

ABSTRACT

Title of Thesis:

THE VICTIM-OFFENDER OVERLAP
CONTEXTUALIZED: UNPACKING
HETEROGENEITY BY VICTIMIZATION
DEGREE, DIMENSION, AND OFFENDING
TYPE AMONG SYSTEM-INVOLVED
YOUTH

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Victimized youth face elevated risks of enduring adverse life outcomes that impede successful transition into adulthood, including a higher propensity for criminal involvement than non-victimized youth. Extant studies have since revealed a significant overlap among juvenile victim and offending populations (“victim-offenders”): youth, especially system-involved youth, encounter a range of victimization experiences, participate in a variety of crime, and their experiences of victimization vary in their capacity to induce a criminal response. So far, however, criminologists have devoted limited attention to examining such variations in the victimization-offending link that influence the prevalence and magnitude of the overlap. In fact, most victim-offender research either depends on general measures of victimization and offending or disproportionately focuses on violence, which neglects the heterogeneity in victimization histories and offending behaviors among victimized youths. To better understand the intra-group

variability of the youth victim-offender group, a deeper look into how different victimization events motivate distinct types of offending is needed.

Using data from the Pathways to Desistance Study, this thesis describes and dissects differences in violent victimization experiences as a means of understanding variation in future criminal behavior among a high-risk, serious offending youth sample. The current research draws on general strain theory to assess whether differentiating degree of victimization and dimensions of victimization (i.e., frequency, variety, and recency) significantly affect predictions of participation in later violent and property crime. Findings indicate that differences in violent victimization experiences may shape meaningful differences in subsequent offending behaviors, but in nuanced ways. While the degree of victimization may matter, as there is notable variation in the magnitude of the effects of direct and vicarious victimization on both offending outcomes, such discrepancies do not appear to be statistically significant for this sample. Further, while specifying the strain dimensions of victimization may matter, as recency and variety dimensions distinguish degrees of vicarious victimization, they appear only to be salient considerations for less proximal exposure to violence (as opposed to direct experiences). Adding to the contributions of prior victim-offender literature, the results of this project highlight the importance of paying attention to sources of heterogeneity in the trauma histories of juvenile victim-offenders and bring to the forefront a discussion of the factors that may influence the historically robust association between victimization and crime.

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by

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Chapter 1: Introduction

Extant research paints victimization as a common experience among juvenile populations. Youth are disproportionately more likely than adults to be violently victimized, to witness someone else being victimized, and to bear a crime-related, non-fatal injury (Finkelhor et al., 2009; Finkelhor et al., 2013; Hashima & Finkelhor, 1999; Kilpatrick et al., 2003; Kort-Butler, 2010; Truman et al., 2012). The 2006 National Crime Victimization Survey (NCVS) found the violent victimization rate to be highest for 16- to 19-year-olds (52.3 per 1,000) and second highest for 12- to 15-year-olds (47.3 per 1,000), making adolescents the most likely to experience direct violence (Rand & Catalano, 2007). Also prevalent is witnessing violence. In 2003, approximately 8.8 million 12- to 17-year-olds nationwide had seen another individual being shot, stabbed, sexually assaulted, physically assaulted, or threatened with a weapon (Kilpatrick et al., 2003). While the overall violent victimization rate has been declining since 2018, a recent 2022 NCVS report marks a small spike in 2022 and recounts that many youths continue to be victims of violent crime and that specific types of violent offending and victimization, such as weapon or sex-based violence, have escalated to pose an even greater public health concern than before (Thompson & Tapp, 2023). As victimization tends to be multiple and cumulative rather than a singular and isolated event (Wolfe, 2018), the documented prevalence of both direct and indirect victimization indicates an even greater risk among youth for exposure to additional types of victimization, termed “poly-victimization” (Finkelhor et al., 2005; Finkelhor et al., 2007; Turner et al., 2010; Wolfe, 2018), and for repeat victimization occurring intermittently throughout the life course (Lauritsen & Quinet, 1995; Menard, 2000; Osborn et al., 1996).

Victimized youths are more likely to participate in criminal behavior than non-victimized youth. In fact, the bulk of previous literature suggests victimization to be a robust and significant predictor of delinquency and crime. Extending from early studies that empirically linked victimization and offending and vice versa (e.g., Wolfgang, 1958), research in this area finds similarities not only between victimization and offending experiences, but also between victims and offenders in their sociodemographic profiles, prior criminal activity, proximity to high crime neighborhoods, and a preference for risky lifestyles and behaviors (Fattah, 1991; Gottfredson, 1984; Hindelang, 1976; 1981; Jensen & Brownfield, 1986; Lauritsen et al., 1991; Sampson & Lauritsen, 1990; Singer, 1981). Other explanatory variables that display similar patterns for victimization and offending include family structure, personality (i.e., impulsivity), low self-control, parental supervision, and conflict with parents (Esbensen & Huizinga, 1991; Pratt & Cullen, 2000; Smith & Ecob, 2007). These shared sources and sociodemographic correlates of victimization and offending lend support for a victim-offender group, separate from “pure” victim-only and offender-only categorizations.

The finding that victimization and offending co-occur is regarded in the literature as the victim-offender (VO) overlap and suggests that criminal offenders often report a history of victimization and, conversely, that victims of crime often have a history of prior criminal or delinquent behavior. Central to establishing the salience of the VO overlap is Lauritsen, Sampson, and Laub’s (1991) longitudinal analysis of the first five waves of the National Youth Survey, in which they reveal a strong association between delinquent lifestyles and criminal victimization, even when controlling for reciprocal effects. Juvenile delinquents exhibit distinctly elevated risks of victimization, which, in turn, cyclically predict further involvement in deviant behavior. Lauritsen and colleagues conclude that “victimization patterns among youths cannot be

understood apart from criminal and deviant activities” (1991:265) and call for more concentrated efforts towards studying victimization and offending under a single lens that acknowledges their complex relationship. Later research that does so finds that victim-offenders constitute a large portion of offenders of victims and indicates the VO overlap exists across different samples and subgroups, data sources, geographic location (i.e., country), offending and victimization type, and time of study (e.g., Jennings et al., 2012).

What remains in question is the mechanism driving the VO overlap. The overlap has traditionally been studied using routine activity and deviant lifestyle theories, subcultural theory, theories of aggression, and self-control theory (Fagan et al., 1987; Ousey et al., 2011). However, while these perspectives include victimization as a correlate of offending and identify commonalities across victim and offender groups, they lack justification for why victimization might be a *cause* for crime.

Many criminologists have instead adopted Agnew (1992)’s general strain theory (GST) to propose a direct explanation for why victims become victim-offenders. The main argument of GST is that victimization *increases* the likelihood of subsequent offending. As a form of strain, victimization generates negative affect and consequently creates pressure for corrective action, such as delinquency and criminal behavior. Engaging in criminal coping may provide an escape from the strain, allow victims to seek revenge, or alleviate negative emotions (Brezina, 1996). Crime as a result of victimization also increases the probability of re-victimization in the future (Grubb & Posick, 2018), further contributing to the VO overlap.

This victimization-offending relationship posited by GST extends to vicarious accounts of victimization, such as witnessing the victimization of another person (Agnew, 2002; Broidy & Agnew, 1997). Whereas the broader literature differentiates between vicarious and indirect

experiences, GST refers to the terms vicarious and indirect interchangeably. Like direct victimization, vicarious victimization experiences can cause individuals to feel negative emotions and increase the likelihood of delinquent and criminal coping, especially if they occur frequently and/or to significant others, such as family (Agnew, 2002; Pinchevsky et al., 2014b). Longitudinal tests of GST have generally yielded support for the proposition that victimized youths have a higher likelihood of offending across diverse forms of victimization and offending (e.g., Hay & Evans, 2006; Kort-Butler, 2010; Kushner & Fagan, 2023; Ousey et al., 2015; Zavala & Spohn, 2013), regardless of their initial propensity for crime (Craig et al., 2017). However, despite research that suggests direct and vicarious victimization may generate different forms of negative affect and prompt different types of criminal and non-criminal outcomes (e.g., Agnew, 2002; 2006), these tests have seldom differentiated experienced, vicarious (i.e., indirect), and dual experiences. Only a small number of studies have tested the independent effects of the different degrees of victimization in a single study (e.g., Baron, 2009; Lee & Kim, 2018; Lin et al., 2011; McGrath et al., 2012; Park & Metcalfe, 2022).

GST also provides an avenue for researchers to investigate why victims resort to certain types of criminal behavior. According to Agnew (1992; 2001; 2017), strain is not a one-dimensional, all-or-nothing concept—how individuals choose specific criminal coping mechanisms largely depends on the dimensions of the strain being experienced. Though sparse, prior work that operationalizes different dimensions of strain has shown frequency, recency, duration, clustering, and the accumulation of various types of victimization to pose significant implications for the victimization-offending link (Baron, 2008; Slocum et al., 2005; Wojciechowski, 2019). In particular, Slocum, Simpson, and Smith (2005) suggest models that include temporal dimensions of strain better estimate victims' involvement in different illicit

activities for high-risk samples. As the magnitude of the VO overlap is affected by the volume and degree of victimization and offending experiences (Hiday et al., 2001), a closer examination into the dimensions that contextualize victimization events can help better predict the selection of a particular criminal coping strategy, such as violence, over other illicit behaviors (i.e., non-violent crime, substance abuse).

According to GST, juveniles are especially at risk for using delinquency and crime to mitigate criminogenic strain because they are more likely to lack legitimate coping mechanisms and to learn antisocial behavior from the victimization experience (Agnew, 1992; 2001). Developmental research shows strong support for this assertion. Compared to adults, adolescents are typically more malleable to peer and external influences, more sensitive to immediate rewards, lack higher executive cognitive functioning, demonstrate still-developing levels of psychosocial maturity, and display a tendency for impulsive and thrill-seeking behaviors (Galvan et al., 2007; Leshem & Glicksohn, 2007; Steinberg & Monahan, 2007). They are also still in the process of building proper resilience and social support networks that can act as buffers for negative stimuli (Baldry & Farrington, 2005; Stoddard et al., 2013). Such age-specific characteristics make youth more susceptible to the adverse impacts of victimization, which include physical and mental health problems (Bouffard & Koeppe, 2014; Buka et al., 2001; Turner et al., 2013), psychological and emotional distress (Hartinger-Saunders et al., 2011; Norris & Kaniasty, 1994; Renner et al., 2020), poor academic performance and school behavior (Loomis et al., 2020; McGill et al., 2014; Sonsteng-Person et al., 2023), lowered expectations for personal success (Hinton et al., 2021), socioeconomic disadvantage (Macmillan & Hagan, 2004), alcohol and substance use (Earnshaw et al., 2017; Pinchevsky et al., 2014a; Widom et al., 2006), re-victimization (e.g., Herrenkohl & Herrenkohl, 2009), and, importantly, delinquency and

criminal offending (e.g., Menard, 2002). The jarring reality that adolescence, a critical period for normative personal, social, and cognitive growth, is symptomatic of heightened vulnerability to the negative outcomes of victimization poses important developmental implications for the VO overlap among young populations.

Juveniles thus encounter a range of victimization experiences, participate in a variety of crime, and their experiences of victimization vary in their capacity to induce a criminal response. So far, however, criminologists have paid little attention to holistically examining such variations in the victimization-offending link that influence the prevalence and magnitude of the VO overlap. The majority of VO overlap research either depends on global and composite measures of victimization and/or offending or disproportionately focuses on violent victimization and violent offending, which neglects non-violent crime and presents ambiguity about whether the VO overlap is “a function of all criminal offending or only violent offenses” (Berg & Mulford, 2020:26). Further, few studies combine considerations of victimization degree (i.e., direct, vicarious, or dual) and other compositional dimensions of the victimization event, such as when it occurred (i.e., recency), the number of times it occurred (i.e., frequency), and the number of different types of victimization experienced (i.e., variety) when assessing the impact of victimization on future criminal behavior.

This thesis aims to extend previous work and address these limitations of current victim-offender literature by breaking down general victimization and offending measures to explore the variability of the youth VO overlap among a high-risk sample. More specifically, this thesis focuses on describing how different victimization experiences contribute to differences in victim-offender trajectories even for individuals already leading adverse lives. First, victimization measures are differentiated by degree (i.e., direct, vicarious, or dual) and are

described using three dimensions of strain. Second, offending measures are specified by type (i.e., violent and property). Applying a GST framework, the following objectives are stipulated: (1) to examine whether general violent victimization more strongly predicts violent than property offending, (2) to compare the independent effects of direct, vicarious, and dual violent victimization on violent and property offending, and (3) to observe whether these relationships change when accounting for different dimensions of victimization (i.e., frequency, recency, and variety). Noting that the victim-offender group is a more pronounced phenomenon among juvenile, especially at-risk, populations (e.g., Jennings et al., 2010; Lauritsen et al., 1991; Sampson & Lauritsen, 1990), data from the Pathways to Desistance project on serious juvenile offenders is used to address these research goals. In the end, this thesis will help illuminate the nuances of the VO overlap by disaggregating the aggregate victimization-offending link and investigating how certain victimization experiences influence future behavior by motivating a specific method of crime.

Chapter 2: Literature Review

Understanding the Victim-Offender Overlap

Early criminological research treated victims and offenders as two separate populations of a “false dichotomy” (Reingle, 2014:1). Numerous studies have since revealed a prominent victim-offender (VO) overlap—to the extent that studying victimization and offending would be obscured without allowing proper consideration of the victim-offender group (Lauritsen et al., 1991). A decade after Hans von Hentig (1948)’s anecdotal proposition of a dynamic victimization-offending relationship, Wolfgang (1958)’s seminal and more systematic work on victim-precipitated homicide was one of the first to present empirical evidence of the VO overlap, a specialized subtype of the victimization-offending association. Using a sample of homicide incidents in Philadelphia between 1948 and 1952, Wolfgang identified similarities in demographic and behavioral characteristics among victims and offenders, indicating that both groups are more likely to be males with a history of violence and more likely to exhibit aggressive tendencies than the general population. Singer (1981)’s retrospective analysis of offending and self-reported victimization experiences of respondents of the Philadelphia Cohort Follow-Up Study of 1945 produced results aligned with Wolfgang (1958): victims of serious assault often reported more frequent aggressive behavior and past criminal involvement, including committing serious assault, than non-victims, and displayed an increased propensity for violent crime. Among the indicators tested, victimization was the best predictor of later offending. While Singer’s study suffered from methodological limitations of memory recall and lacked causal explanatory power, it was a decisive starting point for assessing the homogeneous characteristics of victim and offender groups.

By directing attention to the co-occurrence of victimization and offending among a single population, Wolfgang (1958) marked the beginning of the expansion of victim-offender literature, and contemporary research contributed to this growth by linking official crime data and self-report victimization data to tease apart the homogeneity of victims and offenders and to compare victim-offenders to victim-only and offender-only populations. It is now a well-documented “fact” in criminology that victims and offenders have a lot in common. Victims and offenders of violent crime specifically are disproportionately male, young, of minority race/ethnicity, and live in urban areas with shared ecological measures of social disadvantage and high crime rates (US Department of Justice, 2001). More generally, like offenders, victims tend to have previously been involved in crime, which strongly predicts subsequent offending and increases the chances of future victimization through association with other known offenders or further involvement in illegal activities (Broidy et al., 2006; Daday et al., 2005; Dobrin, 2001). Offenders are more frequently victimized than non-offenders, and victims are more frequently involved in crime than non-victims (Fattah, 1991; Widom, 1989). They also retain similarities in family structure, parental relationships, level of impulsivity, low self-control, and propensity for risk-taking (Esbensen & Huizinga, 1991; Pratt & Cullen, 2000; Smith & Ecob, 2007). Although there exist “pure types” of victims and offenders that are distinguishable from each other, the general consensus finds a within-individual overlap of victimization and offending, with mutual risk factors predicting both outcomes.

In their recount of sixty years of victim-offender research, Berg and Schreck claim that “the correlates of victimization and offending appear everywhere to be very similar” (2022:292) and not confined to specific social conditions or contexts. Indeed, studies testing the homogeneity of victims and offenders have consistently shown the VO overlap to persist across

time, age, race, gender, country, data sources, and victimization and offending measures (e.g., Jennings et al., 2010; Jennings et al., 2012; Reisig & Holtfreter, 2018). For example, Gebo, Rebellon, and Turner (2022) use data from the 2011 National Survey of Children's Exposure to Violence to demonstrate that both males and females are represented in the overlapping population across multiple violent and non-violent victimization and offending types. Maldonado-Molina et al. (2010) suggest a longitudinal overlap in victimization and offending experiences and in the relevant individual, familial, peer, and contextual predictors for a sample of Puerto Rican youth from the Bronx, New York. Even unique populations such as psychiatric patients report a history of covariation in violent victimization and offending, a correlation that holds when accounting for clinical and social risk factors that indicate an already elevated risk for violence (Silver et al., 2011). It is also clear that this phenomenon is not exclusive to the United States nor to acts of violence. Over 80% of both male and female inmates of a representative sample of two prisons in Canada reported past violent and property victimization experiences, with two-thirds of participants having experienced victimization prior to their first criminal charge (Bucarius et al., 2021). Though constituting only 5% of the sample, the co-occurrence of sexual victimization and perpetration is documented among young adults in Hong Kong (Chan, 2021). The VO overlap is also evidenced to hold for non-violent offending, such as vandalism (Tewksbury & Mustaine, 2000) and cybercrime (Kranenberg et al., 2019).

One shortcoming of past victim-offender work, however, is its limited focus on the violent VO overlap. Despite the suggested variation in victimization and offending type among victim-offenders, most studies default to an examination of violent crime. Jennings, Piquero, and Reingle (2012)'s meta-analysis of 37 studies finds 31 of the 37 to provide supporting evidence of the VO overlap. Of these 31, 18 studies estimate the relationship between victimization and some

form of violent offending, excluding those that use general or composite delinquency and crime variables. Three of the 18 studies also include property offending measures. Of all 37 studies analyzed by Jennings and colleagues (2012), only two specifically examine victimization and property offending. Though the VO overlap has continued to attract empirical endeavors since Jennings et al. (2012), the ratio of violent to non-violent research shown in their meta-analysis remains quite representative of the current state of victim-offender literature. For the most part, existing studies do not sufficiently decompose general crime participation to differentiate between violent and property crime, which not only masks a potential determinant of variation among victim-offenders, but also inhibits researchers from “advancing substantive theorizing about the sources of the overlap” (Berg & Mulford, 2020:26). Depending on the type and/or form of victimization experience, victim-offenders may participate in distinct types of crime.

Another source of variation in the VO overlap that remains underdiscussed is the *extent* to which an individual is a victim-offender. That is, most studies go only as far as to utilize risk factors to determine whether someone *is* a victim-offender, and do not further use them to describe or predict the various ways in which someone can *be* a victim-offender. This means that victim-offender research often equates, for example, a victim-offender who has only been victimized and has offended once with a victim-offender who has experienced multiple victimizations and has engaged in persistent or numerous types of offending. Such a generalized and imprecise portrayal of the victim-offender group does not adequately acknowledge extensive research that finds the risks of victimization and offending to be distributed unevenly throughout the population, concentrated among a small subset of victims who encounter multiple instances of victimization and a small subset of offenders who account for a large proportion of all committed offenses (e.g., Farrell, 1992; Hope & Norris, 2013; Lauritsen & Quinet, 1995). It also

overlooks how differential vulnerability to adverse outcomes can either attenuate or amplify an individual's chances of experiencing repeat victimization and/or reoffending (Clay-Warner et al., 2016). Victim-offenders typically report the highest number of risk factors than any other group (i.e., only-victims, only-offenders, and "total abstainers") (Reingle & Maldonado-Molina, 2012; TenEyck & Barnes, 2018). Understanding how varying levels of risk shape the cumulative nature of the VO overlap, such as by diagnosing particularly salient risk factors, can therefore help researchers to identify high-risk individuals who are likely to both become a victim-offender and to continue being one throughout the life course, which holds substantial practical implications for victimization and crime prevention (Farrell et al., 1995; Farrell & Zimmerman, 2017; Schreck et al., 2002).

While the VO overlap is robust across multiple domains and present at all stages of the life course (Jennings et al., 2010; Schreck et al., 2017), not all victims and offenders become victim-offenders. Mustaine and Tewksbury (2000) identify three distinct victim-only, offender-only, and victim-offender groups for assault among college students. Klevens et al. (2002)'s examination of aggressive behaviors revealed only a third of their nationally representative sample to be victim-offenders of inter- and intrapersonal violence. Clearly, there are victims who do not participate in offending and offenders who have never been victimized. Criminologists, however, know surprisingly little about why and how some victims evade the victim-offender nexus, despite being exposed to the same risk factors that dispose them towards crime. Similarly, criminologists know little about why and how some victim-offenders lapse into a cycle of repeated victimization and offending whereas other victim-offenders experience a single victimization and offending event. Many also have yet to apply a holistic lens to the VO overlap

to uncover potentially meaningful differences among victim-offenders that participate in violent, non-violent, or both violent and non-violent crime.

Theoretical Explanations for the Victim-Offender Overlap

To date, criminology as a discipline lacks a theory that sufficiently accounts for the VO overlap. Instead, researchers have applied existing theories that explain either crime or victimization separately to address the overlapping population of victim-offenders, and most frequently draw upon routine activities/lifestyle frameworks, subcultural theory, and theories of aggression to account for similarities in victimization and offending etiologies (Fagan et al., 1987). Routine activity (“lifestyle exposure”) and subcultural theories centralize the importance of place. Being in areas with high crime rates increases the likelihood of becoming an offender and of coming into contact with other offenders, thereby also increasing the risk of victimization. The lifestyle-routine activity framework suggests that situational and behavioral factors, such as an individual’s behavioral patterns and habitual tendencies, shape deviant lifestyles and link crime and victimization (e.g., Jensen & Brownfield, 1986). Subcultural theory focuses specifically on violent offending in urban areas, which are theorized to foster subcultural values systems that expose individuals to the transmission of violence and criminality through social interactions with deviant others (Singer, 1986). In a similar vein, sociopsychological theories of aggression contend that violence can be learned in such subcultural settings that encourage aggression and trigger a cycle of retaliatory offending that leads to a reciprocal relationship between the offender and victim (Megargee, 1982).

Gottfredson and Hirschi (1990)’s assumptions of self-control theory have also often been cited as an explanation for the VO overlap. This perspective argues that victimization and offending are spuriously related on the basis of overlapping stable personality traits, namely low

self-control, that are predictive of an individual's propensity to be both an offender and a victim. Though extant research does generally find low self-control to be a contributing factor, several studies that control for self-control suggest that time-stable variables are insufficient in fully accounting for the victimization-offending relationship and should instead be considered as a complement to other theoretical frameworks (Ousey et al., 2011; Schreck et al., 2006).

Despite their popularity, all the mentioned conceptual arguments suffer from one critical drawback: the temporal order of victimization before crime is not well established. Routine activity theory provides an argument for a relationship in the opposite direction—offending causing subsequent victimization due to lack of guardianship and increased exposure to other motivated offenders (Pizarro et al., 2011). Subcultural and aggression theories are also limited in applicability as they only address violent victimization and violent offending and refer to specific social and urban contexts not representative of the dominant society. Since victim-offenders experience and participate in multiple types of victimization and crime, including non-violent property offenses, and are not isolated to a specific demographic or geographic profile, routine activities/deviant lifestyle, subcultural, aggression, and self-control perspectives provide incomplete explanations for the VO overlap.

Victimization as Strain: Drawing from General Strain Theory

Agnew's (1992) general strain theory (GST) allows researchers to extend beyond understanding homogeneity in victim and offending populations and to test victimization as a *cause* of crime at the individual level. According to Agnew, strain is a product of negative social interactions with others, in which "others are not treating individuals as he or she would like to be treated" (1992:50). Strain can appear in three possible forms—the prevention of achieving positively valued goals, the removal of positive stimuli, and the presentation of negative, or

noxious, stimuli. Such situations generate negative emotionality, such as anger, depression, or frustration, that strained individuals attempt to overcome by employing various coping mechanisms, including both legitimate and illegitimate strategies (e.g., crime).

Victimization is an example of an objective strain as a negative stimulus. Objective strains are defined as “events or conditions disliked by most members of a group” (Agnew, 2017:115). Of the strains expected to motivate criminal coping, victimization is described to be particularly criminogenic: “unjust,” high in magnitude, low in social control, likely to provoke anger, and likely to create an incentive to commit crime, such as targeted retaliation against those responsible (Agnew, 2001). It also exposes the victim to a “criminal role model” (Agnew, 2001:346), which may impart beliefs favorable to crime or justifications for later criminal behavior. Negative emotions experienced due to criminal victimization can modify or aggravate preexisting antisocial personality traits (Agnew, 2001; 2002).

Victimization as Strain: Variation in Degree and Dimensions

The likelihood of victimization leading to crime varies by the degree, or the level of proximity to the individual, of the victimization experience. The criminogenic nature of victimization is not limited to only directly experienced events, but also applies to vicarious, or indirect, experiences of victimization (Agnew, 2001; 2002). Individuals are said to be vicariously victimized if they witness or hear about the victimization of others (Agnew, 2002; Broidy & Agnew, 1997). Although indirect victimization does not result in the same level of physical harm as direct victimization, vicarious victimization also generates negative affect, such as anger or fear, when encountered, which may pressure individuals to resort to criminal and/or other illicit coping strategies (e.g., substance use). For example, witnessing or hearing about someone else being victimized may cause the individual to suspect that they are at risk of the same criminal

situation. Witnessing the victimization of a close significant other, such as family or peers, may engender comparable feelings of anger (Zavala & Spohn, 2013). Further, vicarious exposure to victimization can occur more frequently and at higher rates than direct encounters, which can make criminal coping more likely.

Though direct victimization is hypothesized to be stronger than vicarious victimization in instigating a criminal response (Agnew, 2002), research that compares their associations with delinquency and crime presents mixed conclusions. Some studies do suggest direct victimization is more consequential for criminal involvement than vicarious victimization (e.g., Agnew & White, 1992; Baron, 2009; Hartinger-Saunders et al., 2011), especially physical violence. Others find vicarious victimization to have either similar effects (e.g., Lin et al., 2011) or greater effects on specifically property offending and substance use than direct victimization (Lee & Kim, 2018; Pinchevsky et al., 2014b), possibly because exposure to vicarious victimization is more likely and frequent than direct events. Direct and vicarious victimization are also often interrelated, such that one may increase sensitivity to the other or that they may occur at the same time (Agnew, 2002; Park & Metcalfe, 2022). The combined experience of both forms of victimization is known in the literature as dual victimization, or a “double whammy” experience (Hughes et al., 1989), which can be particularly deleterious for individual offending trajectories (Lin et al., 2011; Park & Metcalfe, 2024). Despite findings that suggest direct, vicarious, and dual victimization all substantially contribute to youths’ future criminal involvement, most applications of GST are limited to measures of direct victimization, which obscures how varying degrees of victimization change its criminogenic capacity. As argued by Agnew (2002), criminologists should work towards demarcating the separate effects of direct, vicarious, and

dual victimization to better understand variation in the magnitude and type of victimization-offending relationships.

Other than the degree of victimization, researchers leveraging a GST perspective should also consider the various dimensions of the victimization experience, such as when it occurred (i.e., recency) and how many times (i.e., frequency) it occurred, that help determine the specific type of crime a victim is likely to engage in. Strained individuals can choose from a range of illegitimate coping strategies, such as violent offending, non-violent offending, substance use, and, if adolescent, status offenses. Identifying and analyzing dimensions of the strain being experienced can help researchers understand why an objective strain like criminal victimization differentially impacts individuals and leads to different forms of illegitimate coping (Agnew, 1992; 2001; 2017).

One of the seminal works that explored this tenet of GST is by Slocum, Simpson, and Smith (2005). Using a sample of incarcerated women, they investigate whether differences in the degree and characteristics of various strains, such as violent victimization, neighborhood strain (i.e., neighborhood safety), and non-criminal negative life events, are associated with differential involvement in violent crime, property crime, and substance use. Their findings suggest that disaggregating strain by its dimensions provide a more nuanced understanding of the general strain-offending link. Focusing on the temporal dimensions of recency, duration, clustering, and accumulation, Slocum and colleagues demonstrate that different combinations of the degrees and dimensions of strains are more strongly correlated to different types of illicit behaviors, independent of changes in other life circumstances. Violence is most likely when violent victimization is directly experienced, chronic, and clustered in a short time period, but appears unrelated to neighborhood strain. Drug use and property crime are best explained by less

proximal experiences of strain (e.g., exposure to neighborhood violence) and when including three or all four specified dimensions of strain (i.e. recency, duration, clustering, and accumulation) in their models. Overall, Slocum et al. (2005)'s results support Agnew (2001)'s conceptual argument that the degree and dimensions of criminogenic strain should predict different types of crime.

Though successful in highlighting the differences among divergent types of strain (and their influence on later illegitimate behaviors), Slocum and colleagues (2005) employ a limited measure of violent victimization that only records the number of times a respondent has been attacked. No other forms of violent victimization (e.g., being shot) are included. Considering the wide range of violent victimization experiences an individual may encounter, especially for individuals of a high-risk or serious offending groups such as the incarcerated sample used by Slocum et al. (2005), such a narrow measure of violent victimization may weaken some of the study's findings (e.g., underestimate the association between violent victimization and property crime and/or drug use). Building from the contributions of Slocum et al. (2005), future studies examining the victimization-offending relationship should utilize a more comprehensive measure of victimization and discriminate strain by its degree and dimensions to more accurately predict changes in participation for a myriad of crime types.

As shown, exposure to strain does not have equivalent effects across all forms of criminal coping (i.e., violent, non-violent, and drug-related), and different strains are asymmetrically conditioned by a variety of factors (Agnew & Brezina, 1997; Baron, 2008; Mazerolle et al., 20001; Ousey et al., 2015; Piquero & Sealock, 2000; Slocum et al., 2005; Wojciechowski, 2019). In addition to the temporal dimensions examined by Slocum et al., (2005), other dimensions of victimization that are found to incentivize particular types of crime include frequency (Sabri,

2012), repeated strain (i.e., repeat victimization) (Agnew, 2001; Sabri, 2012), and variety of strain types (i.e., poly-victimization) (Agnew, 2002). Overlooking Agnew's (1992; 2001; 2002; 2017) recommendations for contextualizing strain by its compositional elements, most research on the victimization-offending relationship continues to operationalize strain as a one-dimensional, static concept, which can be partially attributed to data limitations. To more accurately ascertain the extent and nature of the impact of victimization on subsequent offending behaviors, studies should differentiate victimization experiences by degree (i.e., direct, vicarious, or dual) and by the various dimensions that define the event. The specification of victimization as a causal pathway to future criminal offending is a salient consideration crucial for unpacking variation among victim-offenders.

Victimization as Strain for Juvenile Populations

Agnew argues that crime as a means of corrective action is most likely for victims who are without legitimate coping mechanisms, are low in social support, are low in social control, are quick to transfer blame onto others, and already possess multiple environmental and risk factors that predispose them to criminal involvement (Agnew, 2001). The criminogenic nature of victimization is therefore especially amplified for youth who are more likely to be victimized, to witness victimization, to perceive victimization as unfair, to be emotionally or physically harmed, and to lack normative coping strategies (Agnew, 1992; 2001). Juveniles are also uniquely more susceptible to external influences, such as witnessing stressful or violent events occurring to others (Agnew, 2002). Considering that juvenile victims offend at greater rates and the victimization-offending relationship appears to be strongest for juveniles than any other age group (Jennings et al., 2010; Lauritsen et al., 1991; Sampson & Lauritsen, 1990), GST is a useful theoretical framework for studying the adolescent-specific VO overlap.

Youth Victimization and Offending

Youth are substantially more vulnerable to victimization and exposure to violence than the rest of the general population (Finkelhor & Asdigian, 1996). Violent victimization is notably common: approximately 40% of youth nationwide experience physical assault and/or witness violence in the family or community per year (Finkelhor et al., 2013). Direct and indirect victimization is a strong and enduring indicator of future offending for youth across multiple offense types, including interpersonal violence (Richards et al., 2016), violent and property crimes (Eitle & Turner, 2002; Farrell & Zimmerman, 2017; Menard, 2002; Shaffer & Ruback, 2002), as well as substance use (Pinchevsky et al., 2014b), recidivism (Wylie & Rufino, 2018), and other detrimental short- and long-term physical, psychological, behavioral, and economic outcomes (e.g., Macmillan, 2001; Macmillan & Hagan, 2004). These pervasive consequences are further exacerbated by youths' limited capacity to legally remove themselves from harmful situations like victimization, especially if occurring within the household or in a school setting.

Several prior studies suggest victimization may matter more during adolescence than at earlier ages. For example, using data from the Rochester Youth Development Study, Ireland, Smith, and Thornberry (2002) and Thornberry, Ireland, and Smith (2001) demonstrate maltreatment and exposure to violence to be more consequential during the teenage years, regardless of the presence or absence of childhood exposure, than during childhood for later violent and non-violent offending, arrests, and substance use in early and late adolescence. These consequences extend to adolescents already experiencing high levels of adversity. Comparing the effects of property and violent victimization on later victimization, Clay-Warner, Bunch, and McMahon-Howard (2016) find that high-risk youth with compounded life challenges experienced a “boost in risk” when violently victimized, significantly increasing the likelihood

of vulnerability in adulthood. Taken together, the literature on the victimization-offending link suggests victimization that happens prior to adulthood—rather than *during* adulthood—is more likely to turn victims into victim-offenders independent of risk, highlighting adolescence as a critical period of study for understanding variation in the VO overlap.

Despite the robustness of this association for juveniles and the documented prevalence of victimization during adolescence, much of the relevant literature for this particular age group is limited to research navigating the impact of childhood victimization on adolescent offending, rather than adolescent victimization on offending later in the life course. For example, many studies that treat victimization as a causal variable for delinquency and crime typically rely on adverse childhood experiences (ACEs), which have been recognized as a common denominator among justice-involved youth (Fox et al., 2015). Net of demographic and other personal individual and familial risk controls, ACEs are found to be a key risk factor for early onset of offending behaviors, victimization, delinquency, and criminal offending in adolescence, re-offending, and for becoming a serious, violent, and chronic juvenile offender by the age of 35 (Baglivio et al., 2015; Barrett & Katsiyannis, 2016; Fox et al., 2015; Moore & Tatman, 2016).

Though informative for understanding the consequences of early adverse events, several limitations render ACEs ineffectual for studying the VO overlap for juveniles. First, not all ACEs can be considered as a form of victimization (e.g., parental marital dissolution). Second, ACEs invoke a wide age range of 0 to 17 years, which makes it challenging to isolate the effects of victimization that occur during adolescence, a narrower range of ages 11 to 19. Third, studies that utilize ACEs as a composite measure for youth victimization frequently assume predictors of offending are the same for both children and adolescents (Basto-Pereira & Farrington, 2022). Considering the marked differences between childhood and adolescence in their implications for

future development, the literature on youth victimization should move away from defaulting to ACEs and recognize that the nature and type of behaviors that adolescents externalize post-victimization are significantly different from that of children.

What does exist on the victimization-offending association for juveniles tends to be circumscribed to adverse events and delinquent behaviors particular to that developmental stage, such as bullying and teen dating violence. Two decades of prospective research indicate a concurrent relationship between bullying victimization and perpetration, with directionality going both ways (Walters, 2021). This bidirectional relationship holds even after controlling for individual personality traits. Both bullying victims and perpetrators face an increased risk for future victimization and perpetration and are more likely to find themselves involved in crime (especially violent offending), deviance, substance use, and official school sanctions in the future (Cardwell et al., 2021; Cho, 2017; Cho & Wooldredge, 2016; DeCamp & Newby, 2015). Research on teen dating violence reveal similar patterns of co-occurrence of victimization and perpetration in teen romantic relationships. Among 707 high school students from Long Beach, California, Malik, Sorenson, and Aneshensel (1997) find 70.1% of dating violence perpetrators to report being victims and 72.2% of victims to be perpetrators. Recent studies corroborate the victimization-offending relationship for adolescent dating abuse at a lesser magnitude, typically revealing about 30% of their samples to have been involved in victimization and perpetration in their previous or current romantic relationships (Fedina et al., 2016; Haynie et al., 2013). These rates are similar across race/ethnicity, but higher for females and adolescents aged 18 years and older (Renner & Whitney, 2010; Ybarra et al., 2016).

While these findings are significant and generally consistent with the literature on the victimization-offending relationship, they are limited in scope. The VO overlap is present across

a *range* of offenses (Lauritsen & Laub, 2007). An expansion of juvenile victim-offender research that transcends bullying and teen dating violence foci is thus needed to adequately address the variety of victimization and offending types that youth experience.

The Youth Victim-Offender Overlap

Though sparse, a fraction of victim-offender research has devoted effort to studying the overlap for criminal types of victimization and offending among juvenile populations. Most of this work is localized to violent victimization and violent crime. Using data from the first two waves of the National Longitudinal Study of Adolescent Health (Add Health), Shaffer and Ruback (2002) present results that mirror those of Wolfgang (1958). Victims and offenders were found to share a common set of demographic characteristics and risk factors, including prior violent victimization and offending histories, drug and alcohol use, and depression, and juvenile victims of violence were significantly more likely than non-victims to become violent offenders later in the life course, regardless of age, gender, race, degree of physical growth, and drug use. Applying the same Add Health dataset, TenEyck and Barnes (2018) identify and compare victim-only, offender-only, victim-offender, and “abstainer” groups to find victim-offenders to score the highest on risk assessments that screen youth for predictors of victimization and offending, including levels of self-control, time spent with peers, drug use and involvement, alcohol consumption, and early onset of pubertal maturation. Their findings suggest that the victim-offenders are distinct from youth who are only victims or offenders in their differential exposure to risk and protective factors, underscoring the need for interventions that strategically target the more at-risk victim-offender group to achieve greater success in reducing juvenile offending and long-term detrimental outcomes in adulthood.

Other studies that examine the etiology of the violent VO overlap for youth indicate more of the same—young, violent victim-offenders experience, often simultaneously, higher levels of risk and lower levels of protective barriers that add on to preexisting life adversities and heighten their likelihood of victimization and criminal involvement. Like TenEyck and Barnes (2018), Logan-Greene et al. (2010) divide a racially diverse, high-risk youth sample into four groups: youth with either a history of violent victimization (VH), violent perpetration (PH), both victimization and perpetration (VPH), or no history (NH). As expected, juveniles in the VPH (i.e., victim-offender) category were more likely than the VH and PH groups to take part in risky and self-harming behaviors, demonstrate few resilient coping strategies, and have difficulties with emotion regulation during stressful events.

In light of their pronounced risk for victimization and offending, it is no surprise that youth exposed to violence bear a higher probability of perpetrating violence later in the life course. The ramifications of violence exposure also apply to indirect victimization experiences, which often occur within the community. Similar to personal violent victimization, community or neighborhood violence is a recurring focal predictor of violent offending and re-victimization in adolescence and adulthood (Baron, 2009; Franzese et al., 2017). This is aligned with developmental research that finds adolescents to be more susceptible to environmental influences than children or adults (Bacchini et al., 2011). Neighborhood violence measures typically include witnessing assaults, muggings, and/or shootings in the community, and their negative effects are shown to be exacerbated in places with structural disadvantage (Berg & Loeber, 2011) and a dominant “street culture” of violence (Berg et al., 2012). As adolescents consistently report the highest rates of personal and community-level victimization, the parallel impacts of both forms

of violence on subsequent offending lend further support to the claim that the VO overlap is more drastic for juveniles than any other age group.

Compared to the amount of work investigating the violent VO overlap for juvenile populations, the literature on young victim-offenders engaging in non-violent crime is considerably less common and offers mixed results. Even rarer are studies that include explicit measures of property offending in their analysis, separate from general offending variables. As one of the few that do, Farrell and Zimmerman (2017) compare the associations between exposure to violence and violent offending, property offending, and substance use. Exposure to violence is measured in multiple ways: repeat exposure to violence, degree of violence (i.e., witnessed, threatened, experienced, or more than one type), and poly-victimization. Among their sample of school-aged adolescents from the National Longitudinal Study of Adolescent to Adult Health, they find that, while positive and significant for all offending outcomes, the effect of violence is greatest for violent offending across all operationalizations of violence exposure. In contrast, results from Slocum et al. (2005) indicate violent victimization to significantly predict future violence but not drug use or property crime, which suggests that violent victimization may not have the sweeping effects on illicit behaviors as once assumed. Given the limited number of victim-offender studies that incorporate measures of non-violent crime, it remains unclear whether these inconsistent patterns in the literature are due to different samples (e.g., high-risk/offender-based versus general population), different operationalizations of violent victimization, or different methodological approaches (e.g., cross-sectional versus longitudinal).

The inconsistency of victim-offender research regarding different types of offending underscores a need to investigate the following questions: first, whether violent victimization primarily predicts violent crime (as opposed to non-violent crime), and second, if so, whether the

VO overlap is only a product of the violent victimization-offending relationship. Considering recent work that proposes a separate overlap for property offending (Posick, 2013; Gebo et al., 2022), stratifying composite measures of offending by type thus appears relevant and necessary for advancing our knowledge about the complex mechanisms underlying the VO overlap.

Current Study

The VO overlap, while prominent, is far from deterministic. Many victims do not offend (Broidy et al., 2006). As a result, much of prior research has prioritized identifying similarities and differences between victim-offender, victim-only, and offender-only groups. Fewer studies have scrutinized the group of victim-offenders despite research that suggests distinctive types of victims and offenders exist within a single population (Piquero, 2008; Reid & Sullivan, 2012). Moreover, there may be important differences within the victim-offender group that impact their propensity to offend. By lumping all victim-offenders into one aggregate category, research falsely assumes relative homogeneity among all victim-offenders and neglects important intra-group differences that may be key in understanding variation in the strength and frequency of the VO overlap.

In particular, one important source of heterogeneity that pervades the victim-offender group is variation in the number of victimization and offending experiences. Decades of criminology research find evidence of a significant causal victimization-offending relationship—we know that victims are generally more likely than non-victims to offend. What is missing is a further look into how different victimization events motivate distinct types of offending (e.g., violent, property) and consequently shape different victim-offender trajectories.

Given that a burgeoning literature documents evidence of the VO overlap, the main purpose of this thesis is to describe and dissect differences in victimization experiences as a

means of understanding variation in later criminal behavior. Drawing on GST, this thesis builds upon the contributions of previous work and conducts a more in-depth examination of the VO overlap by exploring how heterogeneity in victimization experiences influence subsequent offending among high-risk juvenile victim-offenders. Specifically, I propose that including more information about youths' victimization histories—when, how frequently, and how diversely victimization events occur—into our analyses of the victimization-offending link can provide valuable insights into the nuanced effects of victimization on the type and severity of subsequent offending outcomes.

In light of the current discourse on whether the overlap is only relevant for violent victimization and crime (e.g., Berg & Mulford, 2020), I first compare the direct relationships between general victimization and violent or property offending to see if they significantly vary in magnitude by crime type (i.e., violent versus property).

Hypothesis 1 (H1). General violent victimization will more strongly predict violent offending than property offending.

Existing research on GST has yet to settle which degree of victimization is more consequential for each type of crime. The current study aims to help fill this gap in the literature by parsing out these relationships by victimization degree to examine whether direct and/or vicarious victimization have differential effects on offending outcomes. I also test the relationship between dual victimization (i.e., experiencing direct and vicarious victimization) and offending, which is predicted to be stronger than direct-only and vicarious-only experiences.

Hypothesis 2 (H2). Direct violent victimization will more strongly predict violent offending than vicarious violent victimization.

Hypothesis 3 (H3). Direct violent victimization will more strongly predict property offending than vicarious violent victimization.

Hypothesis 4 (H4). Dual violent victimization, compared to direct-only and vicarious-only victimization, will have the greatest effect on both violent and property offending.

The direct and vicarious victimization-offending relationships are further specified by including three dimensions of strain—frequency (i.e., repeat victimization), variety (i.e., poly-victimization), and recency—to expand from prior studies that indicate the causal pathways to be contingent upon a range of strain dimensions that alter the criminogenic nature of the victimization experience (e.g., Baron, 2008; Slocum et al., 2005; Wojciechowski, 2019). In particular, Agnew (1992; 2002) posits victimization to be even more conducive to crime when repeated, chronic, recent, or multiple (cumulative). I thus estimate the specific and independent effects of frequency, recency, and variety for direct and vicarious victimization on violent and property offending outcomes.

Hypothesis 5 (H5). More frequent exposure to victimization will have greater effects on both violent and property offending.

Hypothesis 5a (H5a). More frequent direct victimization will have a greater effect on offending outcomes than less frequent direct victimization.

Hypothesis 5b (H5b). More frequent vicarious victimization will have a greater effect on offending outcomes than less frequent vicarious victimization.

Hypothesis 6 (H6). More exposure to a variety of victimization experiences will have greater effects on both violent and property offending.

Hypothesis 6a (H6a). Exposure to a variety of direct victimization experiences will have a greater effect on offending outcomes than only one experience of direct victimization.

Hypothesis 6b (H6b). Exposure to a variety of vicarious victimization experiences will have a greater effect on offending outcomes than only one experience of vicarious victimization.

Hypothesis 7 (H7). More recent exposure to victimization will have greater effects on both violent and property offending.

Hypothesis 7a (H7a). More recent experiences of direct victimization will have a greater effect on offending outcomes than less recent direct victimization.

Hypothesis 7b (H7b). More recent experiences of vicarious victimization will have a greater effect on offending outcomes than less recent vicarious victimization.

Chapter 3: Data and Methods

Data

The current study uses data from the Pathways to Desistance project, a large-scale, two-site longitudinal examination of serious juvenile offenders adjudicated in both juvenile and adult courts in Maricopa County (Phoenix), Arizona ($N = 654$) and Philadelphia County, Pennsylvania ($N = 700$) (see Mulvey et al., 2004; Schubert et al., 2004 for project description and methodology). Participants were recruited through a review of court files at both sites. To be eligible, adjudicated youths had to be between 14 and 18 years of age at the time of their committing offense and found guilty of a serious offense, which primarily included felony offenses and some misdemeanor sexual assault and weapons offenses. From offenses most frequent to least frequent, 41% of the eligible juveniles were adjudicated for committing violent offenses against persons, 26% for property offenses, 10% for weapon-related offenses, 4% for sex offenses, and 4% for other offenses (e.g., conspiracy, intimidation of a witness). In response to the overrepresentation of drug law violations committed by males in this particular age group, the proportion of juvenile males with drug offenses was limited to 15% of the sample at each site. All females and juveniles transferred to adult court that met the age and offense type requirements were eligible to be enrolled.

Eligible youth joined the study during a rolling enrollment period between November 2000 and January 2003 and remained enrolled over a span of seven years from 2000 to 2010. Compared to the eligible youths who were not enrolled in the study, participating youths tended to be, on average, younger at adjudication, have more prior petitions, be younger at first petition, and more likely to be non-Hispanic White (Cauffman et al., 2007). While statistically significant,

the magnitude of these differences between participants and nonparticipants are reported to be “modest” (Cauffman et al., 2015:240). Juveniles who consented to participate in the Pathways project represented approximately 67% of eligible youth and constituted a total sample of 1,354 participants at baseline.

Data was obtained through official records (sourced from court, FBI, child welfare, and Medicaid records) and a series of self-report, computer-assisted interviews conducted at baseline, periodic follow-ups, and post-release. Follow-up interviews were conducted approximately every six months for the first three years of the Pathways study. For the remaining four years, participants were interviewed annually for a total of 10 post-baseline interviews. Interviews were conducted either in a facility, if the participant was confined, at the participant’s home, or at a previously vetted secondary location in the community.

For the purpose of this thesis, which focuses on offending behaviors during middle and late adolescence, I limit my analysis to the first three waves of data, Wave 0 (baseline) through Wave 2 (one year after enrollment). If I were to include waves past Wave 2, the oldest participants in the study would be transitioning from adolescence to early adulthood. The initial sample is the complete Pathways sample of 1,354 serious youth offenders. Of the 1,354 participants, 86.41% are male and 13.59% are female. The mean age at baseline is 16.043 years ($SD = 1.143$). A breakdown of race/ethnicity indicates that 20.25% are White, 41.43% are Black, 33.53% identify as Hispanic, and 4.8% identify as another race or ethnicity not listed.

To reiterate, the primary goal of this thesis is not to substantiate the proposed causal victimization-offending relationship, but rather to investigate differences in victimization experiences and how they differentially affect later offending outcomes, contributing to heterogeneity among victim-offenders. The Pathways data is appropriate for this study for two

main reasons. First, in a high-risk, offender-based sample, a history of violent victimization is likely to be more common than in a general population sample. While this limits the scope of generalizability to similarly high-risk, system-involved offending youth, this increases the chances of exploring variation in victimization experiences and uncovering meaningful differences in victimization effects on future criminal behavior. Second, the dataset includes detailed description of victimization experiences by including self-reported information on the degree (i.e., direct or vicarious) and other characteristic dimensions of the victimization event, such as when and how frequently it occurred, which is rarely recorded in other data sources. It also allows for the categorization of offending behaviors by crime type. Considering that the use of general or composite measures of victimization and offending is a prevailing limitation of victim-offender research, the capacity of the Pathways data to recognize differences in victimization histories is a definite advantage that can be used to better describe consequences of youth trauma.

Dependent Variable: Self-Reported Offending

Participants were asked to report their criminal involvement in different types of crime at baseline and all subsequent waves. The Self-Reported Offending (SRO; Huizinga et al., 1991) inventory adapted by the Pathways researchers consists of 24 total items of illegal behavior. Each endorsed item prompts a series of follow-up questions about frequency and recency. As the present study aims to examine offending behaviors that occur after victimization experience(s) stated at baseline, only items that are measured at Wave 1 and Wave 2, six months and one year after baseline, respectively, are used. There are six items that do not refer to violent and property offending (i.e., drug and sex offenses) that are excluded. The remaining items grouped by crime type (i.e., violent and property offenses) comprise the outcome variables. The descriptive

properties of the specific items used for violent and property offending are listed in **Table 3** (see **Appendix A** for a breakdown of violent and property offending indicators at each wave).

Violent Offending

Violent offending was measured using nine self-reported items. Participants were asked about incidents in which they committed a violent crime (1 = *yes*, 0 = *no*). These items asked whether the participant has (1) killed someone, (2) shot someone (and the bullet hit), (3) shot at someone (and the bullet did not hit), (4) took by force with weapon (i.e., armed robbery), (5) took by force with no weapon (i.e., robbery), (6) beat up someone and caused serious injury (i.e., enough to need to see a doctor), (7) been in a fight, (8) beat someone up as part of a gang, and (9) carjacked. A binary measure of violent offending (i.e., any violent offending during Waves 1 and 2) was created (1 = *yes*, 0 = *no*) to first estimate the basic relationship between violent offending and different degrees of victimization. Of the 1,092 participants included in the analytic sample, 62.6% ($SD = 0.484$) reported engaging in some form of violent offending at either Wave 1, Wave 2, or both waves.

To create the final violent offending measure, I first combine the nine binary violent offending items across Waves 1 and 2, such that any reported involvement in the behavior (e.g., been in a fight) is coded 1 (0 = *never reported having been in a fight*). Items were then summed to create an indicator capturing the variety of different types of violent offenses that the participant engaged in. A variety score is used as the main outcome measure because variety scores retain higher reliability and validity than raw frequency scales and lend insight into the frequency and severity of offending behavior (Sweeten, 2012), especially for samples with high rates of antisocial behavior (Hindelang et al., 1981) such as youth in the Pathways study. The variety score for violent offending ranges from zero to nine types of violent crime, with higher

values indicating more severe violent offending behavior. Descriptive sample statistics indicate a mean variety score of 1.241 ($SD = 1.498$), meaning that, on average, youth reported engaging in just over one type of violent behavior. The distribution of the variety score for violent offending is skewed to the right, with values concentrated around zero. Approximately 37% of the sample report no violent offending across Waves 1 and 2. Participation in up to three different violent offending behaviors accounts for more than 90% of the entire sample.

Property Offending

Property offending was measured using eight self-reported items. Participants were asked to report incidents in which they committed a property (non-violent) crime (1 = *yes*, 0 = *no*). These items included whether the participant has (1) destroyed or damaged property, (2) set fire to house, building, car, and/or vacant lot, (3) broke in a building to steal, (4) shoplifted, (5) bought, received, and/or sold stolen property, (6) used a check and/or credit card illegally, (7) stole a car or motorcycle, and (8) broke into a car to steal. A binary measure of property offending (i.e., any property offending during Waves 1 and 2 was created (1 = *yes*, 0 = *no*). Of the 1,092 participants in the analytic sample, 37.2% ($SD = 0.484$) indicated to have engaged in some form of property offending at either Wave 1, Wave 2, or both waves.

To create the final property offending measure, I first combine the eight binary violent offending items across Waves 1 and 2, such that any reported involvement in the behavior (e.g., destroyed or damaged property) is coded 1 (0 = *never reported destroying or damaging property*). Items were then summed to create an indicator capturing the variety of different types of property offenses that the participant engaged in. The variety score for property offending ranges from zero to eight types of property crime, with higher values indicating more severe non-violent property offending behavior. Descriptive sample statistics indicate a mean variety score

of 0.813 ($SD = 1.426$), meaning that, on average, youth reported engaging in under one type of property offending. Similar to the distribution of violent offending, the distribution of the variety score for property offending is skewed to the right, with values concentrated around zero. Approximately 63% of the sample reported no participation in property offending behaviors, which is greater than the number of youths who reported no violent offending. Participation in up to three different property offending behaviors account for more than 90% of the sample.

Independent Variable: Victimization

Participants were asked to report their direct and indirect experiences with violent victimization at baseline and all subsequent waves. Violent victimization items included in the Pathways to Desistance project were adapted from the Exposure to Violence Inventory (ETV; Selner-O'Hagan et al., 1998). To preserve the temporal order of the hypothesized victimization-offending relationship, the present study only uses victimization data collected at baseline. The descriptive properties of the specific items used to measure direct and vicarious victimization are listed in **Table 2**.

General Victimization

General victimization was measured by combining all indicators of direct and vicarious violent victimization items (listed below). Participants who answered *yes* to any one of these items were coded as 1. Participants who did not experience any form of victimization (i.e., *no*) were coded as 0. Of the 1,092 participants in the analytic sample, 94.3% ($SD = 0.232$) indicated experiencing some form of violent victimization prior to study enrollment.

Direct Victimization

Direct victimization was measured through six self-reported items. Participants were asked to report incidents in which they were violently victimized (1 = *yes*, 0 = *no*). These items included whether the participant has (1) been chased (and thought that they could be hurt), (2) been beaten up by another person, (3) been raped or sexually attacked, (4) been attacked with a weapon, (5) been shot at (but not hit), and (6) been shot and hit by a bullet. Any items answered *no* were coded as 0. Any items answered *yes* were further asked about frequency (e.g., “Number of times you were victimized?”) and recency (e.g., “When was the last time?”). A binary measure was created to gauge the prevalence of direct victimization among the sampled participants (1 = *any direct victimization*, 0 = *no direct victimization*). Of the analytic sample, 63.9% ($SD = 0.480$) experienced some form of direct violent victimization.

Strain Dimension: Frequency. Frequency was reported as a count for each item. Due to a few extreme numbers (e.g., 900), I truncate the frequency count at 20, which accounts for about 99% of all instances of victimization for each item. The frequency of the truncated items are summed to create a total frequency score for direct victimization at baseline. Descriptive sample statistics indicate a mean frequency score of 4.897 ($SD = 8.304$), which means that, on average, youth reported experiencing direct violent victimization approximately five times prior to study enrollment. The most frequently reported direct victimization experiences (truncated at 20) include being chased (and thought they could be hurt), being beaten up by another person, being attacked with a weapon, and being shot (but not hit). Notably, none of the participants reported directly experiencing rape or sexual assault prior to study enrollment.

Strain Dimension: Variety. Direct victimization measures that respondents answered *yes* to were summed to create a variety score of direct victimization that captures the range of

different direct victimization experiences. The variety score ranges from zero to six, with higher values indicating a greater number of direct victimization experiences by the participant.

Participants report a mean variety score of 1.463 ($SD = 1.427$), meaning that, on average, youth reported experiencing between one to two direct violent victimization events prior to study enrollment.

Strain Dimension: Recency. Recency of direct victimization indicators was reported as a numerical score on a 4-item scale of *More than 6 months ago* ($=1$), *4-6 months ago* ($=2$), *1-3 months ago* ($=3$), and *Within the past 30 days* ($=4$), such that a higher value represents a more recent victimization experience. Indicators that were not endorsed were coded as 0. The highest (i.e., most recent) score among the six indicators of direct victimization is recorded for each participant. Participants report a mean recency score of 1.150 ($SD = 1.162$), meaning that, on average, youths' most recent direct victimization experience was less than six months and more than four months prior to study enrollment. Of the different direct victimization indicators, being beaten up by another person was most frequently reported as youths' most recent experience.

Vicarious Victimization

Vicarious victimization was measured through six self-reported items. Participants were asked to report incidents in which they witnessed someone else being violently victimized (1 = *yes*, 0 = *no*). These items included whether the participant has seen someone else (1) be chased (and thought that they could be hurt), (2) get beaten up, (3) be raped or sexually attacked, (4) be attacked with a weapon, (5) be shot at (but not hit), and (6) be shot and hit by a bullet. Any items answered *no* were coded as 0. Any items answered *yes* were further asked about frequency and recency (e.g., "When was the last time?"). A binary measure was created to gauge the prevalence of vicarious victimization among the sampled participants (1 = *any vicarious victimization*, 0 =

no vicarious victimization). Of the analytic sample, 93.0% ($SD = 0.255$) reported experiencing some form of vicarious victimization.

Strain Dimension: Frequency. Frequency was reported as a count for each item. Due to a few nonsensical numbers (e.g., 900), I truncate the frequency count at 20 for each individual item, which accounts for about 99% of all instances of vicarious victimization for each item (as done for the frequency indicator of direct victimization). The frequency of the truncated items is summed to create a total frequency score for vicarious victimization at baseline. Descriptive sample statistics indicate a mean frequency score of 19.202 ($SD = 21.117$), which means that, on average, youth reported experiencing approximately 19 vicarious violent victimization events prior to study enrollment. The most frequently reported vicarious victimization experiences (truncated at 20) include seeing someone else being chased, being beaten up by another person, being attacked with a weapon, being shot (but not hit), and being shot and hit. In contrast to direct victimization, some youths did report witnessing an instance of rape or sexual assault prior to study enrollment.

Strain Dimension: Variety. As with the direct victimization measure, items answered *yes* were summed to create a variety score that captures the range of vicarious victimization experienced by the participant. The variety score ranges from zero to six different types of vicarious victimization, with higher values indicating a greater number of vicarious victimization experiences by the participant. Participants report a mean variety score of 3.408 ($SD = 1.658$), meaning that, on average, youth reported experiencing between three and four vicarious violent victimization events prior to enrollment.

Strain Dimension: Recency. Recency of vicarious victimization indicators was reported as a numerical score on a 4-item scale of *More than 6 months ago* ($=1$), *4-6 months ago* ($=2$), *1-*

3 months ago (=3), and *Within the past 30 days* (=4), such that a higher value represents a more recent victimization experience. Indicators that were not endorsed were coded as 0. The highest recency score among the six indicators of vicarious victimization is recorded for each participant. Participants report a mean recency score of 2.201 ($SD = 1.230$), meaning that, on average, youths' most recent vicarious victimization experience occurred one to four months before study enrollment. Similar to direct victimization, of the different vicarious victimization indicators, seeing another person being beaten up was most frequently reported as youths' most recent experience.

Dual Victimization

A participant is dually victimized if the participant has experienced both direct and vicarious victimization. Dual victimization was measured as a binary variable. Participants who answered *yes* to any direct victimization indicators and *yes* to any vicarious victimization indicators were coded as 1. Participants who experienced either only direct or vicarious victimization or did not experience any victimization at all were coded as 0. Of the analytic sample, 62.6% ($SD = 0.484$) experienced some form of dual violent victimization prior to study enrollment.

Control Variables

All control variables (except for active gang involvement) are measured at baseline.

Self-Reported Offending: Violent and Property Offending. Considering previous research that indicates prior offense history to be a robust predictor of repeat criminal offending (e.g., Cottle et al., 2001), it is possible that offending at baseline contributed to the likelihood of offending at Waves 1 and 2. Furthermore, studies examining offending specialization and

versatility suggest that the likelihood of committing a particular offense later in the life course is greater if the prior offense was of the same type (e.g., Baker et al., 2013). The analyses thus separately control for violent and property offending.

Prior self-reported violent offending is a continuous count variable measured as a variety score of violent offending indicators, ranging from zero to eight different types of violent behavior. Prior self-reported property offending is a continuous count variable measured as a variety score of property offending indicators, ranging from zero to eight different types of property behavior. Higher values indicate more serious prior violent and property offending behavior by the participant. The distribution of the variety score for violent offending is skewed to the right, with values concentrated around one. Few participants (2.84%) report no prior violent offending. Participation in up to five different violent offending behaviors accounts for more than 90% of the entire sample. The distribution of the variety score for property offending is also skewed to the right, with values concentrated around the lower bound (i.e., zero and one). Participation in up to six different property offending behaviors accounts for more than 90% of the sample.

Supervision Status. Noting the unique sample of adjudicated serious youth offenders, I also control for active system involvement post-adjudication, a form of formal social control, which may structurally prevent or limit participants from engaging in crime through increased surveillance. The Pathways data provides a measure of current enrollment in court-ordered supervision, which includes confinement, probation, and informal supervision sentences. This item, labeled ‘supervision status’, is a binary variable (1 = *currently enrolled*, 0 = *not enrolled*). More than half of the sample (60.5%) reported being in court-ordered supervision at the point of study enrollment.

Theoretically relevant control variables include emotion regulation, peer delinquency, resistance to peer influence, low self-control, and gang involvement.

Emotion Regulation. GST proposes that the victimization-offending relationship is mediated by negative affect, most notably anger, which can encourage criminal coping (Agnew, 1992; Brezina, 1996). According to this argument, victims who are better at regulating their negative emotions should be less likely to engage in maladaptive coping mechanisms such as crime. Though the Pathways data does not capture situational negative affect (e.g., anger) generated by the victimization event, it does capture a self-report baseline measure of emotional intensity that captures an adolescent's ability to regulate emotions, adapted from the Children's Emotion Regulation scale by Walden, Harris, Weiss, and Catron (1995) (see **Appendix K** for the full index of emotion regulation items). Participants respond to 12 items on a 4-point Likert scale of *Not at all like me* (=1), *A little bit like me* (=2), *Kind of like me* (=3), and *Really like me* (=4). A mean score of emotion regulation is computed for each participant across all 12 items. Higher scores indicate a greater ability to regulate emotions. The distribution has a slight left skew, such that values are slightly more concentrated around the maximum value of 4 than the minimum value of 1, with a mean emotion regulation score of 2.76 ($SD = 0.65$). This means that on average, youths in the sample have a moderate (or mediocre) ability to regulate emotions.

Delinquent peer association, low resistance to peer influence (i.e., peer resistance), low self-control, low social control, and gang involvement are pertinent risk factors that predispose individuals to criminal involvement and render criminal coping more likely (Agnew, 2001).

Peer Delinquency. The Pathways study measures peer delinquency using a subset of items from the Rochester Youth Study (Thornberry et al., 1994) that ask participants about antisocial behavior demonstrated by peers. The peer delinquency measure consists of 12 items

such as “How many of your friends have sold drugs?”, “How many of your friends have damaged/destroyed property?”, and “How many of your friends got into a physical fight?” that participants responded to on a 5-point scale, ranging from *no delinquent peers* (=1) to *all delinquent peers* (=5) (see **Appendix L** for the full index of peer delinquency items). Higher scores indicate greater peer delinquency. The distribution is right skewed, such that values are more concentrated around the minimum value of 1, indicating that more youths reported having fewer delinquent peers than all delinquent peers. The mean peer delinquency score of 2.31 ($SD = 0.91$), meaning that on average, youths were typically affiliated with some delinquent peers. Scores up to 3.5 account for approximately 90% of the entire sample.

Peer Resistance. The Resistance to Peer Influence (Steinberg, 2000) measure asks participants to select one of two conflicting hypothetical scenarios (e.g., “Some people go along with their friends just to keep their friends happy” and “Other people refuse to go along with what their friends want to do, even though they know it will make their friends unhappy”) that most closely reflects their behavior to gauge how autonomously they would act in their peer group. Then, participants are asked to rate the degree to which the statement is accurate (e.g., “really true of me”). This process is repeated for ten sets of hypothetical scenarios, with each set capturing a particular dimension of potential peer influence (e.g., fitting in with friends, knowingly do something wrong, taking risks, etc.) (see **Appendix M** for the full list of peer resistance scenarios and statements). An overall resistance score calculated using the two answers provided by the participants for each of the ten sequences is provided in the Pathways data, with higher scores indicating greater resistance to peer influence. The distribution has a slight left skew, such that values are slightly more concentrated around the higher values of 3

and 4 than the minimum value of 1, with a mean peer resistance score of 2.70 ($SD = 0.58$), indicating that youths reported a slightly high resistance to peer influence.

Low Self-Control. Low self-control is gaged using the impulse control subscale from the Weinberger Adjustment Inventory (Weinberger & Schwartz, 1990). The impulse control subscale includes items such as “I say the first thing that comes into my mind without thinking about it”, “I say the first thing that comes into my mind without thinking enough about it,” and “I stop and think things through before I act” (see **Appendix N** for the full index of low self-control (impulse control) items). Participant responses are recorded on a 5-point Likert scale of *False* ($=1$), *Somewhat False* ($=2$), *Not Sure* ($=3$), *Somewhat True* ($=4$), and *True* ($=5$). Higher scores indicate greater levels of low self-control. The distribution is platykurtic (Kurtosis = 2.29), with one outlier value at 3. The mean self-control score for the sample is 2.95 ($SD = 0.95$), indicating that youths typically reported lower levels of self-control.

Social Control: School and Employment Status. Levels of social control can impact an individual’s likelihood of engaging in crime by influencing the availability of different coping strategies, the perceived costs and benefits of different strategies, and the consequences or outcomes of these coping strategies (Agnew, 1992; 2007; 2013). Such sources of social control include commitment to school and employment (Agnew, 2007), which prior studies have included as individual-level controls (e.g., Lin et al., 2011; Park & Metcalfe, 2022). While these measures do not fully capture the strength of social control (i.e., how committed or connected one is to prosocial institutions) given the available data, they do provide some information on whether the participant is exposed to such conventional institutions that act as social controls. The present study therefore controls for binary measures of school status (1 = *enrolled in school*, 0 = *not enrolled in school*) and employment status (1 = *currently employed*, 0 = *not employed*) as

proxies for social control. Of the youths in the sample, 73.8% were enrolled in school and 25.7% were legally employed at the time of study enrollment.

Gang Involvement. Prior literature indicates criminal coping to be more likely among individuals who report currently being in a gang (e.g., Thaxton & Agnew, 2018), which has been endorsed to be a reasonably valid indicator of gang involvement for criminological research (e.g., Esbensen et al., 2001). Following such earlier GST studies that analyze the relationship between gang membership and criminal behavior, this study also controls for active gang membership, rather than gang membership reported at baseline. Gang involvement is a binary variable measured across Waves 1 and Wave 2 to capture active gang membership. Active gang membership in either Wave 1, Wave 2, or both Waves 1 and 2 is coded as 1. No active gang membership is coded as 0. About 11% of the sample reported being in a gang at Wave 1 and/or Wave 2.

Demographic Characteristics. Research on the VO overlap also finds a number of demographic and individual characteristics to be related to victimization and/or criminal behavior. Demographic controls include age, sex, and race/ethnicity. Age is a continuous variable ranging from 14 to 19 years at baseline, with a mean age of 16 ($SD = 1.148$). Sex is a binary variable (0 = *female*, 1 = *male*). As in the initial sample, the majority of youths in the analytic sample identified as male (88.9%). Race/ethnicity includes four categories split into binary indicators: Black, White, Hispanic, and Other (i.e., another race or ethnicity not listed). White is the reference category in the current analyses. Demographics indicate 20.1% of the analytic sample to be non-Hispanic White, 41.2% non-Hispanic Black, 33.9% Hispanic, and 4.9% to identify as another race or ethnicity not listed.

Family Structure. Previous research has found youth living in intact families, especially two-parent biological or adoptive parent households, to be less likely to self-report victimization and criminal involvement compared to youth in non-intact families (e.g., single-parent households, no parent or adult relative households) (Esbensen & Huizinga, 1991; Spohn & Kurtz, 2011). As prior studies have done (e.g., Esbensen & Huizinga, 1991; Smith & Ecob, 2007), the categorical measure of family structure provided in the Pathways data is simplified into a binary indicator that records whether the youth participant lives with both biological parents at the time of study enrollment (0 = *other family structure*, 1 = *lives with both biological parents*). Other family structure includes conditions such as living with a biological mother and stepfather, with only the biological father, with other adult relatives, and ‘other’ (not clarified in Pathways data). Less than a quarter (15.4%) of the sample reported residing in a household with both of their biological parents. It must be noted that nearly 42% of the sample reported having an “Other” type of family structure.

Neighborhood Conditions. Agnew (2002) suggests that studies applying a GST framework should control for community characteristics, such as neighborhood disorder or disadvantage. Depending on the level of disorder and structural disadvantage in a neighborhood, youths will be differentially exposed to neighborhood violence and a violent “street culture” (Berg & Loeber, 2011; Berg et al., 2012). Perceptions of neighborhood crime and safety have also been evidenced to impact exposure to violence and subsequent offending among youth (Hartinger-Saunders et al., 2012). Neighborhood conditions is a categorical variable measured by asking participants how often they see indicators of social and physical disorder in their neighborhood (see **Appendix O** for the full index of neighborhood conditions items). Responses vary on a 4-item scale: *Never* (=1), *Rarely* (=2), *Sometimes* (=3), and *Often* (=4). Higher scores

indicate greater perceived neighborhood disorder. The distribution is platykurtic (Kurtosis = 2.23) and is slightly skewed to right, indicating less frequent values at the maximum score of 4. The mean value for neighborhood disorder is 2.34 ($SD = 0.74$), meaning that on average, youths perceive their neighborhoods to have moderate levels of disorder.

Analytic Sample

Among the 1,354 eligible youths at baseline (Wave 0), 93.43% ($N = 1,265$) completed the follow-up interview at Wave 1 and maintained an average retention rate of approximately 90% at Wave 2. The Pathways codebook specifies a range of reasons for missing responses, including (from most common to least common) missed interviews, partial interviews (i.e., some participants were not asked about all items), “don’t know” answers, and rarely, refusal to answer. There are three primary ways missing data may enter the study. Youth are excluded from the study for two reasons. First, participants could have refused to answer baseline victimization questions due to the sensitive nature of the items. While there are no missing responses for binary victimization indicators (e.g., Were you ever chased?), data is missing on some of the victimization recency (i.e., When was the last time...) and frequency items (i.e., How many times...). Other than a few “don’t know” answers, the reasons for the missingness is not specified by the Pathways codebook and is simply marked as ‘Data missing’. Participants with missing responses to any variation of the baseline victimization questions ($N = 101$) are dropped from the sample to retain a consistent sample with complete victimization data at baseline.

Second, data may be missing on the dependent variable, self-reported violent and property offending, at Waves 1 and/or 2. A missing data analysis is conducted to determine how many item responses are missing at each wave, to investigate why they are missing from the

data, and to see how participants with missing items differ from participants with non-missing items by running a series of t-tests on key demographic and individual characteristics.

Results from the missing data analysis indicate that 44 participants have missing responses for violent and property offending items at either Wave 1, Wave 2, or both waves and are dropped from the sample. Participants with missing offending data were, on average, more likely to be older, more likely to not be enrolled in school, and reported slightly higher peer delinquency scores than participants with no missing data on self-reported offending measures.

Third, data may be missing on key control variables included in the proposed models. After dropping participants for missing values on victimization and offending measures, the only control variables with missing data were peer delinquency ($N = 24$) and peer resistance ($N = 5$). Most missing responses for both peer delinquency and peer resistance measures are coded as ‘data missing’; 11 of the missing responses for only peer delinquency items are “don’t know” responses. Participants with data missing on these two control variables are also dropped. The final analytic sample used in the current study includes 1,092 serious youth offenders, which accounts for approximately 80.6% of the initial sample collected at baseline.

Analytic Strategy

The analyses take part in two stages. First, to test whether there is a significant baseline association between violent victimization and offending as the literature suggests, I run a series of logistic regression models with robust standard errors to estimate the general victimization-offending relationships using binary measures of victimization (general, direct, vicarious, and dual) and violent and property offending. I first estimate the victimization-offending relationships without controls (i.e., bivariate models), then estimate the relationships with the controls included in the multivariate models. As the coefficients produced by the logistic

regressions models are not directly comparable, a series of Wald tests using seemingly unrelated estimation to combine results across regressions are conducted to examine whether the varying degrees of victimization experiences produce statistically different effects on offending outcomes across models. This stage tests Hypotheses 1 through 4.

Second, I run a series of Poisson models with robust standard errors to estimate the victimization-offending relationships using binary measures of direct and vicarious victimization and count measures of offending. Four total sets of Poisson models are run: direct victimization-violent offending, vicarious victimization-violent offending, direct victimization-property offending, and vicarious victimization-property offending. To examine whether these relationships vary by the dimensions of victimization that contextualize the strain, each of the four models is modified by independently adding each dimension measure of strain: (1) frequency, a count measure of direct and vicarious victimization experiences, (2) variety, a variety score of direct and vicarious victimization experiences, and (3) recency, a categorical measure reporting the temporal proximity of the most recent victimization experience. If the effect of the binary victimization measures on offending outcomes disappears or is significantly reduced when accounting for the dimensions of strain (i.e., frequency, variety, recency), the proposition that the victimization-offending relationship depends on the specific characteristics of the victimization experience are supported. Other individual-level control variables are also included in the models at each stage. Likelihood ratio tests are run to examine whether the nested models (i.e., including victimization dimensions) explain more variation in offending outcomes than the bivariate models (i.e., only binary measure of victimization). This stage tests Hypotheses 5 through 7.

Poisson regression models are used because they are able to correct for overdispersion by using robust standard errors. The main dependent variables of violent and property offending are count variables with values concentrated around the lower bound (i.e., 0). The right-skewed distributions of the offending measures indicate overdispersion in the data. While negative-binomial regression models assume overdispersion and may achieve the same results as Poisson, Poisson models are less parametric than negative-binomial models and are thus the more conservative choice. A series of negative-binomial models testing the same relationships as the Poisson models are run as a sensitivity check. A p value of $< .05$ is considered statistically significant. Stata version 17 will be used.

Chapter 4: Results

Descriptive Results

Table 1 presents descriptive statistics for the final analytic sample ($N = 1,092$). Victimization is prevalent—94.3% indicated having experienced some degree of violent victimization prior to study enrollment (i.e., general victimization). Of the 1,092 youths, 63.9% ($N = 698$) reported experiencing direct violent victimization and 93.0% ($N = 1,061$) reported experiencing vicarious violent victimization. More than half (62.6%) of the participants reported being dually victimized, meaning that they had experienced both direct and vicarious violent victimization prior to study enrollment. Among those who were vicariously victimized, 32.7% ($N = 332$) reported experiencing only vicarious victimization (i.e., no direct victimization experience). In contrast, only about 2.0% ($N = 14$) of youths who were directly victimized did not experience vicarious victimization. This suggests that youths who have a history of direct violent victimization typically also witness others being violently victimized and be exposed to dual violent victimization. The prevalence of victimization experiences documented for this sample is aligned with extant juvenile justice research that finds victimization to be one of the most salient and common risk factors among system-involved youth (e.g., Wylie & Rufino, 2018), especially those who engage in violent crime (Cain, 2021), as well as other high-risk samples (e.g., McGrath et al., 2012).

The strain dimensions of frequency, variety, and recency also indicate that youths, on average, experience vicarious victimization (Mean = 19.202, $SD = 21.117$) more frequently (i.e., higher raw count) than direct victimization (Mean = 4.900, $SD = 8.304$) (albeit with great variation), report experiencing a greater variety of vicarious experiences (Mean = 3.408, $SD =$

1.658) than direct experiences (Mean = 1.463, $SD = 1.427$), and report their last vicarious victimization experience (Mean = 2.201, $SD = 1.230$) to be more recent than their last direct victimization experience (Mean = 1.150, $SD = 1.162$). Further, vicarious victimization is more frequent (Mean = 24.665, $SD = 22.680$), experienced in greater variety (Mean = 4.007, $SD = 1.348$), and the last vicarious experience more recent (Mean = 2.391, $SD = 1.128$) for youths who have also encountered direct victimization than youths who have never been directly victimized (Frequency Mean = 9.523, $SD = 13.373$; Variety Mean = 2.348, $SD = 1.626$; Recency Mean = 1.865, $SD = 1.331$) prior to study enrollment.

Vicarious victimization may be more prevalent than direct victimization due to the types of victimization that are asked about in the Pathways study. The violent victimization items assess youths' exposure to serious forms of victimization, such as being shot, being sexually assaulted, and being physically attacked with a weapon. Given the severity of these victimization experiences, the participants are realistically more likely to have witnessed the victimization of others more often than experiencing them directly. **Table 2** presents the descriptive statistics for each item of direct and vicarious victimization reported at baseline. Considerably more participants reported experiencing vicarious than direct victimization for all six items. The differences in prevalence were greatest for being beaten up by another person (85.6% for vicarious victimization as opposed to 31.8% for direct victimization) and being shot and hit (46.8% for vicarious victimization as opposed to 6% for direct victimization). The difference in prevalence was the least for sexual assault (e.g., rape), which was uncommon as both a direct (0%) and vicarious (4.8%) violent victimization experience.

It is important in the context of the current study to examine how the victimization indicators that comprise the scales for the strain dimensions compare in prevalence, frequency,

and recency. Excluding sexual assault, other indicators of vicarious victimization were generally similar in prevalence (over half of the sample), with witnessing someone being shot and hit being the least common (46.8%). Direct victimization indicators of being chased, beat up, attacked with a weapon, and shot (but not hit) were also generally similar in prevalence (between 30% and 40% of the sample); being shot and hit by a bullet was considerably less common (approximately 6%). When looking at the frequency of victimization indicators, being chased, being beat up, being attacked with a weapon, and being shot at (but not hit) were the most frequent direct and vicarious victimization experiences. Given that the majority of indicators for both direct and vicarious victimization, which vary in severity, are similar in prevalence and frequency, the strain dimensions of victimization variety and frequency do not appear to be weighted by any one type of victimization experience.

Of the direct violent victimization indicators, being chased, being beat up, being attacked with a weapon, and being shot at (but not hit) had the highest recency scores (i.e., score of 4), which means that the most recent victimization experience occurred within the past 30 days. The most recent experience of a participant being shot and hit was reported to be one to three months ago (i.e., score of 3). All six of the vicarious victimization indicators had the maximum recency score of 4, indicating that of the youths who witnessed someone else be violently victimized, the most recent experiences occurred within the past 30 days. The strain dimension of recency thus also does not appear to be weighted by the occurrence of any one victimization indicator.

Not uncommon with an offender-based sample (e.g., Cottle et al., 2001), more than half (67.3%) of the analytic sample reported involvement in some type of offending after study enrollment (i.e., during Wave 1 and/or Wave 2). Of the 1,092 youths, 62.6% indicated participation in violent offending and 37.2% indicated participation in property offending.

Among those who offend ($N = 735$), more youth reported being only violent offenders (44.8%) than only property offenders (6.9%). Furthermore, about 32.5% of the analytic sample reported engaging in both violent and property offending. Disaggregated by crime type, 87.4% of youths who had engaged in property offending ($N = 684$) had also engaged in violent offending, and 51.9% of youths who had engaged in violent offending had also engaged in property offending ($N = 406$). This considerable overlap in violent and non-violent crime participation is aligned with prior research that supports the generality or versatility, as opposed to specialization, of criminal behavior (e.g., McGloin et al., 2009; Piquero, 2000).

Table 3 shows the descriptive statistics for each indicator of violent and property offending across both Waves 1 and 2. The most common forms of violent offending included being in a fight (60.2%), robbery (16.4%), beating up another person (enough to need medical attention) (15.9%), and being in a gang fight (11.7%). As expected, homicide was the least common (2%). The most common forms of property offending included buying or selling stolen property (24.5%), destroying property (20.1%), and shoplifting (11.6%). The least common type of property crime was arson (i.e., setting fire to property) (1.9%). Given that the less serious forms of violent and property offending dominate over more severe forms of crime, the binary measures of offending outcomes may not be an accurate representation of criminal involvement among this sample, such as by overestimating the severity of violent and/or property offending behaviors. The variation in prevalence among the different forms of violent and property crime indicate that the variety scores for crime participation, which factors in information from all offending indicators, provide a more nuanced reflection of offending outcomes by distinguishing between less and more serious involvement in crime.

Stage 1: Logistic Regression Models

Logistic regression models with robust standard errors estimate the effects of experiencing varying degrees of violent victimization on the likelihood of engaging in subsequent violent and property crime.

Bivariate Logistic Regression Models

Consistent with prior literature, all four violent victimization measures (i.e., general, direct, vicarious, and dual) are significantly and positively associated with violent offending in the bivariate models (see Model 1, **Tables 4** through **7**). Youth who experience any instance of victimization have 162.9% greater odds of engaging in later violent offending ($b = 0.967$, $SE = 0.267$, $OR = 2.629$, $p < 0.001$). When split by victimization degree, the results indicate that experiencing direct victimization is associated with a 169.1% increase ($b = 0.990$, $SE = 0.131$, $OR = 2.691$, $p < 0.001$), vicarious victimization with a 146.3% increase ($b = 0.901$, $SE = 0.241$, $OR = 2.463$, $p < 0.001$), and dual victimization with a 173.9% increase ($b = 1.008$, $SE = 0.130$, $OR = 2.739$, $p < 0.001$) in the odds of engaging in later violent offending.

Similarly, all four violent victimization measures are significantly and positively associated with property offending in the bivariate models (see Model 1, **Tables 8** through **11**). Youth who experience any instance of victimization ($b = 0.651$, $SE = 0.304$, $OR = 1.917$, $p < 0.05$), direct victimization ($b = 1.130$, $SE = 0.144$, $OR = 3.095$, $p < 0.001$), vicarious victimization ($b = 0.689$, $SE = 0.278$, $OR = 1.991$, $p < 0.05$), and dual victimization ($b = 1.150$, $SE = 0.143$, $OR = 3.159$, $p < 0.001$) are all more likely to engage in subsequent property offending than youth who have not experienced any form of violent victimization.

These results thus reveal some notable patterns in the victimization-offending relationships that vary by victimization degree. General violent victimization is more strongly

associated with violent (OR = 2.629) than property offending (OR = 1.917). The effect sizes of direct victimization experiences are greater for both offending outcomes than vicarious experiences, though the difference in effect size between direct and vicarious victimization is much smaller for violent offending than property offending. It is somewhat surprising that direct violent victimization is more strongly associated with property than violent offending, given research that finds the impact of both proximal and distal exposure to violence to be greatest for violent, as opposed to non-violent, behaviors (e.g., Baron, 2009; Farrell & Zimmerman, 2017). This result may partially be attributable to the observed overlap between property and violent offending behaviors among this particular offender-based sample; many participants who reported engaging in subsequent property crime also reported engaging in violence. Dual victimization has largest coefficients for subsequent violent and property offending behaviors among the various degrees of violent victimization assessed in the models. It should be noted, however, that the effect size of dual victimization is not “dually” larger than the effect size of only direct victimization, which is not surprising given the congruency in the measures of dual and direct victimization (i.e., many youths who reported experiencing direct victimization also reported experiencing vicarious victimization).

A series of Wald tests using seemingly unrelated estimation assesses (1) whether the effects of violent victimization (i.e., general, direct, vicarious, and dual) statistically differ for each type of offending (i.e., violent versus property) and (2) whether direct, vicarious, and dual victimization have statistically different effects on offending outcomes. Results from the Wald tests indicate a lack of evidence that the coefficients of general ($p = .259$), direct ($p = .378$), vicarious ($p = .407$), and dual ($p = .364$) victimization are statistically different between violent and property crime models (see **Appendix E**). They also fail to find statistically significant

differences between the coefficients of direct, vicarious, and dual victimization for violent and property offending outcomes (see **Appendix F** for violent offending; see **Appendix G** for property offending). These comparisons of the standardized coefficients across models suggest that while the models reveal important patterns in the effect sizes of various degrees of victimization, the effects of general, direct, vicarious, and dual victimization on subsequent crime do not statistically differ from each other, providing insufficient support for Hypotheses 1 through 4. The patterns by victimization degree may not be statistically significant in the current study due to the limited variation in victimization experiences and may therefore be attributed to the nature of the present offender-based sample, which not only has high victimization rates, but also reports high overlap among direct, vicarious, and dual experiences of violent victimization (discussed further in the Discussion section).

Multivariate Logistic Regression Models

Contrary to prior literature citing violent victimization as a strong and central predictor of crime at both the bivariate and multivariate levels (e.g., Posick, 2013), victimization significantly decreases in significance once the control variables are added to the models. None of the victimization measures (i.e., general, direct, vicarious, and dual) are found to be significantly associated with violent offending (see Model 2, **Tables 4** through **7**). Only direct victimization ($b = 0.457$, $SE = 0.178$, $OR = 1.580$, $p < 0.05$) and dual victimization ($b = 0.479$, $SE = 0.177$, $OR = 1.614$, $p < 0.01$) maintain significant, positive associations with property offending, such that direct victimization is associated with a 0.580% increase and dual victimization is associated with a 0.614% increase in the odds of engaging in later property crime (see Model 2, **Tables 8** through **11**). These results are aligned with the results in the bivariate models that find direct victimization to have larger effect sizes for property than violent crime and dual victimization to

have the largest effect sizes for offending outcomes among the varying degrees of victimization. However, the observed effects of direct and dual victimization on property offending are attenuated in the multivariate models relative to the bivariate models.¹

This drastic decrease in significance for victimization as a major predictor of criminal behavior may indicate that victimization is not significantly independently related to the outcome variable once accounting for other important predictors of crime participation. Several control variables are shown to help explain variation in violent and property offending. Age at baseline, self-control, and peer delinquency are consistently and significantly associated with offending outcomes regardless of crime type, indicating that youths who are younger, exhibit lower levels of self-control, and report greater peer delinquency are more likely to engage in both violent and property offending. Other statistically significant controls are more crime-specific: sex, active gang membership, and emotion regulation are predictive of violent offending only, while being Black, being currently enrolled in court-ordered supervision (i.e., supervision status), and prior property offending are predictive of property offending only. Notably, prior violent offending is significantly and positively associated with both offending outcomes but is a weaker and more inconsistent predictor of property crime than violent crime.

The control variables may also be highly correlated with the main independent variables of victimization. Variance Inflation Factors (VIFs) and correlation coefficients for the variables used in the analyses are examined to rule out multicollinearity as a possible reason for the decrease in statistical significance of victimization. None of the observed variance inflation

¹ As for the bivariate models, results from the Wald tests comparing effects across the multivariate models indicate a lack of evidence that the coefficients of general ($p = .477$), direct ($p = .486$), vicarious ($p = .668$), and dual ($p = .437$) victimization have statistically different effects on subsequent violent and property crime. Direct, vicarious, and dual victimization also do not statistically differ in their effects on violent and property offending outcomes.

factor values is above 2.5. Given that the VIF values are not greater than 4.0 (MacDonald & Lattimore, 2010), the values suggest only moderate correlation and no problematic collinearity. The correlation coefficients also indicate low to moderate correlation (i.e., less than or equal to .52) between the control variables and the key victimization variables (see **Appendix D**). Multicollinearity thus does not appear to be a concern in the current study.

Furthermore, it may be that victimization is either jointly significant with other covariates or that the models are controlling for potential mediators of the hypothesized victimization-offending relationships. These possible explanations are discussed in the next section.

In sum, evidence for violent victimization as a clear *independent* predictor of subsequent offending is mixed. An earlier study by Park and Metcalfe (2022) that analyzes the same Pathways data using path analysis reports similar results: direct and vicarious victimization do not appear to have direct effects on later delinquency and crime. This may be due to the nature of the sample. As shown in the Descriptive Results section, the majority of the participants in this offender-based sample described having some form of prior victimization history, which may consequently mask the independent effect of victimization on later crime. While the results of the multivariate logistic regression models are generally inconsistent with the study's predictions, they do suggest that the link between victimization and crime is variable by victimization degree and offense type, warranting further investigation into the factors that may attenuate or amplify the effects of victimization on later criminal behavior.

Stage 2: Poisson Regression Models

Poisson regression models with robust standard errors estimate the effects of experiencing direct and vicarious victimization on the likelihood of engaging in different types of subsequent violent and property crime. These models provide greater insight into the

relationships between direct and vicarious victimization and criminal behavior than the previous logistic regression models as offending outcomes are measured as variety scores, which captures an aspect of offending severity (and not simply whether a youth engages in violent or property crime). These models also help to reveal whether more informative measures of victimization—measures that specify the frequency, variety, and recency of victimization events—are preferred over more simplistic (i.e., binary) measures of direct and vicarious victimization.

Four total sets of Poisson models are run: direct victimization-violent offending, direct victimization-property offending, vicarious victimization-violent offending, and vicarious victimization-property offending. First, I run the bivariate models (Model 1), which include only binary measures of direct and vicarious victimization. Second, victimization dimensions (i.e., frequency, variety, and recency) are added (Model 2) to observe whether (1) the effects of main victimization measures on offending outcomes significantly change and (2) the victimization dimensions are significantly associated with the offending outcomes. Third, control variables are added to the models (Model 3).

The steps taken for each victimization and crime type combination are presented in nested models that demonstrate how the coefficients of key victimization variables change as the strain dimension and the controls are added to the analyses. All models report average marginal effects (AME) of victimization and of each victimization dimension for the full sample.

Bivariate Poisson Regression Models

Consistent with the results of the bivariate logistic regression models, the bivariate Poisson regression models provide evidence of a significant victimization-crime relationship for both measures of victimization and offending outcomes. Experiencing direct victimization is associated with an increase in the expected number of subsequent violent offending behaviors (*b*

= 0.814, $SE = 0.081$, $p < 0.001$, $AME = 1.011$) (see Model 1, **Tables 12** through **14**) and property offending behaviors ($b = 1.104$, $SE = 0.135$, $p < 0.001$, $AME = 0.898$) (see Model 1, **Tables 18** through **20**). Likewise, experiencing vicarious victimization is also associated with an increase in the expected number of subsequent violent offending behaviors ($b = 0.778$, $SE = 0.210$, $p < 0.001$, $AME = 0.966$) (see Model 1, **Tables 15** through **17**) and property offending behaviors ($b = 0.631$, $SE = 0.289$, $p < 0.05$, $AME = 0.513$) (see Model 1, **Tables 21** through **23**). Direct victimization has larger effect sizes for property offending than violent offending and vicarious victimization has larger effect sizes for violent offending than property offending.

However, also consistent with the previous bivariate regression models are the results from Wald tests that standardize and compare the coefficients across models: while the effect sizes for direct victimization are numerically greater than those of vicarious victimization in all models, the binary measures of direct and vicarious victimization do not appear to statistically differ in their effects on offending outcomes (see **Appendix H** for violent offending; see **Appendix I** for property offending). The bivariate Poisson models thus reiterate the lack of support for Hypotheses 2 and 3.

Multivariate Poisson Regression Models

Some patterned changes in the coefficients for the binary measures of victimization are revealed when adding indicators of victimization frequency, variety, and recency to the analyses (i.e., Model 2). The effects of direct victimization on later criminal involvement remain mostly significant: prior direct violent victimization generally increases the expected number of subsequent violent and property offending behaviors youths engage in, though to a lesser degree than in the bivariate models. In contrast, the effects of vicarious violent victimization on later criminal involvement are mostly rendered insignificant. Only the measure of vicarious

victimization in Model 2 of **Table 15** (i.e., controlling for victimization frequency) remains significantly and positively associated with violent offending ($b = 0.508$, $SE = 0.212$, $p < 0.05$), though to a lesser degree and with weaker statistical significance than in the bivariate models.

Despite this divergence in the significance of the binary victimization measures, noteworthy here is that all the victimization dimensions in the models present statistically significant and positive coefficients. Separate from the effects of the binary measures of victimization, which represent whether a youth has been directly or vicarious victimized, the frequency, variety, and recency of direct and vicarious victimization experiences contribute to changes in the expected number of different violent and property offending behaviors that youths participate in. This can also be inferred from the smaller magnitude effects of the binary victimization measures in Model 2 of the tables: some of the variation in offending outcomes previously explained by victimization in the bivariate models seems to be absorbed by the indicators of victimization frequency, variety, and recency. Of the three strain dimensions, the variety and recency of victimization events appear to be larger in effect size than victimization frequency, which has coefficients close to zero.

While it would be hasty to take these results at face value without accounting for other relevant covariates, they do suggest that relying on general or composite measures of victimization, which is frequent among existing studies, may not be sufficient in identifying and parsing out differences in the victimization-crime link. As recommended by Agnew (1992; 2001; 2017), models that extend beyond the basic strain-crime relationship and explicitly consider the contextual components of strain may better explain why individuals choose to engage in certain types of criminal coping mechanisms.

When accounting for the other control variables (i.e., Model 3), several notable changes in the coefficients and statistical significance of victimization measures are observed. First, the results reveal differences in the effects of direct and vicarious victimization on offending outcomes: while binary measures of direct victimization significantly predict later violent and property offending, binary measures of vicarious victimization do not significantly predict either type of offending in any of the models. Specifically, for youths who report experiencing any instance of direct violent victimization, the average increase in the expected count of different violent offending behaviors is 0.361 ($b = 0.291$, $SE = 0.092$, $p < 0.01$, $AME = 0.361$) and the average increase in the expected count of property offending behaviors is 0.359 ($b = 0.441$, $SE = 0.150$, $p < 0.01$, $AME = 0.359$), all else equal. The effect size of experiencing any direct victimization remains largely unchanged when controlling for victimization frequency: directly victimized youths in the sample are, on average, associated with a 0.365 increase in the expected count of violent offending behaviors ($b = 0.294$, $SE = 0.092$, $p < 0.01$, $AME = 0.365$) and a 0.369 increase in the expected count of property offending behaviors ($b = 0.454$, $SE = 0.149$, $p < 0.01$, $AME = 0.369$). Direct victimization has a slightly greater effect on property offending when controlling for the variety of direct victimization events ($b = 0.507$, $SE = 0.164$, $p < 0.01$, $AME = 0.413$). Substantively, this means that once control variables are added in the models, the effect of experiencing any direct victimization on offending outcomes is reduced but not negated; in contrast, experiencing any vicarious victimization no longer has a significant independent effect on subsequent criminal behavior.

Second, the results reveal differences in the effects of victimization dimensions on offending outcomes by victimization degree. The victimization dimensions of frequency, variety, and recency are rendered mostly insignificant for direct victimization-crime relationships once

control variables are added to the models. This suggests, contrary to the propositions of general strain theory, that taking into consideration when, how frequently, and how many different types of direct violent victimization youths experience may not significantly improve the strain-crime models. This result also suggests that there may be a relationship between the victimization dimensions and the control variables that are worth exploring in future research. Only the indicator of recency of direct victimization events exerts a small, positive effect on violent offending ($b = 0.077$, $SE = 0.038$, $p < 0.05$, $AME = 0.096$), such that more recent experiences of direct violent victimization may lead to a slight increase in the expected number of violent offending behaviors.² As such, Hypotheses 5a, 6a, and 7a are largely unsupported.

Unlike direct victimization, some of the victimization dimensions of vicarious victimization remain significant even after adding other control variables to the analyses. Of the three victimization dimensions, variety and recency appear to be particularly important for the vicarious victimization-crime relationships. All else equal, experiencing a greater variety of vicarious violent victimization experiences is associated with an increase in the expected number of different violent offending behaviors ($b = 0.144$, $SE = 0.032$, $p < 0.001$, $AME = 0.144$), and experiencing more recent vicarious victimization experiences is associated with an increase in the expected number of both violent ($b = 0.160$, $SE = 0.030$, $p < 0.001$, $AME = 0.199$) and property offending behaviors ($b = 0.183$, $SE = 0.046$, $p < 0.001$, $AME = 0.149$). Results from the likelihood ratio tests also demonstrate that adding indicators of the variety and recency of vicarious victimization experiences in the analyses improves model fit. While the frequency of vicarious victimization events is shown to have a significant, positive effect on violent offending

² Likelihood ratio tests comparing the multivariate models without victimization dimensions to the nested models with victimization dimensions find statistically significant differences for only victimization recency ($p = .013$) for both violent and property offending outcomes. See **Appendix J** for likelihood ratio tests.

behavior, the coefficient is close to zero and statistically weak ($b = 0.005$, $SE = 0.002$, $p < 0.05$), making frequency a less salient strain dimension than victimization variety or recency. These results provide weak support for Hypothesis 5b, stronger support for Hypothesis 7b, and qualified support for Hypothesis 6b, and demonstrate that more informative measures of victimization may be useful for studying the effects of distal (i.e., vicarious) violence exposure.³

The associations between the control variables and offending outcomes are similar to those revealed in the multivariate logistic regression models. Regardless of crime type, youths who are younger, exhibit lower levels of self-control, report higher scores of peer delinquency, and are enrolled in court-ordered supervision are more likely to engage in a greater number of offending behaviors across all multivariate Poisson models. When split by crime type, youths who are male, are an active gang member, and who report lower levels of emotion regulation are significantly more likely to engage in serious violent offending, while youths who identify as Black and report prior property offending are significantly more likely to engage in serious property offending. Prior violent offending is significantly and positively associated with greater involvement in both offending outcomes for all victimization-offending relationships except for the relationship between direct victimization and property crime, suggesting that prior violent offending is a more robust predictor of violent offending than property offending.

³ The correlation coefficients for the binary measures and victimization dimensions indicators of direct and vicarious victimization indicate moderate (between .443 and .689) correlation between (1) the binary measures of victimization and victimization dimensions for each degree of victimization (i.e., direct or vicarious) and (2) the victimization dimensions (i.e., frequency, variety, and recency) (see Cohen, 1988). While the correlations are at a moderate level, the measures of victimization are not so strongly correlated to each other that they run the issue of multicollinearity. As a result, models including both a binary measure of victimization and an indicator of victimization dimension are kept in the study. See **Appendix C** for correlation coefficients.

Sensitivity Analyses

As a sensitivity check, negative binomial regressions are run in lieu of the Poisson regressions to test the sensitivity of the results to the model specification. Unlike the Poisson models, which assume that the dependent variable is an unbounded count measure, negative binomial regressions are able to account for the bounded nature of the violent and property offending variety scores (Gardner et al., 1995). Negative binomial regressions also include an additional parameter that captures excessive variance in the data and may yield a more efficient estimate of the standard errors if the overdispersion is stochastic. We may thus expect to see notable differences in coefficients, standard errors, statistical significance, and/or the direction of the associations if the models in the main analysis are mis-specified. Following the order of the Poisson models, I first run the binomial models in their bivariate form. Second, I add in each measure of victimization dimension (i.e., frequency, variety, and recency). Third, I run the full victimization-offending models for violent and property offending, which include each victimization dimension and all other control variables. The same analytic sample is used.

Tables 24 through **27** show that the negative binomial models produce results consistent to those of the Poisson models. Overall, no significant differences in coefficients or statistical significance of the key independent variables are observed, suggesting that the models in the main analyses are not problematically mis-specified.

Chapter 5: Discussion and Conclusion

Discussion

Applying a general strain framework, the current study examined whether differences in victimization experiences shape meaningful differences in subsequent violent and property offending among a sample of serious youth offenders. This research contributes to victim-offender literature by analyzing whether dimensions of strain including victimization frequency, variety, and recency distinguish severity of subsequent involvement in crime and in doing so, further advances our understanding of variation in the VO overlap.

Four key conclusions can be drawn from the results of the study. First, while prior violent victimization does increase future participation in offending across diverse types of violent and property crime, victimization does not appear to be as strong as an independent predictor of crime as prior research utilizing school-based or representative samples suggests (e.g., Agnew, 2002; Kushner, 2020; Lee & Kim, 2018; Zimmerman et al., 2017). Rather, despite that this study includes a wider range of violent victimization indicators than many prior studies (e.g., Posick, 2013; Shaffer & Ruback, 2002; Shukla & Wiesner, 2016), victimization appears to significantly decrease in explanatory power and in effect size when other criminogenic factors such as prior offending and peer delinquency are taken into consideration. Specifically, this research finds that victimization measures that provide limited information about victimization histories (i.e., any victimization experience during lifetime) do not robustly predict changes in later criminal involvement for high-risk, serious offending youth.

There are several possible reasons for this finding. The independent effects of victimization may not be as consequential for this specific sample of system-involved youths as

youths in the general population. Juveniles who engage in serious offending and/or come into contact with the legal system are often already exposed to a multitude of risk factors and stressors other than victimization that increase the likelihood of criminal behavior (Baglivio et al., 2014; Baglivio et al., 2015; Fox et al., 2015). While some studies, including the current study, propose that strain accumulates over time and thus expect victimization to be most detrimental for high-risk and marginalized youths (e.g., Clay-Warner et al., 2016; Fagan et al., 2015; Nurius et al., 2015), other studies posit that strain may instead become increasingly saturated, making high-risk youth less likely than low-risk youth to experience the consequences of victimization (e.g., Hannon, 2003; Kushner, 2014; Posick & Zimmerman, 2014; Wright & Fagan, 2013). Ousey, Wilcox, and Schreck (2015), for example, find that individuals who have the lowest scores of risk across multiple domains (e.g., impulsivity, low self-control, level of social control, peer delinquency, deviant values) are most dramatically impacted by violent victimization. Indeed, it is possible that the negative effects of victimization are redundant with the impact of preexisting adversity for high-risk groups and therefore do not further increase the likelihood of adverse life outcomes such as criminal involvement (Turanovic, 2019b).

The effects of victimization on crime may also be conditioned by other risk factors. Agnew (2001; 2006; 2013) states that an individual's propensity to select an illegitimate, as opposed to legitimate, coping strategy may partially depend on various personal and environmental conditioning factors. Among the control variables included in the analyses, low self-control and peer delinquency were found to be particularly robust predictors of both violent and property offending. Investigating whether these covariates exercise a mediating effect on the relationship between victimization and crime may help clarify the mechanisms through which victimization influences subsequent criminal behavior. For example, using data from the

National Survey of Adolescents, Lin and colleagues (2011) find that significantly more youths who experienced violent victimization engaged in delinquency and substance use if they reported relatively higher levels of peer delinquency and lower levels of social control. Future extensions of the present study should therefore consider including such risk factors as mediators, rather than controls, to more accurately ascertain how violent victimization increases the odds of engaging in crime.

Additionally, the effects of violent victimization may be overshadowed by the impacts of prior violent and property offending, which are found to contribute to later offending outcomes. Previous studies of the victimization-offending relationship, particularly those applying a routine activities framework, show prior offending to be associated with both continuity in offending and a higher chance of victimization (e.g., Grubb & Posick, 2018; Hay & Evans, 2006; Zavala & Spohn, 2013), such as by putting offenders in risky situations that result in physical harm or violence (e.g., Pizarro et al., 2011). As the Pathways data does not allow for accurate temporal ordering of offending and victimization incidents prior to study enrollment, the present study is unable to determine which occurs first, leaving open the possibility that prior involvement in crime precedes violent victimization and therefore reduces the effects of victimization on subsequent criminal behavior. Since general strain theory and routine activities (“lifestyle exposure”) theories are not competing frameworks, future research may benefit from integrating these perspectives to more thoroughly investigate the underlying mechanisms of the VO overlap.

A second key finding of the study is that violent victimization predicts both violent and property offending behaviors, and in doing so, rejects claims of an exclusively “violent” victim-offender overlap. At the same time, this finding also supports extant research that demonstrates violent victimization to have sweeping effects on both violent and non-violent offending

outcomes (e.g., Fagan, 2005; Farrell & Zimmerman, 2017; Hagan & McCarthy, 1997; Ousey et al., 2015), especially prior to adulthood (Macmillan, 2001). The short- and long-term physical, psychological, behavioral, and economic consequences that follow experiences of violent victimization may pervade youths' lives and affect them in ways that push them towards delinquency and crime, irrespective of crime type (Macmillan, 2001; Macmillan & Hagan, 2004). Whatever the reason may be, it is clear that victim-offenders participate in a variety of offending behaviors, and the victimization-offending relationship is not confined to measures of violent victimization and violent offending. As Berg and Mulford (2020) assert in their overview and reappraisal of extant victim-offender literature, researchers examining the VO overlap should continue to direct their efforts towards differentiating between various forms of criminal offending to uncover potentially meaningful variation in the associations between victimization and crime.

The third key finding is more difficult to condense in a clear fashion: the results suggest that while there are patterned differences in effect sizes of prior victimization on violent and property offending outcomes by the degree of victimization (i.e., direct, vicarious, or dual), providing insight into the direction of the victimization-offending relationships, these differences do not amount to significant statistical differences (i.e., direct, vicarious, and dual victimization do not have differential effects on offending outcomes). Of the three examined degrees of victimization, dual victimization has the largest effect size for both offending outcomes, which is aligned with previous work, both specific and non-specific to GST, that describes the combined effects of direct and indirect violence exposure to produce the most harmful life consequences (e.g., O'Keefe, 1994; Shen, 2009), including a heightened risk of subsequent delinquency and crime (Lin et al., 2011; Park & Metcalfe, 2024). Direct victimization consistently has larger

effect sizes for serious violent and property offending than vicarious victimization; however, the gap between their effects is smaller for violent offending and more substantial for property offending.

Though the findings of the current study do not completely conform to the theoretical expectations that victimization degree should have differential effects on later criminal behavior, they are not an outlier in the literature. Prior studies comparing the associations between direct and vicarious victimization and various criminal coping responses have generated mixed conclusions, with some indicating direct victimization to have greater effects on crime, particularly personal violent crime (e.g., Agnew & White, 1992; Baron, 2009; Hartinger-Saunders et al., 2011), others indicating vicarious victimization to have greater effects on property crime (Lee & Kim, 2018; Pinchevsky et al., 2014b), and fewer revealing direct and vicarious victimization to have similar effects on offending outcomes (e.g., Craig et al., 2017; Lin et al., 2011).

Such inconclusive evidence may be driven by differences in methodology among these studies, including type of sample (i.e., high-risk group versus general population), measurement of key variables (i.e., operationalization of victimization measures), type of research design (i.e., cross-sectional versus longitudinal), and, if longitudinal, the length of the study period. Given the lack of variation in prior violent victimization rates among the present sample of high-risk, serious offending youths, extending the scope of the study to include more waves (e.g., up to five years instead of one year) may help to pick up on more variation in victimization experiences among the group. Statistically significant patterns differentiated by victimization degree may thus emerge when tracking the victimization-offending relationships for a longer period of time,

even among this high-risk group of system-involved youths. Future extensions of the current study should aim to utilize more waves of the Pathways data to investigate this possibility.

While the results did not show significant statistical differences between the effects of direct and vicarious victimization, the finding that direct victimization has larger effect sizes than vicarious victimization is aligned with theoretical expectations. According to general strain theory, the most criminogenic forms of strain are those that are “unjust”, high in magnitude, low in social control, likely to provoke anger, and likely to incentivize the individual to commit crime (Agnew, 2001), especially for juvenile populations (Agnew, 1992; 2001). Given that direct encounters of violent victimization are more likely to be perceived as unfair, result in physical and psychological harm (i.e., high in magnitude), occur in situations of low social control, generate feelings of anger, and encourage targeted retaliation than indirect exposure to violence, it makes sense that youth who directly encounter violence experience a uniquely higher risk of selecting criminal coping strategies (as opposed to non-criminal or legitimate strategies) than youth who witness violence.

Less clear is why the difference in the effect sizes of direct and vicarious victimization on crime are greater for property offending than violent offending. Victimization literature has long shown various forms and degrees of victimization to be a strong and enduring predictor of future offending for youth across multiple crime types (e.g., Eitle & Turner, 2002; Menard, 2002; Wylie & Rufino, 2018). However, considering that victimization in this study is captured using only indicators of violent victimization, it may be the case that violent offending outcomes are more likely to result from prior violent victimization than property offending regardless of the degree of victimization. For instance, Averdijk, Van Gelder, Eisner, and Ribeaud (2016) suggest that earlier experiences of violent victimization may shape later decision-making processes in

ways that reduce the perceived seriousness of violent behavior, increase the desire for revenge, and amplify positive feelings and dampen negative feelings (i.e., shame) associated with violent offending. These findings may apply to vicarious experiences of violent victimization as well—witnessing violence may also normalize future use of violence, even if to a lesser magnitude than direct experiences of violent victimization.

Finally, the results reveal that the strain dimensions of victimization may matter for the victim-offender overlap, but only for vicarious victimization. Of the three different dimensions included in the study, the variety and recency of vicarious victimization experiences appear to be particularly significant, with a greater variety of victimization events (i.e., poly-victimization) predicting more serious violent offending and more temporally proximal victimization events predicting more serious violent and property offending.⁴ Taken together, the results demonstrate that youths who witness many different types of violent victimization and youths who have recently witnessed violent victimization are more likely to participate in a greater variety of violent and property offending behaviors. This is supportive of research that finds poly-victims to be more likely than non- and single-type victims to experience adverse psychological and behavioral outcomes (Finkelhor et al., 2007; Ford et al., 2008; Sabri, 2012; Turner et al., 2010), including delinquency and crime (e.g., Ford et al., 2010), even among system-involved youth exposed to non-victimization trauma (Ford et al., 2013), as well as research that identifies recency as an important strain characteristic for understanding the impact of victimization on general delinquency and crime (Park & Metcalfe, 2024), violent offending (Wojciechowski, 2019), and property offending (Slocum et al., 2005).

⁴ In general, the results of the study indicate victimization frequency to be a non-significant strain dimension. However, variety indicators inherently capture the frequency of events (Sweeten, 2012). The significance of variety as a dimension of victimization may therefore suggest that measures of victimization variety (i.e., poly-victimization) may be preferable over measures of victimization frequency (i.e., repeat victimization).

The finding that including the strain dimensions of frequency, variety, and recency do not significantly add to our understanding of the relationship between direct victimization and crime is inconsistent with the predictions of general strain theory. Agnew (2001; 2017) posits that better measures of strain that describe the nature and magnitude of strains should be more valid than one-dimensional (i.e., binary) measures, and should therefore offer more insight into the individual-level differences in crime participation. For this proposition to differ by the degree of strain is unexpected and is left unaddressed by other like studies that analyze the associations between strain, strain dimensions, and criminal coping. Given the study's sample of system-involved youth, the victimization dimensions may appear less salient because many of them reported experiencing a considerable amount of prior violent victimization, limiting the variation in the sample. It must also be noted that the current research only looks at three dimensions due to data constraints. There are other strain attributes not analyzed in this study that Agnew (1992; 2001; 2017) and other researchers (e.g., Sabri, 2012; Slocum et al., 2005) propose to be important, such as duration, accumulation, and clustering. As such, these results do not mean that all strain dimensions are irrelevant for explaining the effects of direct victimization on crime, but only that frequency, recency, and variety may be inconsequential. To identify which dimensions matter more for different forms and degrees of strain such as victimization, future research should aim to account for a wider range of strain dimensions when examining the link between strain and crime.

Alternatively, the experience of directly encountering violent victimization may be so salient to the individual that considerations of when, how often, and how diversely it occurs may not be so relevant. Merely experiencing violence may be traumatic and anger-triggering enough to motivate criminal coping strategies, regardless of the specific nature of the incident. In

contrast, as vicarious victimization is typically not as severe or traumatizing as direct victimization, knowing such contextualizing information may be necessary for more fully gaging the negative and criminogenic impacts of witnessing violence.

Limitations

Despite its contributions to victim-offender literature, the current study has a number of limitations that should be addressed.

First, this research leverages data from an offender-based sample. While the Pathways to Desistance group of serious youth offenders is appropriate given the goals of the current study, this type of sample inherently restricts the range of the dependent variable (i.e., self-reported offending), which can attenuate the effect of the independent variables (i.e., victimization). Additionally, as discussed in the previous section, offender-based samples also typically report higher rates of victimization and exposure to violence, which restricts the amount of variation in the independent variables of interest. These two characteristics of offender-based samples render the results inapplicable to the general juvenile population and limit the scope of generalizability to other similarly situated youth. Since this type of sample is only able to provide insights specific to juveniles predisposed to victimization and criminal behavior, future research should attempt to either examine differences in the victimization-offending experiences of high-risk youths and low-risk youths or replicate this study using a community sample.

Second, the key independent and dependent variables examined in the study relied on self-report instruments. Given the sensitive nature of these variables, youth may underreport experiences of violent victimization and participation in violent and property crime, especially for more serious forms of victimization and offending (e.g., sexual assault). Underreporting may lead to an underestimation of victimization and offending rates and therefore dampen effect

sizes. However, as all youths in the sample (i.e., serious youth offenders) are at the same risk of underreporting, this issue is unlikely to substantially impact the direction of the study's findings. While peer and parent reports may not be highly reliable reflections of a participant's behavior (e.g., De Los Reyes et al., 2010; Meldrum & Boman, 2013), future studies may still benefit from corroborating self-reports of victimization and crime participation to attain greater construct validity by surveying participants' peers or family members about youths' victimization and offending experiences and by comparing the initial survey data to administrative or official records.

Similarly, the self-reported nature of the Pathways data is likely to contribute to underreporting and/or missingness in other sensitive topics, such as the suicide of a family member or close friend or instances of domestic violence, that may represent other forms of criminogenic strain. While these types of strain are "unlikely to have more than a minor effect on delinquency" (Agnew, 2002:605), they may be more consequential when encountered in tandem with victimization. Agnew (1992) suggests that, because different strains can have a combined negative influence on later behaviors, estimating the unique effect of any one stressful experience (such as victimization) may be less important than assessing the cumulative effects of experiencing multiple stressful events. However, this study was unable to examine and control for other forms of strain due to the extent of missing data for such items. Considering that system-involved youths are typically exposed to multiple dimensions of personal and environmental risk and stress, it may be useful to factor in the impacts of other adverse life events in future assessments of the victimization-crime relationship to (1) better isolate the specific effects of victimization on crime and (2) investigate whether other criminogenic strains contribute to differences in offending behaviors.

The Pathways to Desistance data also does not provide adequate indicators of negative affect, which precludes a full examination of the strain-crime model. GST proposes that negative emotions, such as anger, depression, or frustration, mediate the relationship between strain and coping mechanism selection (Agnew, 1992; 2002). Many prior studies that include dispositional measures of negative emotionality have found anger to mediate the relationship between various forms of strain and different types of antisocial behaviors (e.g., Agnew et al., 2002; Hay & Evans, 2006; Jang & Johnson, 2003; Wojciechowski, 2019). Other studies have suggested that depression or anxiety may play a similar role in the victimization-crime link (e.g., Ostrowsky & Messner, 2005). Additionally, some researchers find that different types of negative affect are related to different types of externalizing and internalizing behaviors (e.g., Capowich et al., 2001; Jang, 2007; Jang & Johnson, 2003; Mazerolle et al., 2001; Sabri, 2012). Subsequent research should not only direct greater attention to how negative emotions may mediate the effects of victimization on offending outcomes, but also investigate how different degrees and/or forms of strain experiences might generate different emotional reactions, which in turn may lead to distinct types of criminal coping (Zavala & Spohn, 2013).

Third, though perhaps achievable in theory, it is difficult to empirically parse out the independent effects of direct and vicarious victimization on crime. Direct and vicarious victimization are often interrelated (Agnew, 2002), and they may have reciprocal, amplifying, or attenuating effects on each other that are unlikely to be revealed without more detailed information about victimization experiences and/or a longer study timeframe. Certain types of physical and vicarious victimization are also “contagious” and are likely to lead to future direct, vicarious, or anticipated experiences of strain, especially when they occur in an individual’s home, community, or school (Agnew, 2002:611). As a substantial portion of youths in the

Pathways sample reported encountering both direct and indirect exposure to violence, this limitation suggests that the results of this study should not be interpreted so literally and should instead be regarded as a step towards uncovering how differences in victimization experiences may lead to differences in criminal coping.

Policy and Theoretical Implications

“The knowledge of their past life can be used to transform their circumstances and minimize the risk factors that are conducive to adverse conditions in the future” (Park & Metcalfe, 2022:1692). This is the stance of most studies that find support for a significant victimization-offending relationship—they broadly assert that flagging any previous adversity and/or exposure to violence can help practitioners both prevent and reduce involvement in crime. While this sentiment may hold some truth, the results of the current study suggest that simply knowing whether an individual was victimized may not be enough when examining high-risk and/or serious offending juvenile populations. Assessments of victimization histories may fall short in predicting the adverse impacts of violent victimization on later life outcomes if they do not factor in the severity, recency, and level of proximity (i.e., degree) of victimization events for such individuals.

As such, by recognizing the nuances of the victimization-offending link, this research may have the following policy implications: advocate for (1) more intensive services for youth victims of violence that aim to mitigate the emotional and behavioral consequences of victimization, including later contact with the legal system, and (2) different approaches to direct and indirect experiences of violent victimization as they may affect youths in different ways that disproportionately increases the risk of either violent and/or property offending. Programming that utilizes a more in-depth understanding of victimization trauma is likely to have benefits

beyond reducing youth crime, as both criminal victimization and criminal behavior are associated with deteriorating physical health (e.g., Bouffard & Koeppel, 2014), comorbidity with other mental health disorders (e.g., Lin et al., 2011; Turner et al., 2013), lowered expectations for personal success (Hinton et al., 2021), poor school performance (e.g., Loomis et al., 2020; McGill et al., 2014), socioeconomic disadvantage (Macmillan & Hagan, 2004), and other forms of antisocial behavior such as minor forms of delinquency and drug use (Earnshaw et al., 2017; Pinchevsky et al., 2014a; Widom et al., 2006). Central to such rehabilitative efforts is recognizing that youths, as a product of their age and legal status, are able to exercise less agency than adults, and therefore need to be provided with scaffolding that sets them up for success as they transition into adulthood.

From a theoretical standpoint, the results have several implications for future applications of general strain theory to victim-offender research. While the study indicates that the degree of victimization may be a salient consideration for predicting the direction of future offending behavior, Agnew (2002) posits that certain types of direct and vicarious strain are more likely to be criminogenic than others (but does not clarify why or how these disparities may manifest). Comparisons of the impacts of direct and vicarious strain should thus be extended to other types of victimization, such as property victimization, to examine whether there are meaningful differences in their effects for non-violent negative life events. More tests of the role of victimization dimensions are also needed, with a greater look into (1) the potential interactive or multiplicative effects of different strain attributes (as shown by Slocum et al., 2005) and (2) other dimensions of victimization that GST describes to be pertinent, such as clustering, accumulation, or duration. In sum, greater specification of the theory's proposed victimization-crime link appears necessary moving forward.

Conclusion

Despite extensive research on the VO overlap, there remains much to be uncovered regarding the heterogeneity among victim-offenders and the variability of their victimization and offending experiences. Using a sample of system-involved youths, the current study reveals that individual-level differences in the degree and dimensions of violent victimization can inform us about both the likelihood that victims will engage in later criminal behavior and the likelihood that they will participate in certain types of crime. Specifically, identifying whether an individual was directly or indirectly exposed to violence, as well as whether such trauma was recent and occurred in multiple different forms, can be useful for improving our predictions of the impacts of victimization on violent and non-violent offending outcomes. Future iterations of victim-offender research should move past prior work that treats the victim-offender label as a static, one-dimensional categorization and instead aim to quantify potential sources of variation as proposed by general strain theory. Not all victims are alike in their susceptibility to crime—following the direction of this study to better contextualize the victimization histories of the victim-offender group may help victims mitigate the risk of offending before it becomes reality.

Tables

Table 1. Descriptive Sample Statistics for Key Variables and Control Variables ($N = 1,092$)

Variables	Mean	SD	Min	Max
Victimization				
General victimization	.943	.232	0	1
Direct victimization	.639	.480	0	1
Direct victimization (Frequency)	4.897	8.304	0	62
Direct victimization (Recency)	1.150	1.162	0	4
Direct victimization (Variety)	1.463	1.427	0	5
Vicarious victimization	.930	.255	0	1
Vicarious victimization (Frequency)	19.202	21.117	0	105
Vicarious victimization (Recency)	2.201	1.230	0	4
Vicarious victimization (Variety)	3.408	1.658	0	6
Dual victimization	.626	.484	0	1
Self-Reported Offending				
General offending	.673	.469	0	1
Violent offending	.626	.484	0	1
Violent offending (Variety)	1.241	1.498	0	9
Property offending	.372	.484	0	1
Property offending (Variety)	.813	1.426	0	8
Controls				
Age at baseline	15.983	1.148	14	18
Male	.889	.314	0	1
Female (Reference)	--	--	0	1
White (Reference)	.201	.401	0	1
Black	.412	.492	0	1
Hispanic	.339	.474	0	1
Other	.049	.215	0	1
Family structure	.154	.361	0	1
School status	.738	.440	0	1
Employment status	.257	.437	0	1
Gang involvement	.111	.314	0	1
Prior self-reported violent offending	2.504	1.710	0	8
Prior self-reported property offending	2.876	2.103	0	8
Supervision status	.605	.489	0	1
Emotion regulation	2.759	.653	1	4

Peer delinquency	2.311	.912	1	5
Peer resistance	2.970	.582	1.3	4
Low self-control	2.949	.952	1	5
Neighborhood conditions	2.342	.740	1	4

Table 2. Descriptive Statistics for Direct and Vicarious Victimization at Baseline ($N = 1,092$)

Variables	Direct Victimization		Vicarious Victimization		Min	Max
	Mean	SD	Mean	SD		
Chased	.420	.494	.745	.436	0	1
Beaten up	.318	.466	.856	.351	0	1
Raped	0	0	.048	.213	0	1
Attacked						
(With a weapon)	.300	.459	.653	.476	0	1
Shot at (Not hit)	.365	.482	.639	.480	0	1
Shot (Hit)	.060	.237	.468	.499	0	1

Table 3. Descriptive Statistics for Violent and Property Offending Indicators ($N = 1,092$)

Variables	Mean	SD	Min	Max
Violent Offending				
Killed someone	.002	.043	0	1
Shot someone (Hit)	.025	.155	0	1
Shot at someone (No Hit)	.074	.262	0	1
Armed robbery	.074	.262	0	1
Robbery	.164	.370	0	1
Beat up someone	.159	.366	0	1
In a fight	.602	.490	0	1
In a gang fight	.117	.322	0	1
Carjacked	.024	.153	0	1
Property Offending				
Destroy property	.201	.401	0	1
Set fire to property	.019	.137	0	1
Broke in to steal	.055	.228	0	1
Shoplifted	.116	.321	0	1
Bought or sold stolen property	.245	.430	0	1
Used check/credit card illegally	.029	.169	0	1
Stole a vehicle	.060	.237	0	1
Broke into a vehicle to steal	.088	.283	0	1

Notes: All violent and property offending indicators include self-reported offending across Waves 1 and 2.

Table 4. Logistic Regression Models: Effects of General Victimization on Violent Offending (*N* = 1,092)

Variables	Model 1			Model 2		
	<i>b</i> (SE)	CI	OR	<i>b</i> (SE)	CI	OR
General victimization	.967*** (.267)	[.443, 1.490]	2.629	.274 (.299)	[-.311, .860]	1.316
Controls						
Age at baseline				-.251*** (.065)	[-.378, -.125]	.778
Sex				.871*** (.228)	[-.425, 1.318]	2.390
Black				-.127 (.210)	[-.539, .284]	.881
Hispanic				-.320 (.202)	[-.716, .075]	.726
Other race				-.297 (.363)	[-1.008, .414]	.743
Family structure				-.044 (.195)	[-.426, .338]	.957
School status				-.018 (.168)	[-.348, .313]	.982
Employment status				.319 (.160)	[-.175, .453]	1.149
Supervision status				.234 (.143)	[-.046, .514]	1.263
Gang membership				.784* (.334)	[-.130, 1.438]	2.191
Prior violent offending				.202** (.065)	[-.075, .329]	1.223
Prior property offending				.050 (.048)	[-.043, .143]	1.051
Emotion regulation				-.246* (.106)	[-.453, -.039]	.782
Low self-control				-.203* (.086)	[-.372, -.035]	.816
Peer delinquency				.435*** (.103)	[-.234, .636]	1.546
Peer resistance				.154 (.127)	[-.094, .403]	1.167
Neighborhood conditions				-.090 (.108)	[-.302, .123]	.914
<i>Constant</i>	-.392 (.259)	[-.900, .116]	.676	2.945* (1.143)	[-.704, 5.186]	19.010

Abbreviation: SE = Robust standard error, CI = 95% Confidence interval, OR = Odds ratio.

Note: Sex coefficients are relative to the female category. Race coefficients are relative to the White category.

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Table 5. Logistic Regression Models: Effects of Direct Victimization on Violent Offending (*N* = 1,092)

Variables	Model 1			Model 2		
	<i>b</i> (SE)	CI	OR	<i>b</i> (SE)	CI	OR
Direct victimization	.990*** (.131)	[.733, 1.246]	2.691	.313 (.167)	[-.015, .640]	1.367
Controls						
Age at baseline				-.261*** (.065)	[-.389, -.134]	.770
Sex				.839*** (.231)	[.387, 1.292]	2.314
Black				-.080 (.210)	[-.492, .332]	.923
Hispanic				-.294 (.203)	[-.691, .103]	.745
Other race				-.255 (.364)	[-.967, .458]	.775
Family structure				-.018 (.194)	[-.398, .362]	.982
School status				-.012 (.169)	[-.343, .318]	.988
Employment status				.114 (.161)	[-.171, .459]	1.155
Supervision status				.237 (.143)	[-.043, .518]	1.268
Gang membership				.794* (.333)	[.141, 1.446]	2.211
Prior violent offending				.165* (.068)	[.032, .298]	1.179
Prior property offending				.049 (.048)	[-.045, .143]	1.050
Emotion regulation				-.257* (.105)	[-.463, -.050]	.774
Low self-control				-.202* (.086)	[-0.371, -.034]	.817
Peer delinquency				.420*** (.103)	[.218, .621]	1.521
Peer resistance				.169 (.127)	[-.079, .418]	1.184
Neighborhood conditions				-.087 (.108)	[-.299, -.126]	.917
<i>Constant</i>	-.091 (.101)	[-.289, .106]	.913	3.253** (1.141)	[1.016, 5.491]	25.876

Abbreviation: SE = Robust standard error, CI = 95% Confidence interval, OR = Odds ratio.

Note: Sex coefficients are relative to the female category. Race coefficients are relative to the White category.

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Table 6. Logistic Regression Models: Effects of Vicarious Victimization on Violent Offending ($N = 1,092$)

Variables	Model 1			Model 2		
	<i>b</i> (SE)	CI	OR	<i>b</i> (SE)	CI	OR
Vicarious victimization	.901*** (.241)	[.428, 1.375]	2.463	.238 (.269)	[-.289, .764]	1.268
Controls						
Age at baseline				-.250*** (.064)	[-.376, -.123]	.779
Sex				.872*** (.228)	[-.426, 1.319]	2.393
Black				-.130 (.211)	[-.543, .282]	.878
Hispanic				-.322 (.202)	[-.717, .074]	.725
Other race				-.304 (.363)	[-1.015, .407]	.738
Family structure				-.049 (.195)	[-.431, .333]	.952
School status				-.012 (.168)	[-.342, .319]	.989
Employment status				.139 (.160)	[-.176, .453]	1.149
Supervision status				.233 (.143)	[-.047, .513]	1.262
Gang membership				.787* (.334)	[-.134, 1.441]	2.198
Prior violent offending				.202** (.065)	[-.075, .329]	1.224
Prior property offending				.050 (.048)	[-.043, .143]	1.051
Emotion regulation				-.245* (.106)	[-.452, -.038]	.782
Low self-control				-.205* (.086)	[-.373, -.037]	.815
Peer delinquency				.433*** (.103)	[-.232, .635]	1.543
Peer resistance				.156 (.127)	[-.092, .405]	1.169
Neighborhood conditions				-.089 (.108)	[-.302, .124]	.915
<i>Constant</i>	-.318 (.232)	[-.774, .137]	.727	2.951* (1.141)	[-.715, 5.187]	19.127

Abbreviation: SE = Robust standard error, CI = 95% Confidence interval, OR = Odds ratio.

Note: Sex coefficients are relative to the female category. Race coefficients are relative to the White category.

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Table 7. Logistic Regression Models: Effects of Dual Victimization on Violent Offending (*N* = 1,092)

Variables	Model 1			Model 2		
	<i>b</i> (SE)	CI	OR	<i>b</i> (SE)	CI	OR
Dual victimization	1.008*** (.130)	[.752, 1.263]	2.739	.317 (.167)	[-.010, .645]	1.373
Controls						
Age at baseline				-.260*** (.065)	[-.387, -.133]	.771
Sex				.838*** (.231)	[.385, 1.292]	2.313
Black				-.087 (.210)	[-.499, .325]	.917
Hispanic				-.295 (.203)	[-.692, .103]	.745
Other race				-.263 (.363)	[-.975, .449]	.769
Family structure				-.024 (.194)	[-.404, .355]	.976
School status				-.005 (.169)	[-.335, .326]	.995
Employment status				.144 (.161)	[-.171, .459]	1.155
Supervision status				.235 (.143)	[-.045, .516]	1.265
Gang membership				.799* (.333)	[.147, 1.451]	2.223
Prior violent offending				.164* (.068)	[.031, .297]	1.178
Prior property offending				.049 (.048)	[-.044, .143]	1.051
Emotion regulation				-.256* (.105)	[-.462, -.049]	.774
Low self-control				-.203* (.086)	[-.372, -.035]	.816
Peer delinquency				.414*** (.103)	[.212, .617]	1.513
Peer resistance				.171 (.127)	[-.078, .420]	1.187
Neighborhood conditions				-.087 (.108)	[-.300, .126]	.917
<i>Constant</i>	-.088 (.099)	[-.283, .106]	.915	3.240** (1.142)	[1.002, 5.478]	25.537

Abbreviation: SE = Robust standard error, CI = 95% Confidence interval, OR = Odds ratio.

Note: Sex coefficients are relative to the female category. Race coefficients are relative to the White category.

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Table 8. Logistic Regression Models: Effects of General Victimization on Property Offending ($N = 1,092$)

Variables	Model 1			Model 2		
	<i>b</i> (SE)	CI	OR	<i>b</i> (SE)	CI	OR
General victimization	.651* (.304)	[.056, 1.246]	1.917	.029 (.344)	[-.644, .703]	1.029
Controls						
Age at baseline				-.144* (.067)	[-.274, -.013]	.866
Sex				.421 (.262)	[-.093, .935]	1.524
Black				-.532* (.210)	[-.944, -.121]	.587
Hispanic				-.366 (.199)	[-.757, .024]	.693
Other race				-.321 (.363)	[-1.033, .391]	.725
Family structure				.075 (.199)	[-.315, .465]	1.078
School status				.023 (.168)	[-.315, .465]	1.023
Employment status				-.007 (.166)	[-.333, .318]	.993
Supervision status				.415** (.149)	[.122, .707]	1.514
Gang membership				-.110 (.249)	[-.598, .377]	.896
Prior violent offending				.156* (.061)	[.036, .275]	1.169
Prior property offending				.161*** (.046)	[.071, .250]	1.174
Emotion regulation				-.172 (.109)	[-.386, .043]	.842
Low self-control				-.341*** (.088)	[-.513, -.169]	.711
Peer delinquency				.389*** (.102)	[.188, .590]	1.475
Peer resistance				-.182 (.126)	[-.429, .066]	.834
Neighborhood conditions				-.195 (.107)	[-.404, .014]	.823
<i>Constant</i>	-1.142*** (.297)	[-1.724, -.561]	.319	2.070 (1.220)	[-.321, 4.461]	7.925

Abbreviation: SE = Robust standard error, CI = 95% Confidence interval, OR = Odds ratio.

Note: Sex coefficients are relative to the female category. Race coefficients are relative to the White category.

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Table 9. Logistic Regression Models: Effects of Direct Victimization on Property Offending ($N = 1,092$)

Variables	Model 1			Model 2		
	<i>b</i> (SE)	CI	OR	<i>b</i> (SE)	CI	OR
Direct victimization	1.130*** (.144)	[.847, 1.412]	3.095	.457* (.178)	[.109, .806]	1.580
Controls						
Age at baseline				-.156* (.067)	[-.288, -.025]	.855
Sex				.362 (.265)	[-.157, .881]	1.437
Black				-.492* (.211)	[-.906, -.078]	.611
Hispanic				-.331 (.202)	[-.726, .065]	.718
Other race				-.265 (.365)	[-.980, .450]	.768
Family structure				.107 (.200)	[-.285, .499]	1.113
School status				.025 (.169)	[-.305, .355]	1.025
Employment status				-.015 (.167)	[-.341, .312]	.986
Supervision status				.422** (.150)	[.127, .716]	1.524
Gang membership				-.091 (.247)	[-.576, .394]	.913
Prior violent offending				.107 (.063)	[-.016, .321]	1.113
Prior property offending				.162*** (.046)	[.073, .251]	1.176
Emotion regulation				-.182 (.110)	[-.397, .033]	.834
Low self-control				-.331*** (.088)	[-.503, -.158]	.718
Peer delinquency				.356** (.103)	[.155, .558]	1.428
Peer resistance				-.173 (.128)	[-.424, .078]	.841
Neighborhood conditions				-.205 (.107)	[-.414, .003]	.814
<i>Constant</i>	-1.291*** (.122)	[-1.531, -1.051]	.275	2.192 (1.220)	[-.200, 4.584]	8.952

Abbreviation: SE = Robust standard error, CI = 95% Confidence interval, OR = Odds ratio.

Note: Sex coefficients are relative to the female category. Race coefficients are relative to the White category.

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Table 10. Logistic Regression Models: Effects of Vicarious Victimization on Property Offending ($N = 1,092$)

Variables	Model 1			Model 2		
	<i>b</i> (SE)	CI	OR	<i>b</i> (SE)	CI	OR
Vicarious victimization	.689* (.278)	[.145, 1.232]	1.991	.101 (.314)	[-.515, .716]	1.106
Controls						
Age at baseline				-.144* (.067)	[-.274, -.014]	.866
Sex				.420 (.262)	[-.094, .934]	1.522
Black				-.538* (.211)	[-.952, -.125]	.584
Hispanic				-.367 (.199)	[-.758, .023]	.693
Other race				-.323 (.363)	[-.1034, .387]	.724
Family structure				.073 (.199)	[-.317, .464]	1.076
School status				.024 (.168)	[-.306, .353]	1.024
Employment status				-.008 (.166)	[-.333, .318]	.992
Supervision status				.414 (.149)	[.122, .706]	1.513
Gang membership				-.109 (.249)	[-.596, .379]	.897
Prior violent offending				.155* (.061)	[.035, .274]	1.167
Prior property offending				.161*** (.046)	[.071, .250]	1.174
Emotion regulation				-.172 (.109)	[-.386, .043]	.842
Low self-control				-.340*** (.088)	[-.512, -.168]	.712
Peer delinquency				.385*** (.103)	[.184, .586]	1.470
Peer resistance				-.182 (.126)	[-.430, .066]	.834
Neighborhood conditions				-.197 (.107)	[-.406, .013]	.822
<i>Constant</i>	-1.170*** (.270)	[-1.699, -.641]	.310	2.027 (1.223)	[-.370, 4.423]	7.588

Abbreviation: SE = Robust standard error, CI = 95% Confidence interval, OR = Odds ratio.

Note: Sex coefficients are relative to the female category. Race coefficients are relative to the White category.

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Table 11. Logistic Regression Models: Effects of Dual Victimization on Property Offending ($N = 1,092$)

Variables	Model 1			Model 2		
	<i>b</i> (SE)	CI	OR	<i>b</i> (SE)	CI	OR
Dual victimization	1.150*** (.143)	[.871, 1.430]	3.159	.479** (.177)	[.132, .826]	1.614
Controls						
Age at baseline				-.155* (.067)	[-.286, -.023]	.857
Sex				.360 (.265)	[-.160, .881]	1.434
Black				-.502* (.211)	[-.915, -.088]	.606
Hispanic				-.322 (.202)	[-.728, .064]	.717
Other race				-.275 (.365)	[-.989, .440]	.760
Family structure				.100 (.200)	[-.291, .492]	1.106
School status				.034 (.169)	[-.297, .364]	1.034
Employment status				-.014 (.166)	[-.341, .312]	.986
Supervision status				.420** (.150)	[.125, .714]	1.521
Gang membership				-.088 (.248)	[-.573, .397]	.916
Prior violent offending				.104 (.063)	[-.019, .228]	1.110
Prior property offending				.162*** (.046)	[.073, .252]	1.176
Emotion regulation				-.181 (.110)	[-.396, .035]	.835
Low self-control				-.331*** (.088)	[-.504, -.158]	.718
Peer delinquency				.350** (.103)	[.148, .552]	1.419
Peer resistance				-.171 (.128)	[-.422, .080]	.843
Neighborhood conditions				-.207 (.107)	[-.416, .002]	.813
<i>Constant</i>	-1.291*** (.120)	[-.1527, -1.055]	.275	2.176 (1.220)	[-.216, 4.568]	8.811

Abbreviation: SE = Robust standard error, CI = 95% Confidence interval, OR = Odds ratio.

Note: Sex coefficients are relative to the female category. Race coefficients are relative to the White category.

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Table 12. Poisson Regression Models: Effects of Direct Victimization and Victimization Frequency on Likelihood of Violent Offending ($N = 1,092$)

Variables	Model 1			Model 2			Model 3		
	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME
Direct victimization	.814*** (.081)	[.655, .974]	1.011	.662*** (.086)	[.494, .830]	.821	.294** (.092)	[.114, .474]	.365
Dimensions									
Frequency				.018*** (.003)	[.012, .024]	.022	-.001 (.004)	[-.008, .006]	-.001
Controls									
Age at baseline							-.093** (.028)	[-.149, -.038]	
Sex							.484** (.153)	[.184, .783]	
Black							-.030 (.094)	[-.215, .155]	
Hispanic							-.063 (.098)	[-.255, .128]	
Other race							.137 (.153)	[-.163, .437]	
Family structure							.091 (.093)	[-.091, .274]	
School status							-.010 (.072)	[-.152, .131]	
Employment status							-.036 (.074)	[-.181, .109]	
Supervision status							.155* (.065)	[.028, .283]	
Gang membership							.218* (.098)	[.027, .409]	
Prior violent offending							.125*** (.029)	[.069, .181]	

Prior property offending					.009 (.022)	[-.033, .051]
Emotion regulation					-.093* (.046)	[-.183, -.003]
Low self-control					-.128** (.039)	[-.205, -.052]
Peer delinquency					.199*** (.046)	[.109, .289]
Peer resistance					.028 (.058)	[-.086, .142]
Neighborhood conditions					-.045 (.049)	[-.142, .051]
<i>Constant</i>	-.374*** (.709)	[-.513, -.235]	-.374 (.071)	[-.513, -.235]	.694 (.541)	[-.367, 1.755]

Abbreviation: SE = Robust standard error, CI = 95% Confidence interval, AME = Average marginal effects.

Note: Sex coefficients are relative to the female category. Race coefficients are relative to the White category.

*** p<0.001; ** p<0.01; * p<0.05

Table 13. Poisson Regression Models: Effects of Direct Victimization and Victimization Variety on Likelihood of Violent Offending ($N = 1,092$)

Variables	Model 1			Model 2			Model 3		
	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME
Direct victimization	.814*** (.081)	[.655, .974]	1.011	.218 (.116)	[-.010, .446]	.270	.197 (.109)	[-.015, .410]	.245
Dimensions									
Variety				.243*** (.032)	[.180, .306]	.302	.054 (.038)	[-.021, .128]	.067
Controls									
Age at baseline							-.093** (.029)	[-.196, .173]	
Sex							.468** (.154)	[.166, .769]	
Black							-.011 (.094)	[-.196, .173]	
Hispanic							-.056 (.098)	[-.247, .135]	
Other race							.144 (.152)	[-.154, .442]	
Family structure							.100 (.092)	[-.196, .173]	
School status							-.006 (.073)	[-.148, .137]	
Employment status							-.046 (.073)	[-.189, .096]	
Supervision status							.155* (.065)	[.027, .282]	
Gang membership							.218* (.098)	[.026, .410]	

Prior violent offending				.104**	[.045, .163]
				(.030)	
Prior property offending				.013	[-.029, .055]
				(.021)	
Emotion regulation				-.091*	[-.181, .000]
				(.046)	
Low self-control				-.123**	[-.200, -.047]
				(.039)	
Peer delinquency				.193***	[.104, .282]
				(.046)	
Peer resistance				.023	[-.090, .136]
				(.058)	
Neighborhood conditions				-.049	[-.145, .047]
				(.049)	
<i>Constant</i>	-.374***	[-.513, -.235]	-.374***	[-.513, -.235]	.726
	(.709)		(.071)		(.540)

Abbreviation: SE = Robust standard error, CI = 95% Confidence interval, AME = Average marginal effects.

Note: Sex coefficients are relative to the female category. Race coefficients are relative to the White category.

*** p<0.001; ** p<0.01; * p<0.05

Table 14. Poisson Regression Models: Effects of Direct Victimization and Victimization Recency on Likelihood of Violent Offending ($N = 1,092$)

Variables	Model 1			Model 2			Model 3		
	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME
Direct victimization	.814*** (.081)	[.655, .974]	1.011	.516*** (.109)	[.302, .730]	.640	.159 (.110)	[-.057, .375]	.197
Dimensions									
Recency				.159*** (.038)	[.083, .234]	.197	.077* (.038)	[.003, .151]	.096
Controls									
Age at baseline							-.089** (.028)	[-.144, -.034]	
Sex							.464** (.154)	[.162, .765]	
Black							-.033 (.094)	[-.217, .151]	
Hispanic							-.070 (.097)	[-.260, .120]	
Other race							.138 (.155)	[-.164, .441]	
Family structure							.093 (.090)	[-.084, .270]	
School status							-.006 (.072)	[-.147, .135]	
Employment status							-.050 (.073)	[-.194, .094]	
Supervision status							.140* (.066)	[.012, .269]	
Gang membership							.224* (.066)	[.034, .414]	

					(.097)	
Prior violent offending					.116***	[.062, .170]
					(.027)	
Prior property offending					.012	[-.030, .054]
					(.022)	
Emotion regulation					-.090	[-.180, .000]
					(.046)	
Low self-control					-.124**	[-.200, -.048]
					(.039)	
Peer delinquency					.191***	[.102, .281]
					(.046)	
Peer resistance					.023	[-.089, .135]
					(.057)	
Neighborhood conditions					-.047	[-.143, .049]
					(.049)	
<i>Constant</i>	-.374***	[-.513, -.235]		-.374***	[-.513, -.235]	.681
	(.709)			(.071)		(.536)

Abbreviation: SE = Robust standard error, CI = 95% Confidence interval, AME = Average marginal effects.

Note: Sex coefficients are relative to the female category. Race coefficients are relative to the White category.

*** p<0.001; ** p<0.01; * p<0.05

Table 15. Poisson Regression Models: Effects of Vicarious Victimization and Victimization Frequency on Likelihood of Violent Offending ($N = 1,092$)

Variables	Model 1			Model 2			Model 3		
	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME
Vicarious victimization	.778*** (.210)	[.367, 1.190]	.966	.508* (.212)	[.092, .923]	.630	.213 (.192)	[-.163, .558]	.264
Dimensions									
Frequency				.011*** (.001)	[.009, .014]	.014	.005* (.002)	[.001, .008]	.006
Controls									
Age at baseline							-.094** (.029)	[-.150, -.037]	
Sex							.501** (.153)	[.200, .801]	
Black							-.088 (.095)	[-.274, .099]	
Hispanic							-.067 (.097)	[-.259, .124]	
Other race							.126 (.160)	[-.187, .439]	
Family structure							.074 (.093)	[-.108, .256]	
School status							-.005 (.072)	[-.146, .136]	
Employment status							-.037 (.075)	[-.184, .111]	
Supervision status							.162* (.066)	[.033, .290]	
Gang membership							.223* (.099)	[.029, .418]	

Prior violent offending					.124*** (.028)	[.069, .178]
Prior property offending					.014 (.022)	[-.028, .056]
Emotion regulation					-.087 (.046)	[-.177, .003]
Low self-control					-.133** (.039)	[-.210, -.057]
Peer delinquency					.178*** (.048)	[.083, .272]
Peer resistance					-.007 (.057)	[-.119, .106]
Neighborhood conditions					-.062 (.049)	[-.158, .033]
<i>Constant</i>	-.524* (.207)	[-.929, -.119]	-.524* (.207)	[-.929, -.119]	.783 (.581)	[-.355, 1.922]

Abbreviation: SE = Robust standard error, CI = 95% Confidence interval, AME = Average marginal effects.

Note: Sex coefficients are relative to the female category. Race coefficients are relative to the White category.

*** p<0.001; ** p<0.01; * p<0.05

Table 16. Poisson Regression Models: Effects of Vicarious Victimization and Victimization Variety on Likelihood of Violent Offending ($N = 1,092$)

Variables	Model 1			Model 2			Model 3		
	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME
Vicarious victimization	.778*** (.210)	[.367, 1.190]	.966	-.335 (.234)	[-.794, .125]	-.416	-.184 (.208)	[-.592, .225]	-.228
Dimensions									
Variety				.283*** (.027)	[.231, .336]	.352	.144*** (.032)	[.081, .207]	.178
Controls									
Age at baseline							-.095** (.028)	[-.150, -.040]	
Sex							.488** (.152)	[.190, .785]	
Black							-.107 (.095)	[-.294, .080]	
Hispanic							-.102 (.097)	[-.292, .087]	
Other race							.117 (.155)	[-.186, .420]	
Family structure							.093 (.092)	[-.087, .274]	
School status							-.005 (.071)	[-.145, .134]	
Employment status							-.026 (.073)	[-.170, .117]	
Supervision status							.149* (.065)	[.022, .276]	
Gang membership							.238* (.097)	[.047, .428]	

Prior violent offending					.110***	[.058, .161]
					(.026)	
Prior property offending					.011	[-.031, .053]
					(.021)	
Emotion regulation					-.090*	[-.178, -.002]
					(.045)	
Low self-control					-.128**	[-.205, -.052]
					(.039)	
Peer delinquency					.155***	[.062, .247]
					(.047)	
Peer resistance					.000	[-.110, .110]
					(.056)	
Neighborhood conditions					-.077	[-.173, .019]
					(.049)	
<i>Constant</i>	-.524*	[-.929, -.119]	-.524*	[-.929, -.119]	.894	[-.205, 1.993]
	(.207)		(.207)		(.561)	

Abbreviation: SE = Robust standard error, CI = 95% Confidence interval, AME = Average marginal effects.

Note: Sex coefficients are relative to the female category. Race coefficients are relative to the White category.

*** p<0.001; ** p<0.01; * p<0.05

Table 17. Poisson Regression Models: Effects of Vicarious Victimization and Victimization Recency on Likelihood of Violent Offending ($N = 1,092$)

Variables	Model 1			Model 2			Model 3		
	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME
Vicarious victimization	.778*** (.210)	[.367, 1.190]	.966	.256 (.224)	[-.184, .695]	.317	-.127 (.202)	[-.523, .269]	-.158
Dimensions									
Recency				.209*** (.031)	[.148, .271]	.260	.160*** (.030)	[.102, .219]	.199
Controls									
Age at baseline							-.084** (.028)	[-.139, -.030]	
Sex							.497** (.153)	[.197, .797]	
Black							-.075 (.093)	[-.257, .106]	
Hispanic							-.082 (.095)	[-.267, .104]	
Other race							.144 (.157)	[-.163, .451]	
Family structure							.059 (.088)	[-.114, .233]	
School status							-.010 (.071)	[-.150, .129]	
Employment status							-.017 (.073)	[-.160, .126]	
Supervision status							.113 (.065)	[-.015, .240]	
Gang membership							.208* (.096)	[.020, .395]	

Prior violent offending					.132***	[.081, .183]
					(.026)	
Prior property offending					.019	[-.024, .063]
					(.022)	
Emotion regulation					-.084	[-.174, .007]
					(.046)	
Low self-control					-.124**	[-.200, -.047]
					(.039)	
Peer delinquency					.191***	[.102, .280]
					(.045)	
Peer resistance					-.009	[-.119, .101]
					(.056)	
Neighborhood conditions					-.054	[-.150, .043]
					(.049)	
<i>Constant</i>	-.524*	[-.929, -.119]	-.524*	[-.929, -.119]	.590	[-.492, 1.673]
	(.207)		(.207)		(.552)	

Abbreviation: SE = Robust standard error, CI = 95% Confidence interval, AME = Average marginal effects.

Note: Sex coefficients are relative to the female category. Race coefficients are relative to the White category.

*** p<0.001; ** p<0.01; * p<0.05

Table 18. Poisson Regression Models: Effects of Direct Victimization and Victimization Frequency on Likelihood of Property Offending ($N = 1,092$)

Variables	Model 1			Model 2			Model 3		
	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME
Direct victimization	1.104*** (.135)	[.838, 1.369]	.898	.971*** (.141)	[.695, 1.248]	.790	.454*** (.149)	[.161, .746]	.369
Dimensions									
Frequency				.016*** (.004)	[.008, .024]	.013	-.005 (.005)	[-.015, .005]	-.004
Controls									
Age at baseline							-.115** (.041)	[-.194, -.035]	
Sex							.272 (.220)	[-.159, .703]	
Black							-.597*** (.143)	[-.877, -.318]	
Hispanic							-.175 (.124)	[-.419, .068]	
Other race							-.088 (.241)	[-.559, .384]	
Family structure							.113 (.122)	[-.127, .353]	
School status							-.078 (.100)	[-.274, .118]	
Employment status							.069 (.108)	[-.143, .281]	
Supervision status							.323** (.097)	[.134, .513]	
Gang membership							.115 (.131)	[-.141, .371]	

Prior violent offending					.062 (.039)	[-.014, .137]
Prior property offending					.139*** (.030)	[.080, .198]
Emotion regulation					-.074 (.072)	[-.214, .067]
Low self-control					-.216*** (.061)	[-.336, -.096]
Peer delinquency					.231*** (.065)	[.103, .359]
Peer resistance					-.092 (.082)	[-.254, .069]
Neighborhood conditions					-.115 (.068)	[-.249, .019]
<i>Constant</i>	-1.035*** (.123)	[-1.276, -.794]	-1.035*** (.123)	[-1.276, -.794]	1.151 (.752)	[-.322, 2.624]

Abbreviation: SE = Robust standard error, CI = 95% Confidence interval, AME = Average marginal effects.

Note: Sex coefficients are relative to the female category. Race coefficients are relative to the White category.

*** p<0.001; ** p<0.01; * p<0.05

Table 19. Poisson Regression Models: Effects of Direct Victimization and Victimization Variety on Likelihood of Property Offending ($N = 1,092$)

Variables	Model 1			Model 2			Model 3		
	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME
Direct victimization	1.104*** (.135)	[.838, 1.369]	.898	.606** (.181)	[.250, .961]	.492	.507** (.164)	[.186, .829]	.413
Dimensions									
Variety				.205*** (.047)	[.113, .298]	.167	-.039 (.052)	[-.142, .063]	-.032
Controls									
Age at baseline							-.118** (.040)	[-.197, -.039]	
Sex							.271 (.221)	[-.162, .705]	
Black							-.604*** (.142)	[-.881, -.326]	
Hispanic							-.174 (.124)	[-.417, .069]	
Other race							-.088 (.241)	[-.560, .385]	
Family structure							.118 (.121)	[-.120, .355]	
School status							-.077 (.100)	[-.274, .120]	
Employment status							.067 (.107)	[-.143, .278]	
Supervision status							.325** (.096)	[.136, .514]	
Gang membership							.112 (.131)	[-.144, .368]	

Prior violent offending					.065 (.041)	[-.018, .146]
Prior property offending					.137*** (.030)	[.078, .195]
Emotion regulation					-.071 (.071)	[-.211, .069]
Low self-control					-.218*** (.061)	[-.338, -.097]
Peer delinquency					.229*** (.065)	[.102, .357]
Peer resistance					-.100 (.082)	[-.261, .061]
Neighborhood conditions					-.118 (.067)	[-.250, .015]
<i>Constant</i>	-1.035*** (.123)	[-1.276, -.794]	-1.035*** (.123)	[-1.276, -.794]	1.227 (.755)	[-.252, 2.705]

Abbreviation: SE = Robust standard error, CI = 95% Confidence interval, AME = Average marginal effects.
Note: Sex coefficients are relative to the female category. Race coefficients are relative to the White category.
*** p<0.001; ** p<0.01; * p<0.05

Table 20. Poisson Regression Models: Effects of Direct Victimization and Victimization Recency on Likelihood of Property Offending ($N = 1,092$)

Variables	Model 1			Model 2			Model 3		
	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME
Direct victimization	1.104*** (.135)	[.838, 1.369]	.898	.778*** (.170)	[.444, 1.112]	.633	.296 (.167)	[-.032, .624]	.241
Dimensions									
Recency				.173** (.055)	[.065, .280]	.141	.085 (.052)	[-.016, .187]	.070
Controls									
Age at baseline							-.113** (.040)	[-.192, -.034]	
Sex							.237 (.222)	[-.198, .672]	
Black							-.596*** (.142)	[-.875, -.317]	
Hispanic							-.181 (.122)	[-.420, .059]	
Other race							-.080 (.240)	[-.551, .391]	
Family structure							.125 (.120)	[-.111, .361]	
School status							-.065 (.100)	[-.261, .131]	
Employment status							.045 (.106)	[-.162, .252]	
Supervision status							.316** (.096)	[.127, .504]	
Gang membership							.128	[-.127, .383]	

					(.130)	
Prior violent offending					.042	[-.030, .115]
					(.037)	
Prior property offending					.144***	[.085, .202]
					(.030)	
Emotion regulation					-.063	[-.205, .078]
					(.072)	
Low self-control					-.210**	[-.329, -.092]
					(.061)	
Peer delinquency					.220**	[.091, .349]
					(.066)	
Peer resistance					-.107	[-.269, .054]
					(.082)	
Neighborhood conditions					-.120	[-.252, .012]
					(.067)	
<i>Constant</i>	-1.035***	[-1.276, -.794]	-1.035***	[-1.276, -.794]	1.196	[-.287, 2.678]
	(.123)		(.123)		(.756)	

Abbreviation: SE = Robust standard error, CI = 95% Confidence interval, AME = Average marginal effects.

Note: Sex coefficients are relative to the female category. Race coefficients are relative to the White category.

*** p<0.001; ** p<0.01; * p<0.05

Table 21. Poisson Regression Models: Effects of Vicarious Victimization and Victimization Frequency on Likelihood of Property Offending ($N = 1,092$)

Variables	Model 1			Model 2			Model 3		
	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME
Vicarious victimization	.631* (.289)	[.652, 1.196]	.513	.477 (.292)	[-.096, 1.049]	.388	.106 (.258)	[-.399, .611]	.388
Dimensions									
Frequency				.007*** (.002)	[.003, .011]	.006	-.001 (.003)	[-.006, .004]	-.001
Controls									
Age at baseline							-.106* (.041)	[-.187, -.025]	
Sex							.327 (.222)	[-.108, .763]	
Black							-.619*** (.144)	[-.901, -.337]	
Hispanic							-.197 (.123)	[-.438, .045]	
Other race							-.113 (.241)	[-.585, .359]	
Family structure							.100 (.120)	[-.136, .335]	
School status							-.073 (.100)	[-.269, .124]	
Employment status							.065 (.108)	[-.146, .276]	
Supervision status							.319** (.098)	[.127, .511]	
Gang membership							.093	[-.168, .355]	

					(.133)	
Prior violent offending					.083*	[.011, .156]
					(.037)	
Prior property offending					.141***	[.081, .202]
					(.031)	
Emotion regulation					-.063	[-.204, .078]
					(.072)	
Low self-control					-.226***	[-.348, -.105]
					(.062)	
Peer delinquency					.253***	[.120, .387]
					(.068)	
Peer resistance					-.108	[-.270, .054]
					(.082)	
Neighborhood conditions					-.111	[-.248, .025]
					(.070)	
<i>Constant</i>	-.804**	[-1.360, -.249]	-.804**	[-1.360, -.249]	1.112	[-.435, 2.659]
	(.283)		(.283)		(.789)	

Abbreviation: SE = Robust standard error, CI = 95% Confidence interval, AME = Average marginal effects.

Note: Sex coefficients are relative to the female category. Race coefficients are relative to the White category.

*** p<0.001; ** p<0.01; * p<0.05

Table 22. Poisson Regression Models: Effects of Vicarious Victimization and Victimization Variety on Likelihood of Property Offending ($N = 1,092$)

Variables	Model 1			Model 2			Model 3		
	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME
Vicarious victimization	.631* (.289)	[.652, 1.196]	.513	-.344 (.328)	[-.988, .300]	-.280	-.122 (.282)	[-.676, .431]	-.099
Dimensions									
Variety				.250*** (.039)	[.173, .327]	.203	.077 (.046)	[.013, .166]	.062
Controls									
Age at baseline							-.110** (.041)	[-.189, -.030]	
Sex							.312 (.221)	[-.122, .746]	
Black							-.644*** (.146)	[-.930, -.359]	
Hispanic							-.201 (.124)	[-.444, .041]	
Other race							-.094 (.239)	[-.563, .374]	
Family structure							.107 (.121)	[-.131, .345]	
School status							-.069 (.100)	[-.265, .127]	
Employment status							.066 (.108)	[-.145, .277]	
Supervision status							.323** (.097)	[.133, .514]	
Gang membership							.111	[-.148, .370]	

					(.132)	
Prior violent offending					.061	[-.010, .132]
					(.036)	
Prior property offending					.142***	[.082, .202]
					(.030)	
Emotion regulation					-.062	[-.203, .078]
					(.072)	
Low self-control					-.225**	[-.346, -.104]
					(.062)	
Peer delinquency					.221**	[.090, .353]
					(.067)	
Peer resistance					-.122	[-.280, .036]
					(.081)	
Neighborhood conditions					-.131	[-.266, .004]
					(.069)	
<i>Constant</i>	-.804**	[-1.360, -.249]	-.804**	[-1.360, -.249]	1.329	[-.193, 2.851]
	(.283)		(.283)		(.776)	

Abbreviation: SE = Robust standard error, CI = 95% Confidence interval, AME = Average marginal effects.

Note: Sex coefficients are relative to the female category. Race coefficients are relative to the White category.

*** p<0.001; ** p<0.01; * p<0.05

Table 23. Poisson Regression Models: Effects of Vicarious Victimization and Victimization Recency on Likelihood of Property Offending ($N = 1,092$)

Variables	Model 1			Model 2			Model 3		
	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME	<i>b</i> (SE)	CI	AME
Vicarious victimization	.631* (.289)	[.652, 1.196]	.513	.115 (.312)	[-.496, .727]	.094	-.317 (.280)	[-.866, .231]	-.258
Dimensions									
Recency				.207*** (.046)	[.116, .298]	.168	.183*** (.046)	[.094, .273]	.149
Controls									
Age at baseline							-.102* (.040)	[-.181, -.023]	
Sex							.314 (.228)	[-.131, .760]	
Black							-.637*** (.141)	[-.912, -.361]	
Hispanic							-.192 (.121)	[-.428, .044]	
Other race							-.049 (.239)	[-.517, .418]	
Family structure							.074 (.117)	[-.156, .304]	
School status							-.069 (.099)	[-.263, .125]	
Employment status							.092 (.107)	[-.118, .301]	
Supervision status							.290** (.096)	[.102, .479]	
Gang membership							.112 (.130)	[-.142, .366]	

Prior violent offending					.062 (.036)	[-.007, .132]
Prior property offending					.157*** (.030)	[.098, .216]
Emotion regulation					-.061 (.073)	[-.203, .082]
Low self-control					-.209** (.061)	[-.329, -.088]
Peer delinquency					.232*** (.065)	[.105, .360]
Peer resistance					-.148 (.081)	[-.306, .011]
Neighborhood conditions					-.122 (.067)	[-.253, .010]
<i>Constant</i>	-.804** (.283)	[-1.360, -.249]		-.804** (.283)	[-1.360, -.249]	1.168 (.763)

Abbreviation: SE = Robust standard error, CI = 95% Confidence interval, AME = Average marginal effects.

Note: Sex coefficients are relative to the female category. Race coefficients are relative to the White category.

*** p<0.001; ** p<0.01; * p<0.05

Table 24. Multivariate Poisson and Negative Binomial Regression Models: Direct Victimization Predicting Violent Offending

Variables	Poisson		Negative Binomial	
	<i>b</i>	SE	<i>b</i>	SE
Model 1				
Direct victimization	0.291**	0.092	0.280**	0.090
<i>Constant</i>	0.712	0.536	0.792	0.527
Model 2				
Direct victimization	0.294**	0.092	0.281**	0.090
Direct victimization		0.004	-0.000	0.004
(Frequency)	-0.001			
<i>Constant</i>	0.694	0.541	0.785	0.0531
Model 3				
Direct victimization	0.197	0.109	0.181	0.106
Direct victimization		0.038	0.056	0.037
(Variety)	0.054			
<i>Constant</i>	0.726	0.540	0.818	0.531
Model 4				
Direct victimization	0.159	0.110	0.135	0.108
Direct victimization		0.038	0.084*	0.038
(Recency)	0.077*			
<i>Constant</i>	0.681	0.536	0.763	0.528

Abbreviation: SE = Robust standard error.

Notes: All models include controls.

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

Table 25. Multivariate Poisson and Negative Binomial Regression Models: Vicarious Victimization Predicting Violent Offending

Variables	Poisson		Negative Binomial	
	<i>b</i>	SE	<i>b</i>	SE
Model 1				
Vicarious victimization	0.238	0.191	0.247	0.175
<i>Constant</i>	0.523	0.566	0.588	0.549
Model 2				
Vicarious victimization	0.213	0.192	0.217	0.176
Vicarious victimization (Frequency)	0.005*	0.002	0.005*	0.002
<i>Constant</i>	0.783	0.581	0.837	0.561
Model 3				
Vicarious victimization	-0.184	0.208	-0.158	0.195
Vicarious victimization (Variety)	0.144***	0.032	0.139***	0.032
<i>Constant</i>	0.894	0.561	0.964	0.547
Model 4				
Vicarious victimization	-0.127	0.202	-0.122	0.188
Vicarious victimization (Recency)	0.160***	0.030	0.162***	0.029
<i>Constant</i>	0.590	0.552	0.665	0.540

Abbreviation: SE = Robust standard error.

Notes: All models include controls.

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

Table 26. Multivariate Poisson and Negative Binomial Regression Models: Direct Victimization Predicting Property Offending

Variables	Poisson		Negative Binomial	
	<i>b</i>	SE	<i>b</i>	SE
Model 1				
Direct victimization	0.441**	0.150	0.463**	0.141
<i>Constant</i>	1.222	0.757	1.250	0.776
Model 2				
Direct victimization	0.454**	0.149	0.471**	0.141
Direct victimization (Frequency)	-0.005	0.005	-0.003	0.005
<i>Constant</i>	1.151	0.752	1.206	0.774
Model 3				
Direct victimization	0.507**	0.164	0.510**	0.160
Direct victimization (Variety)	-0.039	0.052	-0.028	0.053
<i>Constant</i>	1.227	0.755	0.149	0.775
Model 4				
Direct victimization	0.296	0.167	0.326	0.167
Direct victimization (Recency)	0.085	0.052	0.078	0.057
<i>Constant</i>	1.196	0.756	1.239	0.778

Abbreviation: SE = Robust standard error.

Notes: All models include controls.

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

Table 27. Multivariate Poisson and Negative Binomial Regression Models: Vicarious Victimization Predicting Property Offending

Variables	Poisson		Negative Binomial	
	<i>b</i>	SE	<i>b</i>	SE
Model 1				
Vicarious victimization	0.101	0.259	0.123	0.235
<i>Constant</i>	1.150	0.780	1.064	0.787
Model 2				
Vicarious victimization	0.106	0.258	0.126	0.235
Vicarious victimization (Frequency)	-0.001	0.003	-0.000	0.003
<i>Constant</i>	1.112	0.789	1.042	0.801
Model 3				
Vicarious victimization	-0.122	0.282	-0.108	0.261
Vicarious victimization (Variety)	0.077	0.046	0.082	0.045
<i>Constant</i>	1.329	0.776	1.320	0.791
Model 4				
Vicarious victimization	-0.317	0.280	-0.286	0.257
Vicarious victimization (Recency)	0.183***	0.046	0.185***	0.046
<i>Constant</i>	1.168	0.763	1.192	0.781

Abbreviation: SE = Robust standard error.

Notes: All models include controls.

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

Appendices

Appendix A. Descriptive Statistics for Violent and Property Offending Indicators by Wave

Variables	Wave 1		Wave 2		Min	Max
	Mean	SD	Mean	SD		
Violent Offending						
Killed someone	0.001	0.030	0.001	0.030	0	1
Shot someone (Hit)	0.011	0.104	0.016	0.124	0	1
Shot at someone (No Hit)	0.043	0.203	0.041	0.199	0	1
Armed robbery	0.045	0.207	0.041	0.199	0	1
Robbery	0.106	0.308	0.092	0.289	0	1
Beat up someone	0.103	0.304	0.089	0.285	0	1
In a fight	0.469	0.499	0.395	0.489	0	1
In a gang fight	0.080	0.271	0.063	0.243	0	1
Carjacked	0.013	0.113	0.011	0.104	0	1
Property Offending						
Destroy property	0.145	0.352	0.110	0.313	0	1
Set fire to property	0.013	0.113	0.006	0.080	0	1
Broke in to steal	0.036	0.186	0.026	0.158	0	1
Shoplifted	0.080	0.271	0.060	0.237	0	1
Bought or sold stolen property	0.172	0.378	0.137	0.344	0	1
Used check/credit card illegally	0.021	0.144	0.012	0.109	0	1
Stole a vehicle	0.032	0.176	0.033	0.179	0	1
Broke into a vehicle to steal	0.055	0.228	0.051	0.221	0	1

Appendix B. Correlation Coefficients for Binary Measures of Victimization and Offending

	1	2	3	4	5	6
1 General victimization	1.00					
2 Direct victimization	.327	1.00				
3 Vicarious victimization	.897	.259	1.00			
4 Dual victimization	.318	.973	.354	1.00		
5 Violent offending	.113	.232	.116	.237	1.00	
6 Property offending	.066	.243	.076	.250	.394	1.00

Appendix C. Correlation Coefficients for Binary Measures of Direct and Vicarious Victimization and Victimization Dimensions

	1	2	3	4	5	6	7	8
1 Direct victimization	1.00							
2 Vicarious victimization	.259	1.00						
3 Victimization frequency (Direct)	.443	.148	1.00					
4 Victimization variety (Direct)	.771	.240	.680	1.00				
5 Victimization recency (Direct)	.744	.200	.479	.689	1.00			
6 Victimization frequency (Vicarious)	.344	.249	.621	.437	.325	1.00		
7 Victimization variety (Vicarious)	.481	.562	.406	.516	.409	.608	1.00	
8 Victimization recency (Vicarious)	.205	.490	.192	.232	.342	.320	.479	1.00

Appendix D. Correlation Coefficients for Key Independent Variables and Control Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1 General victimization	1.00																		
2 Direct victimization	.33	1.00																	
3 Vicarious victimization	.90	.26	1.00																
4 Dual victimization	.32	.97	.35	1.00															
5 Age at baseline	.09	.16	.07	.15	1.00														
6 Sex	.08	.20	.08	.20	.05	1.00													
7 Race/ethnicity	-.01	.02	.00	.03	.05	.02	1.00												
8 Family structure	-.03	-.03	.00	-.02	-.01	.03	-.02	1.00											
9 School status	.00	-.09	-.03	-.11	-.22	.00	-.07	-.06	1.00										
10 Employment status	.02	.07	.01	.06	.18	.07	-.07	.03	.00	1.00									
11 Supervision status	-.02	-.08	-.01	-.07	-.10	-.11	-.08	.06	.02	-.08	1.00								
12 Gang membership	.05	.18	.05	.18	.02	.08	.23	.02	-.13	-.01	-.03	1.00							
13 Prior violent offending	.21	.52	.22	.52	.13	.18	.13	.01	-.13	.09	-.11	.40	1.00						
14 Prior property offending	.12	.37	.13	.37	.12	.17	.06	.06	-.15	.10	-.08	.27	.62	1.00					
15 Emotion regulation	.00	.01	.00	.00	.06	.02	.04	-.07	.00	.05	.01	-.06	-.04	-.12	1.00				
16 Low self-control	-.13	-.25	-.12	-.25	.02	-.05	-.03	-.05	.07	-.07	-.03	-.27	-.34	-.42	.17	1.00			
17 Peer delinquency	.23	.41	.25	.43	.11	.12	.15	.03	-.13	.03	-.11	.30	.55	.50	-.04	.17	1.00		
18 Peer resistance	.03	-.06	.02	-.06	.12	-.10	-.07	-.06	.03	.02	.01	-.09	-.03	-.13	.05	.18	-.05	1.00	
19 Neighborhood conditions	.17	.15	.17	.16	.04	-.02	.04	-.06	-.06	-.07	-.03	.02	.23	.10	.04	-.10	.26	.01	1.00

Appendix E. Wald Tests Comparing Logistic Regression Model Differences by Offending Type (Violent Versus Property) ($N = 1,092$)

Variables	Wald Test Statistic	<i>p</i> -value
Bivariate Models		
General victimization	1.270	.259
Direct victimization	.780	.378
Vicarious victimization	.690	.407
Dual victimization	.820	.364
Multivariate Models		
General victimization	.510	.477
Direct victimization	.490	.486
Vicarious victimization	.180	.668
Dual victimization	.610	.437

Notes: Multivariate models include full list of controls.

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

Appendix F. Wald Tests Comparing Logistic Regression Model Differences by Victimization Degree for Violent Offending ($N = 1,092$)

Variables	Wald Test Statistic	<i>p</i> -value
Bivariate Models		
Direct vs Vicarious victimization	.130	.719
Direct vs Dual victimization	.310	.576
Vicarious vs Dual victimization	.210	.647
Multivariate Models		
Direct vs Vicarious victimization	.060	.800
Direct vs Dual victimization	.010	.919
Vicarious vs Dual victimization	.080	.774

Notes: Multivariate models include full list of controls.

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

Appendix G. Wald Tests Comparing Logistic Regression Model Differences by Victimization Degree for Property Offending ($N = 1,092$)

Variables	Wald Test Statistic	<i>p</i> -value
Bivariate Models		
Direct vs Vicarious victimization	2.640	.104
Direct vs Dual victimization	.410	.520
Vicarious vs Dual victimization	3.190	.074
Multivariate Models		
Direct vs Vicarious victimization	1.180	.277
Direct vs Dual victimization	.210	.649
Vicarious vs Dual victimization	1.500	.221

Notes: Multivariate models include full list of controls.

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

Appendix H. Wald Tests Comparing Poisson Regression Model Differences by Victimization Degree for Violent Offending ($N = 1,092$)

Variables	Wald Test Statistic	<i>p</i> -value
Bivariate Model		
Direct vs Vicarious victimization	.040	.850
Multivariate Model		
Direct vs Vicarious victimization	.090	.770

Notes: Multivariate models include full list of controls.

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

Appendix I. Wald Tests Comparing Poisson Regression Model Differences by Victimization Degree for Property Offending ($N = 1,092$)

Variables	Wald Test Statistic	<i>p</i> -value
Bivariate Model		
Direct vs Vicarious victimization	3.130	.077
Multivariate Model		
Direct vs Vicarious victimization	1.800	.179

Notes: Multivariate models include full list of controls.

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

Appendix J. Likelihood Ratio Tests Comparing Poisson Regression Models With and Without Victimization Dimensions ($N = 1,092$)

Variables	Violent Offending		Property Offending	
	Test Statistic	<i>p</i> -value	Test Statistic	<i>p</i> -value
Direct Victimization				
Frequency	.100	.746	1.280	.259
Variety	2.900	.089	1.040	.309
Recency	6.120	.013	5.200	.023
Vicarious Victimization				
Frequency	10.210	.001	.210	.647
Variety	2.900	.089	1.040	.309
Recency	37.030	< .001	31.130	< .001

Appendix K. Emotion Regulation Scale

Items

- I know things to do to make myself less excited.
 - I wish I could control my feelings better.
 - I know things to do to make myself more happy.
 - I do a lot of things I wish I wouldn't.
 - I know things to do to make myself less mad.
 - I can change my feelings by doing something with another person.
 - I can change my feelings by thinking of something else.
 - I know things to do to make myself less scared.
 - I control my feelings very well.
 - I can calm myself down when I get very upset.
 - I know things to do to make myself less sad.
 - I know things to do to calm myself down.
-

Responses are recorded on a 4-point Likert scale of *Not at all like me* (=1), *A little bit like me* (=2), *Kind of like me* (=3), and *Really like me* (=4).

Appendix L. Peer Delinquency Scale

Items (During the past 6 months...)

How many of your friends have damaged/destroyed property?

How many of your friends have hit/threatened to hit someone?

How many of your friends have sold drugs?

How many of your friends have gotten drunk?

How many of your friends have carried a knife?

How many of your friends have carried a gun?

How many of your friends have owned a gun?

How many of your friends have gotten into a physical fight?

How many of your friends have been hurt in a fight?

How many of your friends have stolen something worth more than \$100?

How many of your friends have stolen a car?

How many of your friends have gone into a building to steal?

Responses are recorded on a 5-point Likert scale of *None of them* (=1), *Very few of them* (=2), *Some of them* (=3), *Most of them* (=4), and *All of them* (=5).

Appendix M. Peer Resistance Scale

Scenarios	
1	Some people go along with their friends just to keep their friends happy. Other people refuse to go along with what their friends want to do, even though they know it will make their friends unhappy. Statement: I refuse to go along with my friends even if they are unhappy.
2	Some people think it is more important to be an individual. Other people think it is more important to fit in a crowd. Statement: It is important to fit in a crowd than to be an individual.
3	It is pretty easy for some people's friends to change their mind. For other people, it is pretty hard for their friends to change their mind. Statement: It is hard for my friends to change my mind.
4	Some people would do something that they knew was wrong. Other people would not do something they knew was wrong. Statement: I would not do something wrong to stay on my friends' good side.
5	Some people hide their true opinions from their friends so they won't make fun of them. Other people will say their true opinions to friends. Statement: I say my true opinion even if my friends make fun of me.
6	Some people will not break the law because their friends said so. Other people would break the law if their friends said so. Statement: I would break the law because my friends say so.
7	Some people change the way they act with their friends. Other people act the same way when they are alone and with their friends. Statement: I act the same way whether I am alone or with friends.
8	Some people take more risks when with their friends. Some people are just as risky when they are alone as with their friends. Statement: I am just as risky when I am alone or with friends.
9	Some people say things they don't really believe to gain respect. Other people would not say things that they don't really believe to gain respect. Statement: I won't say things I don't believe to gain respect.
10	Some people think it is better to be an individual even if people go against you. Other people think it's better to go along with the crowd. Statement: I think it is better to go with the crowd than make people angry.

Responses to statements are recorded as either *Sort of true* (=1) or *Really true* (=2).

Appendix N. Self-Control (Impulse Control) Subscale

Items
I do things without giving them enough thought.
I say the first thing that comes into my mind without thinking enough about it.
I will try anything once even if it is not that safe.
I should try harder to control myself when having fun.
I like to do new/different things that many people would consider weird/unsafe.
I become wild and crazy and do things other people might not like.
When doing something fun, I tend to get carried away and go too far.
I stop and think things through before I act. (REVERSE CODED)

Responses are recorded on a 5-point Likert scale of *False* (=1), *Somewhat False* (=2), *Not Sure* (=3), *Somewhat True* (=4), and *True* (=5).

Appendix O. Neighborhood Conditions Index

Items (How often do you see...)

Cigarettes on the street or in the gutters
Garbage in the streets or on the sidewalk
Empty beer bottles on the streets or sidewalks
Boarded up windows or buildings
Graffiti or tags
Graffiti painted over
Gang graffiti
Gangs (or other teen groups) hanging out
Abandoned cars
Empty lots with garbage
Condoms on sidewalk
Needles or syringes
Political messages in graffiti
Adults hanging out on the street
People drinking beer, wine or liquor
People drunk or passed out
Adults fighting or arguing loudly
Prostitutes on the streets
People smoking marijuana
People smoking crack
People using needles or syringes to take drugs

Responses are recorded on a 4-point Likert scale of *Never* (=1), *Rarely* (=2), *Sometimes* (=3), and *Often* (=4).

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