (0.06)	0.98	-0.38	-0.01 (0.05)	0.99	-0.16	-0.13	-0.10 (0.07)	0.90	-1.50	-0.05 (0.04)	0.95	-1.26	-0.62
Number of Sexual Partners - Wave 3	-0.02 (0.04)	0.98	-0.56	-0.01 (0.02)	0.99	-0.23	-0.22	-0.06 (0.04)	0.94	-1.50	0.04 (0.02)	1.04	2.33*	-2.24 *
Birth Control - Wave 3	0.10 (0.11)	1.11	0.90	0.00 (0.08)	1.00	0.00	0.74	0.13 (0.11)	1.14	1.15	0.16 (0.06)	1.17	2.44*	-0.24
Low Self-Control - Wave 3	0.23 (0.11)	1.26	2.07*	0.19 (0.10)	1.21	1.94*	0.27	0.12 (0.12)	1.12	0.93	0.24 (0.08)	1.27	3.08**	-0.83
Depression - Wave 3	0.00 (0.02)	1.00	0.03	0.08 (0.02)	1.08	4.18***	-2.83 *	0.06 (0.02)	1.06	2.64**	0.08 (0.01)	1.08	5.18***	-0.89
Constant	0.01 (0.04)	1.01	0.22	0.04 (0.04)	1.04	0.89	-0.53	0.01 (0.04)	1.01	0.20	0.05 (0.03)	1.05	1.66	-0.80
	-3.79 (3.20)	--	-1.18	-7.30 (2.61)	--	-2.80**	0.85	-6.58 (3.31)	--	-1.99*	-5.97 (2.10)	--	-2.85**	-0.16

Note. Entries are in unstandardized coefficients (b), standard errors are in parentheses, relative risk ratios (RRR), and z-tests (z); control variables (e.g., attachment to parents, education, sex, and marital status) were included in the analysis but not presented in the table *p<0.05, **p<0.01, ***p<0.001; Model $\chi 2$ for female sample = 398.67***; Model $\chi 2$ for male sample =368.03***.

driven to engage in intimate partner violence by low self-control and risky behaviors as opposed to negative emotionality.

As seen in the invariance test of the full model, depression significantly predicts membership in the abused-abusers class for the racial/ethnic minority subsample. When looking solely at predictors from wave three (see Table 18), depression is the only variable that emerges as significant for the abused-abusers class. Inconsistent with the full model, depression also reaches statistical significance for predicting membership in the abused-abusers class for the white subsample; however, engaging in risky behaviors has a stronger impact on class membership.

Structured routines do not significantly predict membership in any of the classes for the subsample of white respondents. This indicates that routines do not significantly alter offending opportunities nor victimization risk among white respondents. For the racial/ethnic minority subsample, structured routines do not conform to expectations. Put another way, for several classes structured routines increase likelihood of membership. This finding contradicts the expectations of routine activity theory, however this may reflect the unique experiences of racial/ethnic minorities in society. For example, what may be considered a protective factor for whites may be a risk factor for minorities. Unstructured routines are statistically significant for predicting membership in the aggressive & violently victimized class for the white subsample, indicating that there is a specific function within the unstructured routines that increases exposure to violent offenders and simultaneously provides opportunity to engage in offending. For the subsample of minorities, structured routines are statistically significant in predicting membership in the safe-substance abusers and aggressive & violently victimized classes.

Table 18. Multinomial logistic regression for wave 3 and wave 4 racial/ethnic minority and white subsamples.

	Model 1							Model 2							Model 3					
	Abused-Substance Abusers						Difference of Coefficients	Abused-Abusers						Difference of Coefficients	Safe-Substance Abusers					
	Racial/Ethnic Minority (n = 34)			White (n = 49)				Racial/Ethnic Minority (n = 239)			White (n = 243)				Racial/Ethnic Minority (n = 148)			White (n = 547)		
	b	RRR	z	b	RRR	z		b	RRR	z	b	RRR	z		b	RRR	z	b	RRR	z
Structured Routines - Wave 3	-0.05 (0.07)	0.95	-0.78	-0.10 (0.06)	0.91	-1.62	0.54	-0.05 (0.03)	0.96	-1.71	-0.05 (0.03)	0.96	-1.73	0.00	-0.30 (0.05)	0.74	-6.42***	-0.16 (0.02)	0.85	-7.12
Unstructured Routines - Wave 3	-0.04 (0.03)	0.96	-1.10	0.02 (0.02)	1.02	0.75	-1.66 *	-0.01 (0.01)	0.99	-0.71	-0.00 (0.01)	1.00	-0.17	-0.71	0.01 (0.02)	1.01	0.42	0.01 (0.01)	1.01	1.13
Number of Sexual Partners - Wave 3	0.12 (0.11)	1.13	1.13	-0.03 (0.10)	0.97	-0.33	1.01	-0.05 (0.05)	0.96	-0.90	-0.11 (0.05)	0.89	-2.21*	0.85	-0.03 (0.06)	0.97	-0.47	-0.08 (0.04)	0.93	-2.18*
Birth Control - Wave 3	-0.14 (0.15)	0.87	-0.95	0.29 (0.11)	1.32	2.69**	-2.31 *	0.06 (0.05)	1.06	1.15	0.25 (0.05)	1.29	4.71***	-2.69 *	0.06 (0.07)	1.06	0.84	0.09 (0.05)	1.09	1.94*
Low Self-Control - Wave 3	0.07 (0.02)	1.07	3.03**	0.12 (0.02)	1.12	5.59***	-1.77 *	0.01 (0.01)	1.01	1.42	0.05 (0.01)	1.06	5.23***	-2.83 *	0.03 (0.01)	1.03	2.40*	0.06 (0.01)	1.06	7.18***
Depression - Wave 3	0.07 (0.05)	1.07	1.56	0.03 (0.04)	1.03	0.61	0.62	-0.05 (0.02)	1.05	2.27*	0.04 (0.02)	1.04	2.14*	-3.18 *	0.02 (0.03)	1.02	0.68	0.02 (0.02)	1.02	1.11
Constant	-7.71 (3.41)	--	-2.26*	-4.77 (3.03)	--	-1.57	-0.64	-2.19 (1.45)	--	-1.51	-4.14 (1.46)	--	-2.84**	0.95	0.49 (1.87)	--	0.31	-1.64 (1.10)	--	-1.50

Note. Entries are in unstandardized coefficients (b), standard errors are in parentheses, relative risk ratios (RRR), and z-tests (z); control variables (e.g., attachment to parents, education, sex, and marital status) were included in the analysis but not presented in the table
*p<0.05, **p<0.01, ***p<0.001; Model $\chi 2$ for racial/ethnic minority sample = 275.26***; Model $\chi 2$ for white sample = 470.60***.

Table 18. Continued.

	Model 4						Difference of Coefficients	Model 5						Difference of Coefficients
	Late Onset Substance Abusers							Aggressive & Violently Victimized						
	Racial/Ethnic Minority (n = 50)			White (n = 48)				Racial/Ethnic Minority (n = 71)			White (n = 70)			
	b	RRR	z	b	RRR	z		b	RRR	z	b	RRR	z	
Structured Routines - Wave 3	0.00 (0.05)	1.00	0.10	-0.04 (0.05)	0.96	-0.72	0.57	-0.11 (0.05)	0.90	-2.08*	-0.04 (0.05)	0.96	-0.85	-0.99
Unstructured Routines - Wave 3	-0.03 (0.03)	0.97	-1.12	0.01 (0.03)	1.01	0.45	-0.94	-0.01 (0.05)	0.99	-0.31	0.04 (0.05)	1.04	2.13*	-0.71
Number of Sexual Partners - Wave 3	0.18 (0.09)	1.19	1.90	-0.12 (0.10)	0.88	-1.21	2.23 *	0.21 (0.08)	1.23	2.59**	0.12 (0.08)	1.13	1.56	0.80
Birth Control - Wave 3	0.23 (0.10)	1.25	2.21*	0.21 (0.10)	1.23	2.00*	0.14	0.16 (0.09)	1.17	1.71	0.26 (0.09)	1.30	2.88**	-0.79
Low Self-Control - Wave 3	0.04 (0.02)	1.04	2.17*	0.04 (0.02)	1.04	2.07*	0.00	0.05 (0.02)	1.05	2.88**	0.09 (0.02)	1.09	5.19***	-1.41
Depression - Wave 3	0.07 (0.04)	1.07	1.88	-0.01 (0.04)	0.99	-0.25	1.41	0.03 (0.04)	1.03	0.92	0.05 (0.04)	1.05	1.46	-0.35
Constant	-8.06 (2.78)	--	-2.91*	-3.25 (2.93)	--	-1.11	-1.19	-5.21 (2.44)	--	-2.14	-9.22 (2.52)	--	-3.65***	1.14

Note. Entries are in unstandardized coefficients (b), standard errors are in parentheses, relative risk ratios (RRR), and z-tests (z); control variables (e.g., attachment to parents, education, sex, and marital status) were included in the analysis but not presented in the table $^{*}p<0.05$, $^{**}p<0.01$, $^{***}p<0.001$; Model $\chi 2$ for racial/ethnic minority sample = 275.26***; Model $\chi 2$ for white sample = 470.60***.

Conclusion

Overall, the above findings emphasize the importance of considering variation within the victim-offender overlap. Just as different patterns emerge among offending populations and victimization populations, unique taxonomies of victim-offenders also exist. Varying patterns of victimization experiences and offending behaviors are linked to the formation of unique groups that distinctly differ from one another. Consistent with expectations, theoretically derived variables do not always predict membership in each class when compared to the reference class of *safe & compliant* respondents.

Testing the invariance of the findings across gender and race demonstrates that theoretical explanations for the victim-offender overlap are not consistent across gender and race. The differences in findings across the multinomial logistic regression models emphasizes the need to measure differences within the victim offender overlap rather than conceptualizing the overlap as all victim-offenders. Put differently, when looking at the multinomial logistic regressions predicting membership in the different victim-offender overlap taxonomies, variables derived from general theories uniquely influence group membership. For example, general strain theory explains membership in classes that include abuse that tends to be consistent with the cycle of violence, while structured routines fail to explain membership in classes that primarily involve crime and victimization that takes place inside of the home. Moreover, these differences indicate that not all of the findings are invariant across gender and race. Taken together, these findings have several implications for theory and policy and provide some direction for future research. It is toward those implications that the final chapter of this dissertation now turns.

CHAPTER FIVE

DISCUSSION

While the victim-offender overlap has become an accepted and empirically supported concept in criminology, there is much about the overlap that still remains unknown. Previous studies have been limited in scope when it comes to understanding the victim-offender overlap, often relying on cross-sectional data to capture the association between victimization and offending. By comparison, research on pathways to offending as well as studies focused either exclusively on victimization or offending have demonstrated that there is considerable variation in victimization and offending, suggesting that the victim-offender overlap is also more complex.

Given the crude prior operationalization of the victim-offender overlap (e.g., including all victim-offenders in the same group) little consensus on theoretical explanations for the overlap has emerged. In addition to developing unique victim-offender overlap taxonomies, this study sought to test whether theoretically derived variables can better explain membership in distinct victim-offender taxonomies when compared to predicting membership in a monolithic overlap variable (i.e., non-offender/non-victim, offenders-only, victims-only, and victim-offenders).

The first goal of this dissertation was to determine if unique victim-offender overlap taxonomies exist. Using a latent class analysis methodology and 115 indicator variables, seven different victimization-offending classes were established. Each class has a unique distribution of offending behaviors and victimization experiences drawn from four waves of the National Longitudinal Study of Adolescent to Adult Health (Add Health) data. The *safe & compliant* class consists of respondents who reported no

offending and no victimization across the four waves. The second class, *adolescence limited*, consists of those who reported offending and victimization during the first two waves of data. The class labeled *abused-substance abusers* includes individuals who abuse substances at all four waves of data and were victims of childhood neglect and intimate partner violence. The *abused-abusers* class includes intimate partner violence perpetrators and victims. The fifth class, *safe-substance abusers,* primarily engage in substance abuse across the four waves, but experience little to no victimization. Individuals in the *late onset substance abuse* class report substance abuse during waves three and four and experienced mild childhood neglect and abuse. The last class, *aggressive & violently victimized,* includes individuals that resemble the life-course persistent offenders identified in research on developmental criminology (Moffitt, 1993). The individuals in this class engage in a wide array of offending behaviors across all four waves including fighting, theft, substance abuse, and property offenses. Additionally, they report victimization across the four waves of data. What is more, when the latent class analysis was performed using twenty-eight indicators derived exclusively from wave four, the class findings were replicated with the exception of the adolescence limited class, which was to be expected based on the age of the sample at wave four. In sum, the latent class analysis also provides support for the hypothesis that variation *within* the victim-offender overlap exists.

As documented in the review of the literature for this dissertation, previous studies have faced challenges in their ability to theoretically explain the victim-offender overlap. Accordingly, the second goal of this study was to test how well variables derived from routine activity/lifestyle theory, low self-control theory, and general strain theory

predict membership in the different victim-offender overlap taxonomies. Several findings warrant further discussion. Overall, the variables derived from three general theories of crime do not consistently predict membership in each class when compared to the *safe & compliant* class (i.e., the reference group with relatively no victimization or offending histories). This may help explain the inconsistent findings of previous studies. A summary of the directionality of significant findings can be found in Table 19. Additionally, when comparing the results of the multinomial logistic regressions (see Table 13) to the baseline regressions (see Tables 8 and 9) the findings further support the need for a more thorough operationalization of the victim-offender overlap. For example, in the logistic regression, depression does not emerge as statistically significant. Depression, however, significantly predicts being classified as a victim-only individual and victim-offender. Findings from the more complex conceptualization of the victim-offender overlap demonstrates that depression is only a significant predictor for membership in three of the victim-offender overlap classes (e.g., adolescence limited, abused-abusers, and aggressive & violently victimized). In other words, negative emotionality – an indicator consistent with general strain theory – plays a more important role in some types of overlap but not all. This nuanced finding would not be evident in an analysis that relies on a more typical operationalization of the overlap.

Support for measuring the variation within the victim-offender overlap is further highlighted by the wave four analyses (see Table 14). Low self-control consistently predicts membership in all five classes. Using a monolithic operationalization of the overlap would likely produce disparate findings for the partial theoretical tests of routine activity/lifestyle theory and general strain theory. Despite low self-control's ability to

Table 19. Summary of full model findings.

	Full Model						Gender Invariance: Female						Gender Invariance: Male						Race Invariance: Minority						Race Invariance: White					
	C2	C3	C4	C5	C6	C7	C2	C3	C4	C5	C6	C7	C2	C3	C4	C5	C6	C7	C2	C3	C4	C5	C6	C7	C2	C3	C4	C5	C6	C7
Structured Routines - Wave 1																										+				
Structured Routines - Wave 2																					+									
Structured Routines - Wave 3		−		−	−				−	−	−									−	−		−						−	
Structured Routines - Wave 4				−						−					−		−								−	−		−		
Unstructured Routines - Wave 1	+	+				+								+				+		+				+		+		+		
Unstructured Routines - Wave 2																												+		
Unstructured Routines - Wave 3													+		+															
Unstructured Routines - Wave 4																														
Risky Behaviors - Wave 1	+	+	+	+		+	+	+	+	+		+	+	+	+	+		+	+	+	+	+		+	+	+	+	+		+
Birth Control - Wave 1						+													+		+									
Risky Behaviors - Wave 2	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Birth Control - Wave 2						−												−												−
Number of Sexual Partners - Wave 3													−	−		−														
Birth Control - Wave 3	+	+	+	+	+	+	+	+	+			+			+										+	+	+	+	+	
Risky Behaviors - Wave 4		+	+	+	+	+	+	+	+	+	+			+	+		+	+	+	+	+			+		+	+	+	+	+
Birth Control - Wave 4																		+						+						
Low Self-Control																														
Wave 1		+		+	+	+		+		+										+						+		+	+	
Wave 2	+	+		+	+	+		+		+	+	+	+	+		+	+			+			+	+		+		+	+	
Wave 3	+	+	+		+	+	+	+	+		+	+		+	+		+	+		+			+		+	+	+		+	+
Wave 4	+						+												+											
Depression																														
Wave 1	+											+	+																	−
Wave 2	+																								+					+
Wave 3						+												+						+						
Wave 4			+						+					+							+									
Anger																														

Note. + indicates significant positive association; − indicates significant negative association.
C2 = Adolescence Limited
C3 = Abused-Substance Abusers
C4 = Abused-Abusers
C5 = Safe-Substance Abusers
C6 = Late Onset Substance Abusers
C7 = Aggressive & Violently Victimized

predict membership in each of the victim-offender overlap taxonomies, failure to consider the variation within the overlap may still produce inconsistent findings. Put differently, effects may be overestimated or underestimated depending on the sample characteristics and specific victimization and offending measures included in the study. More specifically, low self-control uniquely influences the likelihood of membership across classes. For example, an increase in low self-control reflects a 10 percent increased likelihood of being classified as an *abused-substance abuser* while the same one-unit increase in low self-control corresponds to a 3 percent increase in the likelihood of being assigned to the *abused-abusers* class.

The final goal of this study was to test the invariance of the above findings across gender and race. Toward this end, theoretical differences emerged across gender and race. Most notably, depression is a significant predictor of membership in the *abused-abusers* class for females but not males. Prior research on female offenders and victims would suggest that this finding is not unexpected. In general, females are influenced more heavily by emotions than men. For example, females may become depressed as a consequence of being victimized while males may act out violently (Joon Jang, 2007; Kruttschnitt, 2013). This finding is also consistent with several female pathways to crime identified by Daly (1992). For example, the *battered woman* engages in intimate partner violence in self-defense against an abusing partner. Similarly, the *harmed and harming woman* follows the cycle of violence, experiencing childhood abuse and perpetrating violence in adulthood. Consistent with general strain theory, being a victim of childhood abuse and intimate partner violence are strains that lead to negative emotions, such as depression (Agnew. 2006).

The results from the analyses testing invariance across race also produce a notable finding. Low self-control does not reach statistical significance for racial/ethnic minorities in the *abused-abusers* and *safe-substance abusers* classes. For the sample of white respondents, low self-control remained a significant predictor of membership in all six classes. Instead of membership being influenced by low self-control for the minority subsample, risky behaviors and structured routines predict whether an individual was classified as an *abused-abusers* or *safe-substance abusers*. This difference suggests that individual traits, such as low self-control, may not be as applicable to understanding crime and victimization among minority races relative to white respondents. This may be due a variety of contextual circumstances (e.g., deviant peers, disorganized neighborhoods, and lack of formal/informal social controls) that are disproportionately experienced by minorities (Sampson & Groves, 1989; Ulmer, Harris, & Steffensmeier, 2012).

In an effort to address potential concerns associated with the establishment of time ordering in the latent class analysis an additional set of analyses was also conducted using theoretically derived variables from wave three to predict membership in victim-offender overlap taxonomies constructed at wave four. This simplified model provides a clearer examination of the causal relationships between theoretically derived variables and the victim-offender overlap taxonomies. Low self-control emerges as the only consistent predictor across all five classes. This finding is not surprising given the wide support for low self-control across a variety of crime types and demographics (Holtfreter, Reisig, Pratt, & Holtfreter, 2015; Reisig & Holtfreter, 2013, 2018; Reisig, Wolfe, & Holtfreter, 2011; Wolfe, Reisig, & Holtfreter, 2016). Unstructured routines, surprisingly

Table 20. Summary of wave 4 findings.

	Full Model					Gender Invariance: Females					Gender Invariance: Males					Race Invariance: Minority					Race Invariance: White				
	C3	C4	C5	C6	C7	C3	C4	C5	C6	C7	C3	C4	C5	C6	C7	C3	C4	C5	C6	C7	C3	C4	C5	C6	C7
Structured Routines		−	−		−		−	−					−					−		−					
Unstructured Routines															+										+
Number of Sexual Partners		−			+		−								+					+		−	−		
Birth Control		+	+	+	+		+	+	+			+		+	+				+		+	+	+	+	+
Low Self-Control	+	+	+	+	+	+	+	+		+	+	+	+	+	+	+		+	+	+	+	+	+	+	+
Depression		+					+										+					+			
Anger																									

Note. + indicates significant positive association; − indicates significant negative association.
C3 = Abused-Substance Abusers
C4 = Abused-Abusers
C5 = Safe-Substance Abusers
C6 = Late Onset Substance Abusers
C7 = Aggressive & Violently Victimized

do not significantly predict membership in any of the groups. Consistent with research on childhood maltreatment, negative emotions, and intimate partner violence, the *abused-abusers* class is the only taxa significantly associated with depression. Table 20 depicts the direction of the significant associations between the wave three predictor variables and the five victim-offender overlap classes derived from wave four.

Contributions to Theory

The results from this dissertation have several implications for theory. Most importantly, this study emphasizes the need to consider victimization when establishing general theories of crime, which have traditionally focused on explaining offending outcomes. The findings from this study have identified strengths and weaknesses of three frequently tested general theories of crime in predicting membership in unique victim-offender taxonomies. Much like early attempts to apply general theories (many of which were developed and tested on samples of males) to female criminality, the victim-offender overlap has been similarly examined. In other words, theories that were not intended to explain the overlap have been applied to combined victimization and offending outcomes. Just as feminist pathways researchers have moved the scholarship on differences within female criminality forward, consideration of the within-group differences in the victim-offender overlap will do the same. Feminist criminology highlights how female offenders should not be assumed to be equal; rather, there is within-sex variation in background characteristics as well as unique risks and needs (Pusch & Holtfreter, 2018; Somers & Holtfreter, 2018; Wattanaporn & Holtfreter, 2014). Similarly, all victim-offenders should not be assumed to be cut from the same cloth. Along these lines, members in the abused-abusers class likely have different risks and

needs than members in the aggressive & violently victimized class. These differences have implications not just for theory, but also for criminal justice officials considering how best to treat offenders who have also experienced victimization.

Recall that low self-control is a significant predictor of membership in all six victim-offender overlap taxonomies. Risky behaviors, a dimension of routine activity/lifestyle theory, is also significant in predicting class membership in each class. Low self-control and risky behaviors are both statistically significant for each victim-offender overlap taxonomy, emphasizing the importance of considering both of these variables in studying the victimization-offending relationship. This finding is not surprising given the connections between routine activity theory and low self-control identified in previous studies of victimization (Holtfreter, Reisig, & Pratt, 2008; Reisig & Golladay, 2018)

The findings for negative emotionality in the form of depression provide partial support for general strain theory as an explanation for some forms of the overlap. Classes that include childhood maltreatment, intimate partner violence, and/or severe victimization were all significantly associated with depression. As suggested by general strain theory, negative emotions result from strains such as victimization and can lead to criminal coping (Agnew, 2006). Future tests of general strain theory in the overlap context should consider the role of a more comprehensive set of negative emotions.

Future Research

The findings from this study contribute to the extant literature on the victim-offender overlap and also suggest some directions for future research. While this research included a more diverse range of victimization and offending outcomes, it was limited by

the measures available in the data. The Add Health data includes a variety of offending and victimization outcomes, the inclusion of additional measures (e.g., fraud victimization and bullying) would be useful. Previous studies of the overlap have shown that low self-control predicts fraud offending, fraud victimization, and their overlap (Holtfreter, Reisig, et al., 2010). Whether these relationships hold longitudinally remains an open empirical question.

This study moved forward the research on establishing unique victim-offender classes. However, additional groups likely exist. For example, there may be a group consisting of individuals who were victims of bullying and also participated in bullying perpetration. General strain theory has frequently been used to explain the relationship between bullying perpetration and victimization and would likely significantly predict membership in this group. Other important victimization and offending measures to incorporate include forms of white-collar crime, property victimization, and identity theft perpetration and victimization. Many studies on pathways to crime have identified an economically motivated group. For example, Reisig, Holtfreter, and Morash (2006) found an *economically motivated women* pathway in their study of female offenders that differed considerably from women who followed gendered pathways. Economically motivated offenders would likely be part of a taxonomy that had little (if any) prior victimization experiences. Additionally, financially motivated offenders have distinctly different demographics than violent and property offenders (Holtfreter, 2013, 2015) Establishing additional victim-offender overlap taxonomies may also help elaborate patterns that are more consistent with theoretical expectations. For example, routine activities may increase membership in a class with a high level of property victimization

and an economically motivated class may be more strongly influenced by low levels of self-control.

In addition to routine activity/lifestyle theory, low self-control theory, and general strain theory variables included in the current study, additional variables derived from other theories of crime should be considered. The risky behavior scale for the current study consists of deviant peers and risky sexual behavior (e.g., number of sexual partners and not using birth control). Future studies should include risky behaviors such as propensity towards instigating violence or retaliation, risky drug use, and additional risky sexual behaviors. Additional negative emotions including anxiety, anger, fear, and hopelessness should be used to further measure the predictability of general strain theory (Daniels & Holtfreter, 2018).

Along those lines, additional theories in need of investigation include social control and social disorganization. Social control – particularly conventional bonds – may help account for engaging in risky behaviors and preventing crime opportunities in addition to reducing victimization risk. Family support may act a potential moderator of the relationship between victimization and offending (Holtfreter, Reisig, & Turanovic, 2016, 2017). Social disorganization takes into account contextual factors, such as neighborhood effects, which may also influence opportunities to offend and victimization risk.

Policy Implications

Within the criminal justice system, resources are limited, so evidence-based policies are critical. This study provides several policy implications. Examining the victim-offender overlap longitudinally can help determine crucial intervention points to

prevent further offending and victimization. Additionally, more specialized strategies should be implemented to address unique risks and needs of specific victim-offender overlap groups. For example, childhood neglect and abuse is present in several of the established victim-offender overlap taxonomies (e.g., abused-substance abusers, late onset substance abusers, and aggressive & violently victimized). Over 31 percent of the current sample was victims of childhood abuse and/or neglect. This is consistent with the approximation of 1 in 4 children experiencing at least one form of child abuse (U.S. Department of Health & Human Services, 2018). This statistic emphasizes the need for early intervention. Abused and neglected children can experience psychological, behavioral, and relationship consequences into adulthood. Victims of childhood abuse are more likely to exhibit psychological problems such as depression and anxiety (Silverman, Reinherz, & Giaconia, 1996). Additionally, experiences of child maltreatment increase the likelihood of substance abuse throughout adulthood by about 1.5 times (Widom, Marmorstein, & White, 2006).

Childhood abuse also negatively affects adult relationships (Colman & Widom, 2004). These negative consequences of childhood victimization are important to note because they help explain offending patterns seen in several of the victim-offender overlap classes. Early intervention for victims of childhood maltreatment could help prevent future offending behaviors and/or victimization experiences later in life. For example, members of the late onset substance abuse class were victims of child abuse/neglect and it could be hypothesized that their substance abuse in adulthood is a negative consequence of this victimization. As suggested by prior research, childhood abuse negatively influences relationships in adulthood as well (Colman & Widom, 2004).

Among the respondents classified as abused-abusers, about 41 percent were victims of childhood maltreatment. Depression was also a significant predictor of being assigned to the abused-abusers class. Both depression and relationship issues are consequences of early childhood victimization. Policies directed at child abuse victims, in the early stages of life, is not only important for preventing future psychological and relationship problems, it is also a vital component in reducing future victimization and offending.

The events and consequences discussed above are commonly referred to as adverse childhood experiences (ACEs) and have been found to have both short and long term negative effects. For example, witnessing parental abuse, parental substance abuse, and childhood neglect and abuse. These experiences have been correlated with negative consequences beyond offending and victimization risk including lower cognitive development, heart disease, obesity, and eating disorders (Felitti et al., 1998; Silverman et al., 1996; U.S. Department of Health and Human Services, 2016). Many of the ACEs included in the current study are not consistent across the different victim-offender overlap classes showing how adverse childhood experiences have unique influences on the victim-offender relationship. While several of these ACEs are included in the current study, items such as exposure to parental violence, parental substance abuse, and additional forms of childhood abuse should be considered in future studies. Additionally, ACEs and their relation to crime and victimization can be used to help further inform research on other physical, behavioral, and psychological consequences of childhood abuse.

Invariance testing shows that different programs are needed for unique populations. For example, female offenders are more likely to be influenced by negative

emotions compared to men, which may lead to substance abuse as a form of coping (Joon Jang, 2007; Kruttschnitt, 2013; Somers & Holtfreter, 2018). Therefore, policies designed to help female victim-offenders should incorporate therapeutic elements to assist in coping with negative emotions. Also, females comprise a majority of the *safe-substance abusers* class. These individuals do not need interventions primarily aimed at preventing crime but rather providing substance abuse counseling and/or developing more pro-social coping mechanisms. While depression did not significantly predict membership in the *safe-substance abusers* class for males or females, other negative emotions not included in this study (e.g., anxiety, hopelessness, and fear) may be increasing substance abuse coping. The call for gender responsive programming has been increasingly prevalent in criminological research due to the distinct differences between male and female offenders (Holtfreter & Morash, 2003; Holtfreter & Wattanaporn, 2014; Pusch & Holtfreter, 2018; Wattanaporn & Holtfreter, 2014).

Differences in the findings were also present between the white and racial/ethnic minority subsamples analyses. The most notable difference was the inability of low self-control to predict membership for minorities categorized in the *abused-abusers* and *safe-substance abusers* classes. As hypothesized above, these differences may be influenced by social factors that disproportionately plague minority races. To this end, policies should also reflect the different experiences of whites and minority races.

Conclusion

Despite the widespread acceptance of the victim-offender overlap in criminological research, there is still a large gap in the understanding of this concept. The empirical findings from this dissertation have begun to fill some of the voids in the

victimization-offending literature. Most notably, the latent class analysis provides evidence that variation *within* the victim-offender overlap exists. Victim-offenders have often been treated uniformly, not permitting consideration of differences in victimization experiences and offending patterns. As suggested by pathways literature, all offenders and victims are not the same. Different patterns in offending and victimization exist among the unique pathways. Previous research on the victim-offender overlap has largely failed to consider these differences. The findings from the latent class analysis and subsequent multinomial logistic regressions emphasizes the need to examine variation when studying both victimization and offending. What is more, this study provides evidence in favor of examining the ways in which general theories help explain varying aspects of the victim-offender overlap. Nonetheless, general theories of crime do not apply equally across demographic subgroups. While this dissertation sheds some much needed light on understanding the complexities of the victim-offender overlap, there is still much to learn.

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APPENDIX A

OFFENDING AND VICTIMIZATION VARIABLES USED FOR LATENT CLAS ANALYSIS

APPENDIX A: Offending and victimization variables used for Latent Class Analysis.

Offending

Violent Offending (wave 1)
- Hurt someone badly enough to need bandages or care from a doctor or nurse.
- Use or threaten to use a weapon to get something from someone.
- Take part in a fight where a group of your friends was against another group.
- You got into a physical fight.
- You pulled a knife or gun on someone.
- You shot or stabbed someone.
- Rape

Violent Offending (wave 2)
- Use or threaten to use a weapon to get something from someone.
- Take part in a fight where a group of your friends was against another group.
- Been initiated into a gang.
- You pulled a knife or gun on someone.
- You shot or stabbed someone.
- Hurt someone badly enough to need bandages or care from a doctor or nurse.
- Rape

Violent Offending (wave 3)
- Use or threaten to use a weapon to get something from someone.
- Take part in a fight where a group of your friends was against another group.
- Hurt someone badly enough to need bandages or care from a doctor or nurse.
- You pulled a knife or gun on someone.
- You shot or stabbed someone.

Violent Offending (wave 4)
- Used or threatened to use a weapon to get something from someone.
- Take part in a fight where a group of your friends was against another group.
- Get into a serious physical fight.
- Hurt someone badly enough to need bandages or care from a doctor or nurse.
- You pulled a knife or gun on someone.
- You shot or stabbed someone.

Property Offending (waves 1 & 2)
- Paint graffiti or signs on someone else's property or in a public place.
- Deliberately damage property that didn't belong to you.
- Take something from a store without paying for it.
- Drive a car without its owner's permission.
- Steal something worth more than $50.
- Go into a house or building to steal something.
- Steal something worth less than $50.

Property Offending (wave 3)
- Deliberately damage property that didn't belong to you.
- Steal something worth more than $50.
- Go into a house or building to steal something.
- Steal something worth less than $50.
- Buy, sell, or hold stolen property.

Property Offending (wave 4)
- Deliberately damage property that didn't belong to you.
- Steal something worth more than $50.
- Go into a house or building to steal something.
- Steal something worth less than $50.
- Buy, sell, or hold stolen property.

Substance Abuse (waves 1 & 2)
- Used marijuana.
- Used illicit drugs (e.g., cocaine, heroin, LSD).
- Underage drinking.
- Drinking and driving.

Substance Abuse (wave 3)
- Used marijuana.
- Used illicit drugs (e.g., cocaine, heroin, LSD).
- Drinking and driving.

Substance Abuse (wave 4)
- Used marijuana.
- Used illicit drugs (e.g., cocaine, heroin, LSD).
- Drinking & legal issues (e.g., drinking & driving, public intoxication, etc.)

Child Abuse (wave 3)
- Left your child home alone, even when an adult should have been with them.
- Not taken care of your child's basic needs, such as keeping them clean or providing food or clothing.
- Slapped, hit, or kicked your child.

Sex Offenses (waves 1 & 2)
- Sex in exchange for drugs.

Sex Offenses (wave 3)
- Paid someone to have sex with you.
- Paid to have sex with someone.

Sex offenses (wave 4)
- Insisted [initials] had sex with you.

Fraud Offending (waves 3 & 4)
- Use someone else's credit card, bank card, or ATM card without their permission or knowledge.
- Deliberately wrote a bad check.

Delinquency (waves 1 & 2)
- Lie to your parent or guardians about where you had been or whom you were with?
- Run away from home.
- Spent the night away from home without permission.

Drug Offenses (waves 1, 2, 3, & 4)
- Sell marijuana or other drugs.

Intimate Partner Violence (wave 4)
- Threatened [initials] with violence, pushing, or shoving, or throwing something that could hurt them.
- Slapped, hit, or kicked [initials].

Victimization

Violent Victimization (waves 1 & 2)
- Someone pulled a knife or gun on you.
- Someone shot you.
- Someone cut or stabbed you.
- You were jumped.
- You were raped.

Violent Victimization (wave 3)
- Someone pulled a gun on you.
- Someone pulled a knife on you.
- Someone shot you.
- Someone stabbed you.
- You were beaten up, but nothing was stolen from you.
- You were beaten up and something was stolen from you.

Violent Victimization (wave 4)
- Someone pulled a knife or gun on you.
- Someone shot or stabbed you.
- Someone slapped, hit, chocked, or kicked you.
- You were beat up.
- You were raped.

Childhood Maltreatment (wave 3)
- Childhood neglect
- Childhood abuse
- Childhood sexual abuse

Intimate Partner Violence (wave 2)
- Verbal abuse (e.g., called you names, threatened you with violence, insulted you).
- Physical abuse (e.g., pushed or shoved you, threw something that could hurt you).

Intimate Partner Violence (wave 4)
- [Initials] threatened you with violence, pushing, or shoving, or throwing something that could hurt you.
- [Initials] slapped, hit, or kicked you.

Property Victimization (wave 4)
- Property stolen worth more than $50

Note. All items are dichotomously coded (1 = *yes*; 0 = *no*).

APPENDIX B

ITEMS USED IN ROUTINE ACTIVITY/LIFESTYLE THEORY SCALES

Appendix B. Items used in routine activity/lifestyle theory scales.

- Wave 1
  - Structured Routines
    - In the past 12 months, how often did you attend religious services?
    - In the past 12 months, how often did you attend church youth activities?
    - Before the age of 18, did you participate in volunteer activities? (measured at wave 3)
  - Unstructured Routines
    - Participatng in individual sports or recreation.
    - Participate in team sports.
    - Hanging out with friends.
  - Risky Behaviors
    - Number of sexual partners
    - Use of birth control during sexual encounters (RC).
    - Of your 3 best friends, how many drink alcohol at least once a month?
    - Of your 3 best friends, how many use marijuana at least once a month?
- Wave 2
  - Structured Routines
    - In the past 12 months, how often did you attend religious services?
    - In the past 12 months, how often did you attend youth church activities?
  - Unstructured Routines
    - Participating in individual sports or recreation.
    - Participating in team sports.
    - Hanging out with friends.
  - Risky Behaviors
    - Number of sexual partners.
    - Use of birth control during sexual encounters (RC).
    - Of your 3 best friends, how many drink alcohol at least once a month?
    - Of your 3 best friends, how many use marijuana at least once a month?
- Wave 3
  - Structured Routines
    - In the past 12 months, how often did you attend religious services?
    - In the past 12 months, how often did you attend youth church activities?
    - In the past 12 months, did you participate in volunteer activities?
  - Unstructured Routines
    - Participate in individual sports or recreation.
    - Participate in team sports.
    - Hang out with friends.
  - Risky Behaviors
    - Number of sexual partners.
    - Use of birth control during sexual encounters (RC).
- Wave 4
  - Structured Routines
    - In the past 12 months, How often did you attend religious services?
    - In the past 12 months, how often did you attend church activities?
    - In the past 12 months, did you participate in volunteer activities?
  - Unstructured Routines
    - Participate in individual sports or recreation.
    - Participate in team sports.
  - Risky Behaviors
    - Use of birth control during sexual encounters (RC).
    - Has [initials] ever had any other sexual partners?
    - Have you had any other sexual partners?

Note. Reverse coded items (RC).

APPENDIX C

ITEMS USED IN LOW SELF-CONTROL SCALES

Appendix C. Items used in low self-control scales.

Wave 1
When you have a problem to solve one of the first things you do is get as many facts about the problem as possible? (RC)
When you are attempting to find a solution to a problem you usually try to think of as many different ways to approach the problem as possible. (RC)
When making decisions you generally use a systematic method for judging and comparing alternatives. (RC)
After carrying out a solution to a problem you usually try to analyze what went right and what went wrong. (RC)
You have trouble paying attention in school
You have trouble getting your homework done
You have trouble keeping your mind on what you are doing
Wave 2
When making decisions, you usually go with your "gut feeling" without thinking too much about the consequences of each alternative
After carrying out a solution to a problem, you usually try to think about what went right and what went wrong? (RC)
You have trouble paying attention in school
You have trouble getting your homework done
You have trouble keeping your mind on what you are doing
Wave 3
I often try new things just for fun or thrills, even if most people think they are a waste of time
When nothing new is happening, I usually start looking for something exciting
I can usually get people to believe me, even when what I'm saying isn't quite true
I often do things based on how I feel at the moment
I sometimes get so excited I lose control of myself
I like it when people can do whatever they want, without strict rules and regulations
I often follow my instincts, without thinking through all the details
I can do a good job of "stretching the truth" when I'm talking to people
I change my interests a lot, because my attention often shifts to something else
Wave 4
I like to take risks
I get upset easily
I live my life without much thought for the future
When making a decision, I go with my gut feeling and do't think much about the consequence of each alternative
I make a mess of things
I lose my temper

Note. Reverse coded items (RC).

APPENDIX D

ITEMS USED IN DEPRESSION SCALES

Appendix D. Items used in depression scales.

In the past 7 days,
Were bothered by things that usually don't bother you?
You felt that you were just as good as other people (RC).
You felt happy (RC).
You could not shake off the blues, even with help from family and friends.
You enjoyed life (RC).
You were depressed.
You had trouble keeping your mind on what you were doing.
You felt that people disliked you.
You felt sad.
You were too tired to do things.

Note. Reverse coded items (RC).

APPENDIX E

ITEMS USED IN SELF-ESTEEM SCALES

Appendix E. Items used in self-esteem scales.

You feel like you are doing things just about right.
You have a lot to be proud of.
You have many good qualities.
You like yourself just the way you are.

APPENDIX F

ITEMS USED IN ATTACHMENT TO PARENTS AND ATTACHMENT TO SCHOOL SCALES

Appendix F. Items used in attachment to parents and attachment to school scales.

Attachment to Parents

Wave 1

You feel close to your mother.
You feel close to your father.
Your mother is warm and loving toward you.
Your father is warm and loving toward you.
You are satisfied with your relationship with your mother.
You are satisfied with your relatinship with your father.
You are satisfied with the way you communicate with your mother
You are satisfied with the way you communicate with your father.

Wave 2

You feel close to your mother.
You feel close to your father.
Your mother is warm and loving toward you.
Your father is warm and loving toward you.
You are satisfied with your relationship with your mother.
You are satisfied with your relatinship with your father.
You are satisfied with the way you communicate with your mother
You are satisfied with the way you communicate with your father.

Wave 3

You enjoy doing things with your mother.
You enjoy doing things with your father.
Your mother is warm and loving toward you.
Your father is warm and loving toward you.
You feel close to your mother.
You feel close to your father.

Wave 4

You feel close to your mother.
You feel close to your father.
You are satisfied with your relatinship with your mother.
You are satisfied with your relationship with your father.
You and your mother talk on the telephone, exchange letters, or exchange mail (at least once a week)
You and your father talk on the telephone, exchange letters, or exchange mail (at least once a week)

Attachment to School

Wave 1

Your teachers care about you.
Your teachers treat students fairly.
You are happy to be at your school.
You feel safe at your school.
You feel like you are part of your school.
You feel close to people at your school.

Wave 2

Your teachers care about you.
Your teachers treat students fairly.
You are happy to be at your school.
You feel safe at your school.
You feel like you are part of your school.