Making it on the Outside: Unravelling the Effects of Self-Control and Informal Social Control in Reintegration

By

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ABSTRACT

MAKING IT ON THE OUTSIDE: UNRAVELLING THE EFFECTS OF SELF-CONTROL AND INFORMAL SOCIAL CONTROL IN REINTEGRATION

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The effects of self-control and informal social control on adult criminality have been well documented in the criminological literature. However, very little of this research has extended these theories to the area of reintegration which has become a prominent subarea of criminology. The increased focus on reintegration by criminologists, policy-makers, and service-providers has been precipitated by the growing number of individuals being processed through criminal justice systems in the United States, Canada, and other countries. Using data from Wave 4 of the National Longitudinal Study of Adolescent to Adult Health (‘Add Health’), this retrospective cross-sectional study examines the independent and interdependent effects of self-control and informal social control on self-reported general crime, four crime subtypes, alcohol consumption, and marijuana use among an American sample of formerly convicted young adults. This study provides the reader with a snapshot of whether these theories can explain these outcomes during young adulthood. The sample was further divided according to sanction type (probation and prison), in order to capture any differences in self-control and informal social control based on the type of punishment received. The results provide the most support for informal social control in explaining crime and alcohol use among the full sample and prisoner subsample, with self-control being most
relevant for predicting marijuana use and crime among the probation subsample. This study also provides little support for an interdependent relationship between self-control and informal social control. This thesis concludes by discussing the implications that these theories have on reintegration and desistance.
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Chapter 1: Introduction

The process by which an individual exits the correctional system and transitions back into the community is receiving greater attention in criminology. Whether termed reintegration as in Canada, New Zealand, and Australia, resettlement in the United Kingdom (UK), or re-entry in the United States (US), academics, policy-makers, and front-line service providers have expressed their concerns over the growing number of ex-offenders returning to custody or making new contact with the criminal justice system. While rates of re-offending for these jurisdictions were collected at different time points, the most recent recidivism statistics vary from 41.6% in the Province of Ontario, Canada, 44.2% in New Zealand, 24.8% in Australia, 25.1% in England and Wales, to 67.8% in the US (UK Department of Justice 2015; US Department of Justice 2014; New Zealand Department of Corrections 2014; Western Australia Department of Corrective Services 2014; Ontario Ministry of Community Safety and Correctional Services 2008). As evident from these statistics, roughly one-quarter to two-thirds of offenders in these international jurisdictions are re-offending after the completion of their sentence. Therefore, it is of the essence that criminologists explore and uncover the dynamics which affect reintegration and desistance from crime.

Unfortunately, in the existing reintegration literature, few studies have applied criminological theories to understand reintegration and desistance, as well as what theoretical elements are and are not conducive to law-abiding behaviour. One reason for this, as postulated by Grommon (2013), is that there exists a disconnection between reintegration programs and services and social scientific theory; that is, questions have

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1 The term “reintegration” will be used throughout this dissertation.
been raised over the applicability of various social theories to this subarea of criminology. As such, this corpus of literature has been inundated with descriptive studies offering accounts of various reintegration challenges, useful reintegration strategies and practices, as well as program evaluations. This has included voluminous studies on the barriers to successful reintegration (e.g., Travis 2005; Petersilia 2003), government reports espousing greater rehabilitation and institutional programming (Office of the Correctional Investigator 2014; UK Ministry of Justice 2013), and evaluations of major US reintegration programs such as the Serious and Violent Offender Reentry Initiative (Veysey, Osterman, and Lanterman 2014; Lattimore et al. 2012), the Transition from Prison to Community Initiative (Janetta et al. 2012), the Reentry Partnership Initiative (Roman et al. 2007), and many initiatives at the state-level (Duwe 2012; Severson et al. 2011). Other research has also assessed various initiatives across multiple jurisdictions including the US, Canada, the UK, and Australia (Griffiths, Dandurand, and Murdoch, 2007; Seiter and Kadela 2003). Comprehensive reviews of the reintegration literature by Lynch (2006) and Lafleur and O’Grady (2016) have concluded that this research area continues to be overly descriptive, and therefore, mainly atheoretical.

The limited amount of research theorizing reintegration and desistance has focused on either internal or external factors (LeBel et al. 2008). Underpinned by psychological frameworks, internal desistance proposes that various factors internal to the individual engender law-abiding behaviour. Theorists have posited this form of desistance as a subjective process commencing when individuals undergo cognitive changes (cf. Healy 2014; Paternoster and Bushway 2009; Giordano, Cernkovich and Rudolph 2002; Maruna 2001). While some theorists maintain that this process occurs
through individuals’ adoption of narratives or “redemption scripts” (Maruna 2001:131), others view desistance as flowing from cognitive shifts that affect the trajectory of individuals’ behaviour (Paternoster and Bushway 2009; Giordano et al. 2002).

On the other hand, external desistance is concerned with the influence of exogenous (or social) factors on offending. A wide-array of social factors have been linked to reintegration such as pre-release strains (induced mainly from the prison or correctional setting) (Listwan et al. 2013); social environment and neighbourhood context (Morenoff and Harding 2014); as well as individuals’ degree of informal social controls or social bonds\(^2\) which develop prior to, or after, their release from the correctional system (Cobbina, Huebner and Berg 2012).

Although the above theories of internal and external desistance are a good starting point for theorizing reintegration, they continue to be mainly factor-based accounts. That is, this research has determined that a multitude of social and individual factors are associated with recidivism. However, it is limited in that few theoretical analyses have been undertaken to explore whether or not the integration of these elements can foster a stronger explanation of desistance after the completion an offender’s sentence. In order to fill this gap in the reintegration literature, this study contends that reintegration and desistance should be theorized in the context of two mainstream criminological theories which were borne out of classical social control theory (cf. Hirschi 1969) and argue that crime and deviance is either the corollary of social factors such as tenuous social bonds (Laub and Sampson 2003; Sampson and Laub 1993) or stable individual-level traits such as low self-control (Gottfredson and Hirschi 1990). There are two substantive reasons

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\(^2\) As per most of the existing criminological literature, this dissertation uses the terms social bonds and informal social controls interchangeably.
why theoretical analyses of reintegration should be underpinned by classical social control theory. First, although Gottfredson and Hirschi’s (1990) General Theory of Crime (GTC) and Sampson and Laub (1993) and Laub and Sampson’s (2003) Age-Graded Theory of Informal Social Control (AGTISC) have been empirically validated by a large amount of research, only a handful of studies have conducted an integrated test of these frameworks on offending populations including those who have exited prison and/or completed a community sanction such as probation. As such, there is a necessity for criminologists to further investigate the extent to which social bonds and self-control bolster or impede upon reintegration and whether or not these theories function interdependently to prevent recidivism and antisocial behaviour. Second, some preliminary research that has examined reintegration has shown that self-control (Malouf et al. 2014) and informal social control (Yeager 2004) are both significant predictors of recidivism. Thus, this indicates that both the GTC and AGTISC are relevant to, and perhaps vital for, understanding reintegration and how individuals come to desist from crime.

The purpose of this study is to disentangle the relationship between informal social control and self-control on various forms of recidivism and substance use using an American sample of young adults who were formerly convicted in court over the age of 18 and sentenced for their criminal acts. More specifically, this retrospective cross-sectional study will explore whether both theoretical constructs are associated with levels of general crime, four major crime subtypes—property crime, violent crime, drug crime, and financial crime—alcohol consumption, and marijuana use at a single point in time.
Research Questions

To fulfill the objective of this study, the following research questions will be addressed:

1. Does self-control predict recidivism?
2. Does informal social control predict recidivism?
3. Is self-control or informal social control a stronger predictor of recidivism?
4. Does self-control and informal social control interact to predict recidivism?
5. Does self-control predict alcohol consumption?
6. Does informal social control predict alcohol consumption?
7. Is self-control or informal social control a stronger predictor of alcohol consumption?
8. Does self-control and informal social control interact to predict alcohol consumption?
9. Does self-control predict marijuana use?
10. Does informal social control predict marijuana use?
11. Is self-control or informal social control a stronger predictor of marijuana use?
12. Does self-control and informal social control interact to predict marijuana use?

Plan of Dissertation

The following chapters of this dissertation provide literature reviews (of the existing reintegration literature, the AGTISC, the GTC, and integrated frameworks), an overview of the data and methods for this study, a description of the statistical results obtained in this study, a detailed discussion highlighting the significance of the results, and a conclusion which notes directions for future research, policy implications, and limitations of the current study.

Literature reviews can be found in Chapters 2 and 3. Chapter 2 provides an overview of the existing reintegration literature, and reviews many of the salient factor-based accounts which dominate this area of research. It also notes several internal and external explanations which have been proposed to explain reintegration and desistance. Chapter 2 then provides an extensive literature review of Sampson and Laub (1993) and Laub and Sampson’s (2003) AGTISC, the empirical literature testing it, and its
limitations. Chapter 3 begins by reviewing Gottfredson and Hirschi’s (1990) GTC, the empirical literature testing it, and its limitation. Chapter 3 concludes with a brief review of the small literature which has tested the AGTISC and GTC concurrently.

Chapter 4 describes the Add Health study, the analytical sample, the main variables used in the analyses, and the statistical analyses to be conducted in this study while Chapter 5 provides the results from these analyses. These include the results for self-control and informal social control on general crime, the four major crime subtypes, alcohol consumption, and marijuana use for the full sample, the probation sample, and the formerly incarcerated subsample. Chapter 6 discusses and interprets the findings of this study, as well as the significance of these findings for the broader reintegration literature. Lastly, this dissertation concludes by recapping the main results, identifying directions for future research, and noting the implications and limitations of this study.
Chapter 2: Literature Review and Conceptual Framework Part I

This chapter begins by briefly reviewing the existing reintegration literature, as well as some explanations of internal and external desistance which have been proposed to explain reintegration. It then follows with a literature review of Sampson and Laub’s (1993) and Laub and Sampson’s (2003) AGTISC—one of the two theories that will be tested in the current study.

The Reintegration Literature

Since the Enlightenment, groups of criminologists have put forth competing theoretical explanations concerning the causes of crime and desistance. Few of these theories, however, have been applied to reintegration—the process whereby individuals have completed their sentence, transition back into the community, and work toward leading a conventional lifestyle—because of their limited relevance to reintegration programs, services, events, and practices (Grommon 2013). For the most part, this body of literature has been dominated with studies outlining the barriers to reintegration as well as program evaluations, thus causing the work to remain overly descriptive and therefore largely atheoretical (Lafleur and O’Grady 2016; Grommon 2013; Lynch 2006). Much research germinating from the US, the UK, and Canada, for example, has highlighted the complex and intersecting social, economic, and personal challenges individuals face as they leave prison and return to society such as homelessness (Lutze, Rosky, and Hamilton 2014; Gaetz and O’Grady 2006; Metraux and Culhane 2006, 2004); substance use (Fries, Fedock, and Kubiak 2014); inadequate discharge planning (Kesten et al. 2011); mental illness (Visher and Bakken 2014); physical health issues (Kinner and
Wang 2014); weak family ties (Barrick, Lattimore, and Visher 2014); financial hardship and unemployment (Pogrebin et al. 2014; Western, Kling, and Weiman 2001); and, stigma which is often associated with having a criminal record (Maruna 2014; Pager 2003).³

Locating and obtaining stable housing is one of the most fundamental barriers to reintegration (Fontaine and Biess 2012). In the US context, post-release homelessness has been exacerbated by an amalgam of factors including: returning to high-risk, low-income neighbourhoods where affordable housing is difficult to obtain (Lutze et al. 2014; Kubrin and Stewart 2006); federal policies which preclude individuals with criminal histories from accessing public housing (Geller and Curtis 2011); drug and alcohol dependency (Mallik-Kane and Visher 2008); unemployment and few financial resources which preclude ex-offenders from acquiring housing in the private market (Visher, Debus, and Yahner 2008; Bradley et al. 2001); a lack of pre-release housing plans (Visher and Travis 2003); and, discrimination by some landlords who require prospective tenants to obtain criminal background checks which typically causes those persons with prior convictions to have their housing applications rejected (Clark 2007; Roman and Travis 2004).

Furthermore, it has been well documented that a bi-directional relationship between imprisonment and homelessness exists. A study by Metraux and Culhane (2006), for example, tracked the incarceration histories of a sample of homeless adults using city shelters in New York City and determined that 23.1% of these shelter users were imprisoned in a municipal jail or state prison over the past 2 years. Likewise, Gaetz and O’Grady (2006) explored the interrelationship between homelessness and

³ For a comprehensive discussion of all of the above factors affecting reintegration, refer to Petersilia (2003) and Travis (2005).
imprisonment by interviewing a sample of imprisoned persons and prison releasees in two Canadian provinces (Ontario and British Columbia). This study not only reached the conclusion that imprisonment itself intensifies the likelihood of homelessness, but also that homeless individuals are at an enhanced risk of being imprisoned (Gaetz and O’Grady 2006). As a result, housing challenges serve as a major detriment to successful reintegration.

Substance use is another problem affecting the reintegration of ex-offenders (Solomon et al. 2008). In the US, while only 9% of the general population is diagnosed as having an addiction or substance dependency issue, the proportion of imprisoned persons with such a diagnosis is 68% (Solomon et al. 2008). The severity of this problem has been attributed to past patterns of substance use, concomitant with a sharp decline in the ability of individuals to access the requisite institutional and community-based treatment programs (Mallik-Kane and Visher 2008). Not only does substance abuse have deleterious effects on the individual (e.g., in terms of personal health), but it is also associated with other negative reintegration outcomes such as tenuous social relationships, joblessness, low quality housing, and re-offending (Mallik-Kane and Visher 2008). Similar trends in substance abuse have also been identified in the Canadian correctional landscape, particularly at the federal level (Office of the Correctional Investigator 2016).

Mental and physical health problems are also prevalent among returning ex-offenders (Peters, Wexler, and Lurigio 2015; Visher and Bakken 2014; Vaughn et al. 2012). One of the first studies to document the criminalization of mental illness was conducted by Abramson (1972). Over the last 40 years, this trend has remained consistent
as mental illness continues to affect an increasingly large number of persons admitted to US prisons (Baillargeon, Hoge, and Penn 2010). According to the most recent available data, the prevalence rate of mental illness in US correctional facilities varies by jurisdiction with local jails having the highest rates (64%), followed by state prisons (56%), and finally, federal prisons (45%) (James and Glaze 2006). When mental health challenges are not treated, successful reintegration into the community is likely to fail; as is the case with substance abuse, mental illness is related to the negative reintegration outcomes described above (Mallik-Kane and Visher 2008). In addition, there exists a link between mental health issues and substance abuse. Termed co-occurring mental and substance use disorders (CODs) by practitioners, CODs refer to individuals having both serious mental illness and substance abuse problems (Peters et al. 2015). Approximately 74% of incarcerated persons in US state and federal prisons identified as having a mental illness also suffer from substance abuse (Mumola & Karberg 2006). Thus, these two barriers to reintegration generally coincide with one another.

The physical health of ex-offenders is also of concern to reintegration. Research by Mallik-Kane and Visher (2008), for instance, found that 49% of male ex-offenders and 68% of female ex-offenders reported having a physical health condition. For both males and females, the most common problems included high blood pressure (20% versus 23%), Hepatitis B or C (11% versus 15%), asthma (10% versus 25%), arthritis (7% versus 14%), back pain (6% versus 15%), and high cholesterol (8% versus 6%) (Mallik-Kane and Visher 2008). This population is also at-risk of acquiring other chronic infectious diseases such as HIV. Hammett et al. (2015), for example, note that an estimated one in seven individuals with HIV flow through US prisons or jails on an
annual basis. It should be acknowledged that ex-offenders in Canada also face similar challenges in regards to physical and mental health (Office of the Correctional Investigator 2016).

The re-establishment of family ties is another strain which affects individuals reintegrating back into society from the correctional system (Visher and Travis 2003). Lynch and Sabol (2001), for instance, state that contact with family and friends—an important element that fosters successful reintegration—tends to be severed by lengthy sentences of incarceration. When an individual is incarcerated, child and spousal relationships are disrupted; that is, these family relationships may suffer from feelings of loss and lead to weaker attachments (Travis et al. 2005). Upon release, some ex-offenders’ family members may find it onerous to support them, because of factors such as: relocating to a new home; establishing new intimate relationships; having feelings of anger; and possessing few financial resources to support the ex-offender (Travis et al. 2005).

Finally, the financial instability of the ex-offender poses a threat to reintegration. For many ex-offenders, employment is a major obstacle to successful reintegration. Western (2008) notes that nearly 50% of all incarcerated individuals in the US find themselves unemployed at release. While unemployment has been attributed to a lack of job skills and educational qualifications (Pryor and Tompkins 2013; Western 2008), most individuals find themselves faced with systemic social discrimination and are excluded from the labour market because of the stigma of having a criminal record (Decker et al. 2015; Uggen et al. 2014; Western 2006; Pager 2003). Another associated problem is income inequality. A study by Western (2002) found that incarceration exacerbated
income inequality by decreasing the overall income of formerly incarcerated persons over time. In particular, between 1983 and 1998, males who had been incarcerated had between a 10 and 20 percent reduction in overall earnings compared to those males who had not been incarcerated (Western 2002). A subsequent study by Western (2008) found that the mean annual income for prison releasees was around $9,000 and that this figure remained nearly unchanged over time. Finally, financial instability is exacerbated by various pre- and post-prison financial obligations (Pogrebin et al. 2014). For example, many individuals owe outstanding child support payments, mortgage or rental payments, and are often required by their parole conditions to pay for court-mandated treatment and counselling programs (Pogrebin et al. 2014). Consequently, even with employment in hand, many ex-offenders are faced with few job prospects, lower wages, and greater financial instability than the average American citizen.

Some literature has moved beyond the descriptive nature of the above reintegration research by positing several explanations of internal and external desistance. Internal desistance, which has been mainly informed by psychological frameworks, suggests that internal factors generate conventional behaviour (LeBel et al. 2008). Several prominent theorists who have proposed theories of internal desistance include Maruna (2001), Giordano et al. (2002), and Paternoster and Bushway (2009). Maruna (2001), for example, argues that formerly convicted individuals use various scripts and attempt to locate their “core self” in order to dissociate themselves from their past patterns of crime. While persisters generally possessed “condemnation scripts”—the belief that their past criminality has hindered any chance of rehabilitation—Maruna (2001:11) found that desisters used “redemption scripts” which enabled them to
transform their lives and terminate their involvement in crime. Redemption scripts refer to an individuals’ conception that, although he or she may have become ensnared in past crime, they now have the power to find their “good core self” and become productive members of the community (Maruna 2001:126). This process is better known as “making good” in society (Maruna 2001:85).

The Theory of Cognitive Transformation developed by Giordano et al. (2002) explains desistance through both human agency and social structure. According to this theory, desistance from criminality begins when an individual exhibits a readiness to change; once this has occurred, the individual may become more receptive to one or more conventional institutions and structures in society (Giorando et al. 2002). Various factors in the social environment—which are also called “hooks for change”—are conducive for transforming an individual’s identity and forging it into one where crime is viewed as unfavourable (Giorando et al. 2002:1002). These social factors include, but are not limited to, employment, parenthood, religiosity, marriage, and rehabilitative treatment (Giordano et al. 2002). Therefore, according to this theory, desistance can only come to fruition through a combination of human agency and the social environment.

Finally, the Identity Theory of Desistance put forth by Paternoster and Bushway (2009) focuses on the role of an individual’s self as a catalyst for identity change in the desistance process. According to this framework, the “working self” of an individual involved in crime is comprised of both deviant social relations and deviant predilections. In order to part ways with their working self and attain their future “possible self”—becoming the law-abiding, conventional person they wish to become—individuals must engage in a rational calculus where they come to the realization that the costs of crime
outweigh any advantages that may be accrued through such acts (Paternoster and Bushway 2009). Instrumental to this process is the development of the “feared self”—an individual’s thought that they may confront undesirable life circumstances such as being re-incarcerated, re-arrested, or experiencing unemployment or family problems (Paternoster and Bushway 2009:1103). As such, this framework presumes that the central impetus for prosocial identity change is individuals’ perception that they will become their feared self.

Other theories contend that exogenous factors influence desistance. Listwan et al. (2013), for instance, argue that Agnew’s (2006) General Strain Theory (GST) has applicability to reintegration. The GST purports that crime is the consequence of an individual’s exposure to negative strains such as physical and emotional abuse, homelessness, unemployment, poverty, and the inability to achieve positively-valued cultural goals (Agnew 2006). Listwan et al. (2013) explored whether various strains of imprisonment—including victimization, being unfairly treated by correctional officers, and encountering homelessness and financial problems post-release—affected recidivism using an American sample of formerly incarcerated persons. Overall, results showed that experiencing a negative prison setting and having negative relationships with other incarcerated individuals was associated with a greater likelihood of being re-incarcerated and re-arrested.

Other literature has theorized the importance of post-release social ties for reducing recidivism. Informed by Sampson and Laub (1993) and Laub and Sampson’s (2003) AGTISC, Cobbina et al. (2012) theorized that strong social relationships to parents, spouses, and/or peers would reduce post-release recidivism. The findings of this
study indicated that females with robust parental and intimate partner relationships were less probable to re-offend. While recidivism for males was explained by both of the above social ties, associating with criminal peers also had a strong effect on this outcome variable (Cobbina et al. 2012). Therefore, this section of the chapter has reviewed the reintegration literature and some preliminary research which has theorized reintegration and desistance. Overall, this body of literature has been descriptive and mainly atheoretical, to the extent that most studies have only provided factor-based accounts of these processes. Although some research has explained desistance and reintegration through various internal and external factors, little of this research has theorized them through the lens of both the AGTISC and the GTC. This thesis will now turn to Sampson and Laub (1993) and Laub and Sampson’s (2003) life-course theory.

The Age-Grade Theory of Informal Social Control

Developmental and life-course theories of crime postulate that antisocial behaviours and criminality are affected by a variety of human developments—whether biological, psychological, or social—throughout childhood, adolescence, and adulthood (Farrington 2011). Sampson and Laub’s (1993) and Laub and Sampson’s (2003) AGTISC developed in response to the GTC and has become one of the most salient life-course theories because of its assumption that informal social controls determine trajectories of persistence in and desistance from adult criminality. This age-graded, life-course theory germinated out of various developmental theories, the life-course perspective, the concept of social capital, and most importantly social control theory. A
description of these diverse frameworks, and how they have influenced Sampson and Laub (1993) and Laub and Sampson’s (2003) theory, will now be undertaken.

Traditionally, explanations of human development based on the ontogenetic model have prevailed in academia. The majority of criminological research tracing the effects of early antisocial behaviour on adult offending has followed this line of thought (Moffitt 1993; Caspi et al. 1995; Gottfredson and Hirschi 1990; Patterson, DeBaryshe, and Ramsay 1989; Wilson and Herrnstein 1985; Robins 1966). It was not until Dannefer’s (1984) critique of this model in the mid-1980s, however, that sociological explanations of adult development gained currency. This precipitated a greater focus on social context rather than on purely biological or psychological explanations focused solely on the individual. The sociogenic model, according to Dannefer (1984), is predicated on three precepts capable of explaining human development. First, human beings are constantly interacting with the social environment over the life-course; through this interaction, both mutually affect the development of the other (Dannefer 1984). Thus, human development is characterized by instability and can be moulded by one’s social milieu. Second, the human development process is socially organized according to the structure of the social environment (Dannefer 1984). How individuals behave and what activities they engage in are affected by organizational processes at the macro-, meso-, and micro-levels. For instance, if the social environment is stratified by variables such as sex or class, these structural forces will shape individuals’ development and life opportunities (Dannefer 19984). Lastly, knowledge has the power to influence human development. Knowledge manifests in two forms. First, there exist culturally-defined preconceptions of proper development (Dannefer 1984). This suggests that
individual development is circumscribed by cultural expectations of what is expected at each life stage. In Western society, for instance, culture prescribes that individuals complete their education, find a career, get married, have children, and then retire in a chronological sequence. Those diverging from this cultural knowledge—such as school dropouts or the unemployed—are viewed as not adhering to the so-called proper developmental sequence established by society.

Second, knowledge of proper development is transmitted through social interaction (Dannefer 1984). That is, knowledge is constructed, shared, and instilled by individuals in the course of their everyday interactions. Normative developmental trajectories may be known through the construction of typologies, stereotypes, or labels which affect an individual’s life chances. Human beings have the ability to respond to such knowledge, meaning that they can remain in particular developmental paths or redirect the trajectory of their lives (Dannefer 1984). Overall, the sociogenic model opposes the individualism of the ontogenetic model by reinforcing the salience of social dynamics in the adult life-course.

A body of research known as developmental criminology has also shaped Sampson and Laub’s (1993) and Laub and Sampson’s (2003) theory. According to Loeber and LeBlanc (1990: 376-377), developmental criminology aims to explain “within–individual changes” in criminality over time. It does so in two ways: (1) by identifying early antisocial behaviours and their effects on later offending; and (2) by ascertaining the causal forces which affect changes in human behaviour. This research attempts to understand what causes the onset of criminality (conceptually known as “activation” which includes the sub-concepts of acceleration, diversification, and
stabilization); what factors exacerbate the patterns and frequency (λ or lambda) of crime over the developmental process⁴ (also called “aggravation” and its sub-concept escalation); and the dynamics generating desistance from criminality (involving the sub-concepts of deceleration, de-escalation, or age at termination). Although developmental criminology assumes a general developmental sequence (onset-aggravation-desistance) of offending for all individuals, it purports that a variety of factors affect the probability that an offender will remain in a particular developmental process or progress throughout the developmental sequence. These factors include, but are not limited to, the following: criminal opportunity, sexual development, developing a stable anti-social personality in childhood (e.g., condescension; psychopathy), and body strength (Loeber and LeBlanc 1990).

Developmental criminology is composed of various theories, some of which are more sociological in nature than others. Moffitt’s (1993) developmental taxonomy, for instance, is a psychological theory with ontogenetic roots which argues that two distinct types of offenders exist: life-course persistent and adolescent-limited offenders. For Moffitt (1993), the underlying causes of life-course persistent offending begin in childhood and continue throughout life. It is presumed that persistent offenders will have had neuropsychological deficits in early childhood. Neuropsychology refers to the biological and physical developments in the nervous system which affect the psychological features of an individual including cognition, personality, and behavioural dispositions (Moffitt 1993). These deficits generally lead to poor parenting, weak family relationships, and greater exposure to antisocial/criminal milieus.

⁴ In the extant criminological literature, the continuation in crime is known conceptually as “persistence” (Sampson and Laub 2003: 37).
Persistence in offending can be traced to three dynamics: cumulative continuity, contemporary continuity, and few avenues for behavioural change (Moffitt 1993). Cumulative continuity suggests that early behavioural differences affect future life chances, whereas contemporary continuity denotes that individuals transport their unchanging antisocial traits from childhood into adulthood. Finally, individuals are likely to remain in a particular behavioural trajectory, insofar as the repercussions of past antisocial behaviour places limits on their prospective of engaging in prosocial behaviour or activities (Moffitt 1993). Past criminal convictions, for instance, may restrict one’s ability to find meaningful employment later in life.

Moffitt’s (1993) theory ultimately presumes that persistence in antisocial behaviour and crime in adulthood is the corollary of the interaction amongst individuals’ traits and their social context. The greater childhood antisocial behaviour permeates into adulthood, the more likely individuals will manifest stable patterns of offending throughout life. Thus, life-course persistent offenders are characterized as psychopathic—an attribute emanating out of deficiencies in biology and the nervous system (Moffitt 1993). In contrast, adolescent-limited offenders typically engage in crime and deviance most frequently during adolescence but sever themselves from such behaviour after this developmental period. According to Moffitt (1993), the causes of adolescent-limited offending are threefold. First, some adolescents associate with delinquent peers who teach them the techniques of committing crime and deviance. Second, there exists a maturity gap in modern society between biological and social maturity. Adolescence is a period of life situated between childhood and adulthood and, as such, adolescents come to be deprived of the privileges, statuses, and freedoms of
adulthood (Moffitt 1993). It is this deprivation that engenders strain on individuals, which in turn produces criminality and deviance (Moffitt 1993). Lastly, crime and deviance are bolstered by the undesirable effects of such actions. This suggests that individuals participate in a variety of criminal and socially deviant behaviours—such as smoking or vandalizing property—as a means of buttressing their autonomy and involvement in said activities. In conclusion, Moffitt’s theory is predicated on two distinct types of offenders whose divergent developmental trajectories lead to varying degrees of crime and deviance over the life-course.

Farrington’s longitudinal research from the Cambridge Study of Delinquent Development has also been important for developmental criminology. Beginning in 1961, this study followed a sample of 411 inner-city lower-class males from age 8 through to age 46. This study sought to explain the causes of crime and delinquency over the life-course, the effect of life events on crime, and stability and change in offenders’ developmental and behavioural trajectories (Farrington 2003). In terms of offending up to age 40, the frequency of crime peaked at age 18.6 whereas complete desistance began at age 25.7; thus, the mean criminal career lasted 7.1 years (Farrington 2003). While most male offenders had family members (e.g., their father, mother, sister, brother, or wife) involved in crime, a wide-array of early childhood dynamics placed this population at a greater risk of offending. Future offending was predicted by the following factors manifested between ages 8 and 10: ineffective parenting, impoverishment, tenuous academic achievement/intellect, impulsivity and risk-taking, and early antisocial behaviour (Farrington 2003).
Key life events were also significantly related to offending. An official criminal conviction and unemployment, for instance, were both found to predict subsequent offending. This was likely caused by the social process of being labelled a criminal and individuals’ need to engage in instrumental crime as a means of survival while jobless. Contrariwise, desistance was precipitated by transitions such as residential relocation from the inner-city to the suburbs and getting married (Farrington 2003). These results were hypothesized to be the consequence of upward socio-economic mobility, where respondents had accrued enough financial resources to purchase their own family dwellings in the suburbs rather than remaining in downtown rental properties. One caveat should be noted about the effect of marriage on offending—only those males who married women with no criminal histories showed lower rates of offending (Farrington 2003). As a result, developmental criminology—including the theories and ideas of Moffitt and Farrington—argues that sociological, psychological, and/or biological elements play critical roles in crime and deviance. While these theories are concerned with how the above factors affect human development, a branch of research called life-course theory focuses on the effect of life events and transitions on trajectories of human behaviour.

The life-course perspective pioneered by Elder (1985) has been one of the two most important influences on Sampson and Laub (1993) and Laub and Sampson’s (2003) work. According to Elder (1985), modern research on life-course dynamics is founded on three conceptual pillars: trajectories, transitions, and turning points. A life trajectory

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5 See West and Farrington (1977), Farrington (2003), and Farrington, Piquero, and Jennings (2013) for a comprehensive overview of the Cambridge Study and all associated publications.
refers to “a pathway defined by the aging process or by movement across the age structure” (Elder 1985: 31). In contrast, transitions or life events indicate sudden changes in the circumstances of everyday life (Elder 1985). As such, life trajectories are generally long-term processes which interconnect and develop over time, whereas transitions are typically short-term and are located within particular trajectories. The convergence of these two processes during the life-course has the potential to produce “turning points” or significant life events and transitions capable of altering an individual’s life trajectory (Elder 1985: 35). Whether an individual makes a turning point in their lives is contingent upon four major factors: (1) how a person adapts to a specific setting; (2) the type of life transition/event that occurs; (3) how an individual defines the setting; and, (4) an individual’s convictions, skills, and assets they utilize in the setting (Elder 1985).

A significant aspect of the life-course perspective is that all life trajectories interconnect sequentially and have ramifications for other family members (Elder 1985). First, there is no inherent or presupposed order these to life pathways (Elder 1985). For instance, an individual may be employed for many years, make the life transition to return to school, and subsequently establish a new career in late adulthood. Second, an individual’s life-course is shaped and circumscribed by the life trajectories and life events taken by their family members across generations. Elder (1985: 40) thus purports that past instances of joblessness, failed marriages or relationships, having an unsuccessful career, or failing to complete school creates a persistent “intergenerational cycle” wherein the life trajectories and transitions of past generations dictate the life-courses of other individuals. Therefore, this perspective places emphasis on the importance of life-course pathways and the dynamics which can change them.
The AGTISC is also underpinned by Coleman’s (1990, 1988) concept of social capital. Unlike economic capital which is more tangible in nature (e.g., wealth; printed money or coins), social capital is a utility residing in the structural relationships amongst individuals enabling persons to engage in pragmatic interactions to fulfill their own self-interests (Coleman 1988). For Coleman (1988), social capital is generated out of changing social relations which induce action and can take various types including: (1) social structures/institutions where trust, obligations, and expectations exist among actors; (2) access to knowledge; and, (3) strong social norms and punishments. As such, these three types of social capital either compel individuals to engage in specific actions (e.g., help someone in need) or dissuade them from particular lines of behaviour (e.g., crime). More importantly, strong social capital can lead to the development of human capital—a type of capital where intra-individual changes permit people to behave differently than in the past (Coleman 1988). In consequence, Coleman’s notion of social capital illustrates theoretically why individuals act, as well as what is at stake if they act, errantly.

Finally, social control theory—specifically, the early writings of Durkheim ([1897] 1951) followed by Reckless, Reiss, Nye, and Hirschi—has influenced the AGTISC. Building from the Durkheimian perspective, control theorists make the Hobbesian assumption regarding human nature that individuals have natural deviant tendencies and will pursue their own self-interests unless constrained by a variety of internal or external controls (Kornhauser 1978). Opposed to other criminological theories
assuming that human beings are inherently good, control theorists desire to explain why individuals do not deviate from pre-established social and legal rules (Hirschi 1969).

Modern control theories put forth in the mid-20th century provided the impetus for the AGTISC. Reckless, Reiss, and Nye are considered the progenitors of modern control theory. Reckless (1950) argued that the etiologies of crime are best explained through the concept of “containment.” The central assumption of containment theory is that individuals are subject to both external and internal containment. According to Reckless (1950), individuals are confronted with various outside social forces (e.g., social and economic inequalities; impoverishment; and joblessness) and pull factors (e.g., crime; deviant peers) which disrupt the conventions and structured routines of everyday life. External containment, then, is the structure existing above the individual comprised of tenacious societal support and family cohesiveness; it functions to resolve moral ambiguities, provide guidance and institutional support, direct social mores, and ultimately circumscribe any inner pushes generated within the individual. The inner pushes conducive to crime include, inter alia, aggression, defiance against authority, impulsive actions, and mental illness. Internal containment refers to one’s level of self-control, self-concept, temperance, accountability, and normal psychological and personality development (e.g., a strong ego and superego) which resist external forces

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6 Theories founded on the Lockean or Rousseauian assumption that human beings are naturally moral and ethical include: strain theory, social disorganization theory, and cultural deviance theory. According to these perspectives, individuals would only be compelled to engage in criminal acts if they faced undue societal pressures (e.g., inability to meet social goals with available means), lived in impoverished areas with few social controls, or were exposed to persons with definitions more favourable to crime (Kornhauser 1978; cf. Hirschi 1969).
and the intrinsic desire to act unconventionally. Therefore, when both forms of containment are effective, individuals are less prone to engage in crime and deviance.

Following Reckless’ work, Reiss (1951) reframed control theory by arguing that it was not containment that inhibited crime, but rather a variety of personal and social controls in society. Delinquency will occur when individuals’ personal, primary group, and community/institutional controls have deteriorated. In such cases, delinquents will possess an underdeveloped ego and superego; will come from poorer family backgrounds (e.g., in terms of lower social strata, having divorced/separated parents, and improper morals); and, will reside in disadvantaged, crime-stricken areas (Reiss 1951). This version of control theory thus retains the idea that both internal and external forces regulate individual behaviour.

Nye (1958) hypothesized that one particular family process—namely, the parent-child relationship—was the central social control mechanism preventing crime and delinquency. This framework is predicated on a conceptual scheme involving four major types of controls: direct, indirect, internal, and the fulfillment of needs. While direct control comes from both the state apparatus and parents who restrict their children’s behaviour, indirect control occurs only between parents and children with strong, caring relationships (Nye 1958). As such, parents can indirectly regulate children’s behaviour, insofar as their children will not act in ways that disrespect or displease their parents. Individuals are also controlled internally and through the fulfillment of needs. On one hand, parents have the purview of instilling conventional social mores into their children to foster a pro-social lifestyle; this bolsters one’s conscience or personality and engenders a form of internal control. On the other hand, parents also encourage law-abiding
behaviour in their children by meeting their needs. Families incapable of meeting certain needs generally relegate this responsibility to other social institutions and members of society (Nye 1958). Overall, this theory views the family as the key social institution controlling individuals’ behaviour.

Finally, the most well-known rendition of social control theory was promulgated by Hirschi (1969) in his influential book *Causes of Delinquency.* This theory suggests that, when a person’s bond to society becomes fractured, crime and deviance will ensue. For Hirschi (1969), the social bond is comprised of four major components: belief, involvement, attachment, and commitment. Individuals strongly bonded to society subscribe to the prevailing social values and mores of the community; participate in socially-acceptable actions; have strong links to other conventional members of society; and, are firmly dedicated to living a lifestyle congruent with both the law and existing social prescriptions (Hirschi 1969). Unlike those with disintegrated social bonds, these individuals have an immense “stake in conformity” and thus do not engage in criminal or delinquent acts (Hirschi 1969: 19). As such, various developmental theories, the life-course perspective, the notion of social capital, and social control theory have influenced Sampson and Laub (1993) and Laub and Sampson’s (2003) life-course theory.

In *Crime in the Making*, Sampson and Laub (1993) put forth the AGTISC which is, in essence, an integrated theory containing elements of the theories discussed above. Following other developmental and life-course research (Nagin and Paternoster 2000;

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7 This is not to indicate that other theories containing aspects of social control are irrelevant. For example, not only has Matza’s (1964) theory of drift provided strong insight into the intermittency of crime amongst youth, but Hagan, Gillis, and Simpson’s (1990) power-control theory has also illustrated that crime is a gendered phenomenon which intersects with class and spousal power.
this theory puts forth a state dependence\textsuperscript{8} and sociogenic model which postulates that the establishment of informal social controls (or social capital or bonds) at different ages affects levels of delinquency and crime over the life-course. Between childhood and adolescence, Sampson and Laub (1993) argue that structural influences (e.g., poverty; being reared in large or disorderly families) and individual differences (e.g., self-control; antisocial behaviour) are moderated by school, family, and peer social control processes which predict delinquency outcomes. These controls include, for example, low academic achievement, tenuous parenting, punitive or unstable punishments, and association with deviant peers (Sampson and Laub 1993). Despite the fact that some individuals may exhibit early patterns of offending, Sampson and Laub (1993, 1990) contend that the development of informal social controls in adulthood—such as employment, education, marriage, military service, or parenthood—may function as “turning points” conducive to desistance and conventional behaviour in adulthood. Re-examining the Gluecks’ (1950) longitudinal data on 500 juvenile delinquents from age 14 to age 32, the results confirmed both stability and change in criminality. Those offenders who experienced negative structural influences and exhibited antisocial behaviour during childhood showed greater continuity in crime, whereas those offenders who developed stable employment and robust marriages in adulthood displayed greater discontinuity in crime over time (Sampson and Laub 1993).

\textsuperscript{8} Equivalent in many respects to Moffitt’s (1993) concept of cumulative continuity, state dependence is the process whereby an individual’s past criminal or antisocial actions restrict their later life chances or opportunities and render them more prone to further criminality (Nagin and Paternoster 2000). Conversely, this process also presumes that engagement in conventional behaviour, activities, or relationships can foster law-abiding behaviour (Nagin and Paternoster 2000). State dependence is the counterpart of population heterogeneity.
Ten years later, this theory was modified to include new assumptions regarding criminality. Maintaining the essence of the theory—namely, that turning points cause desistance in adulthood and function to “knife off” past antisocial behaviour—Laub and Sampson (2003: 148; 286) integrated the concepts of human agency, situational and historical context, local culture and community, routine activities, and “random developmental noise” (e.g., random events occurring by chance/luck) into the theory. This modified theory purports that human development is not invariant and results from several interdependent factors including the social environment, individual differences, and randomness (Laub and Sampson 2003). As such, this framework diverges from other developmental theories (such as those of Dannefer, Moffitt, and Farrington) which argue in favour of a stable developmental trajectory which begins with early antisocial behaviour and leads to persistence in crime over time.

Notably, for the first time, Laub and Sampson (2003) would argue that criminal propensity or self-control is characterized by both stability and change; that is, many factors—for example, informal social controls or age—affect the development of this trait. While delinquents obviously show patterns of early childhood and adolescent misconduct, when and if these individuals become attached to co-workers or a spouse, find a stable job, or rear children later in life then levels of self-control will increase and the probability of crime will decrease. While this theory now blends both the population heterogeneity and state dependence perspectives, its fundamental assumption that pro-social attachments/bonds are more significant for understanding offending over the life-course than enduring individual differences remains the cornerstone of the framework. Because Laub and Sampson’s (2003) modified theory claims instability in both self-
control and informal social control across the life-course, they insist on the use of longitudinal research for capturing criminality. They, therefore, reject Gottfredson and Hirschi’s (1990) claim that crime invariably peaks in adolescence and drops over time. Having reviewed the AGTISC, and the theories which have informed it, the empirical research which has tested it will now be reviewed.

**Empirical Research**

Since being introduced into the criminological community as a challenger of Gottfredson and Hirschi’s GTC, the AGTISC has received wide empirical support and validation in the literature (Laub, Sampson, and Sweeten 2006). Both longitudinal and cross-sectional research has found that a diverse range of informal social controls inhibit or reduce the likelihood of criminality in adulthood. Several types of intimate partner relationships, for instance, have been found to affect adult crime. A large body of research has examined the effect of marriage on crime and deviance and has found that being married fosters desistance by reducing criminal behaviour (Bersani and DiPietro 2016; Craig 2015; Rocque et al. 2015; Bersani and Doherty 2013; Craig and Foster 2013; Doherty and Ensminger 2013; Theobald and Farrington 2011; O’Connell 2006; Sampson, Laub, and Wimer 2006; Yeager 2004; Piquero, MacDonald, and Parker 2002; Laub, Nagin, and Sampson 1998; Farrington and West 1995). Bersani and DiPietro (2016) and Craig (2015), for example, examined the impact of marriage on offending using a time series methodology and established that being married decreased criminal behaviour.

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9 This methodological position is consistent with research carried out since the mid-20th Century by West and Farrington (1977), West (1969), Wolfgang, Figlio, and Sellin (1972), and Glueck and Glueck (1950).
Other research, however, has found that the marriage effect is not uniform and should be analyzed in terms of marriage duration and race/ethnicity. A study by Bersani and Doherty (2013) explored the impact of marriage on the probability of arrest only to find that, once marriage was dichotomized into short (23 months and less) and long (greater than 24 months) marriages, those individuals in shorter marriages were just as likely to be arrested as divorcees and single persons. Furthermore, for individuals in longer marriages, getting divorced was significantly related to being arrested (Bersani and Doherty 2013; cf. Theobald and Farrington 2013). Marriage has also been shown to vary by race/ethnicity. Craig (2015) determined that marriage had a stronger negative effect on crime for Hispanics and Whites, but not for Blacks. Bersani and DiPietro (2016) found an opposite trend by discovered that Blacks actually benefitted the most from marriage in terms of decreases in being arrested, followed by Hispanics and then Whites. Moreover, the relationship between marriage dissolution and arrest was also influenced by race/ethnicity. That is, marriage dissolution was associated with a greater likelihood of arrest for Blacks and Whites, but not Hispanics (Bersani and DiPietro 2016). Thus, these studies point to important racial dynamics inherent in the marriage effect.

Cohabitation is another type of intimate relationship which has been examined in the extant literature (cf. Forrest 2014; Siennick et al. 2014; Lonardo et al. 2010; Sampson et al. 2006; Horney, Osgood, and Marshall 1995). Compared to the marriage effect, studies exploring the effect of cohabitation on crime and deviance have provided mixed results. In re-analyzing the Glueck data on 500 delinquent males, Sampson et al. (2006) found that while marriage and cohabitation both led to reductions in crime, marriage was the more robust predictor of the two variables. Similarly, Forrest (2014) analyzed
whether marriage and cohabitation exhibited different effects on violent, property, and drug offending. This study found that, while marriage was significantly related to decreases in these three crime subtypes, cohabitation was only related to decreases in the latter two crime subtypes. Notably, Forrest’s (2014) study also revealed that only marriage, and not cohabitation, predicted desistance from the above three types of crime (cf. Piquero et al. 2002; cf. Horney et al. 1995). This finding aligns with research conducted by Lonardo et al. (2010) who determined that cohabitation—particularly at an early age—fostered persistence in, rather than desistance from, offending in early adulthood. Overall, regardless of relationship type, the probability of criminal behaviour is intensified when a relationship is terminated or an individual enters into a relationship with a criminally involved person (Larson and Sweeten 2012; van Schellen, Poortman, and Nieuwbeerta 2012; Carbone-Lopez and Kruttschnitt 2010; Krueger et al. 1998)

Other literature has also explored the influence of marriage and cohabitation on substance use (alcohol and illicit drugs). Siennick et al. (2014), for example, found that cohabitation was significantly and negatively associated with binge drinking but not marijuana use or criminality. However, marriage significantly predicted involvement in all three types of behaviours. Interestingly, cohabitation only manifested a significant effect on both binge drinking and marijuana use when individuals were engaged to be married (Siennick et al. 2014). As such, relationship commitment and intentions to marry may be the key mechanisms underpinning a cohabiting relationship and could determine whether a cohabiter engages in crime and other antisocial behaviour.

Some literature has moved beyond examining the social bonds of marriage and cohabitation by focusing on the effect of family ties on the desistance process (cf.
Markson et al. 2015; Cid and Martí 2012; Cobbina et al. 2012; Berg and Huebner 2011). A case in point is a study by Markson et al. (2015) which determined that individuals with strong and positive pre- and post-prison family relationships were more likely to refrain from alcohol and drug use. Similarly, Cid and Martí (2012) examined a sample of formerly convicted adult males and found that tenacious family ties—to parents, siblings, and/or a spouse—were pivotal for them in desisting from crime.

According to the AGTISC, employment is another important social bond that affects criminality in adulthood. A wide body of literature has explored this relationship and shown that employment is related to lower rates of recidivism (cf. Cook et al. 2015; Duwe 2015a, 2015b, 2012; Uggen and Shannon 2014; Lageson and Uggen 2013; Uggen and Staff 2001; Uggen 2000; Farrington et al. 1986). A study by Uggen (2000) was one of the earliest and most important studies to substantiate Sampson and Laub (1993) and Laub and Sampson’s (2003) finding that employment reduces crime. In examining the effect of employment on crime, Uggen (2000) found that employment decreased self-reported crime and arrest only for individuals over the age of 27; however, this social bond did not predict any form of recidivism for younger persons. Uggen (2000) also notes that it is not purely the fact of being employed that engenders desistance; rather, it is also the quality of employment or the acquisition appealing jobs which provide individuals with an overall sense of satisfaction.

Not all studies have found that obtaining employment itself reduced criminality. Tripodi, Kim, and Bender (2010), for example, found that being employed did not significantly predict recidivism as measured by reincarceration. Rather, employment significantly predicted a longer length of time crime-free until reincarceration. Other
studies have found job stability—measured temporally by the number of months employed—to be associated with lower levels of re-offending (O’Connell 2006; Kruttschnitt, Uggen, and Shelton 2000).

Unfortunately, the effect of employment on alcohol use and illicit drug use has received far less attention in the criminological literature (Uggen and Shannon 2014). Due to this lack of research, most studies in this area have germinated from the alcohol and drug abuse literatures and provide support for the claim that stable employment is contingent upon one’s drug use (e.g., Brown and Riley 2005; Ginexi, Foss, and Scott 2003; Schulenberg et al. 1996; Kandel 1980). As noted by Ginexi et al. (2003) and Brown and Riley (2005), the most pronounced detriment to secure, permanent employment is habitual drug and alcohol use. One exception to this trend in the criminological literature is a recent study by Uggen and Shannon (2014) which contradicts the above studies. Using a sample of individuals with substance use issues from the National Supported Work Demonstration Project (an employment and training initiative), Uggen and Shannon (2014) found that employment—placement in a subsidized job for up to 18 months—decreased predatory economic crime but did not reduce heroin and cocaine use for the experimental group. More research thus needs to be undertaken to fill this gap in the literature and truly understand the impact of employment on substance use.

Another prominent type of informal social control identified in the literature known to affect adult crime is education. Several studies have noted the importance of education as a “turning point” for individuals with past histories of crime and antisocial behaviour (cf. Blomberg, Bales, and Piquero 2012:212; Lockwood et al. 2012; Blomberg
et al. 2011; Chappell 2004; Bernburg and Krohn 2003; Batiuk, Moke, and Rountree 1997). Blomberg et al. (2012), for example, analyzed a sample of formerly incarcerated juvenile delinquents to learn the importance of education as a turning point in their lives. This study yielded two main results: 1) youth with stronger academic attendance were more likely to not be re-arrested during the 1-year follow-up period; and 2) youth with stronger academic records while institutionalized were more likely to continue pursuing their education after release (Blomberg et al. 2012). These findings are congruent with a study by Bernburg and Krohn (2013) who discovered that the negative corollaries of a criminal conviction—for instance, blocked educational opportunities early in life—exacerbates crime in adulthood. Another study by Lockwood et al. (2012) tracked over 6,000 formerly incarcerated adults over a 5-year period to decipher the influence of educational attainment on recidivism. It was determined that ex-offenders possessing below secondary education showed the greatest levels of recidivism (56 %), followed by high school graduates/GED (46.2 %), and college graduates (31 %) (Lockwood et al. 2012). This finding is consistent with other research demonstrating that both secondary and post-secondary education decrease recidivism (Runell 2015; Duwe and Clark 2014; Lochner and Moretti 2001).

Finally, many studies have considered the association between other social bonds developed over the life course—for example, religion, parenthood, civic participation—and crime and deviance. The existing literature supports the claim that religiosity is negatively associated with crime and substance use (Thomson 2016; Kelly et al. 2015; Salas-Wright et al. 2014; Ulmer and Harris 2013; Baier and Wright 2001; Evans et al. 1995). A meta-analysis of 60 studies conducted by Baier and Wright (2001), for example,
found a statistically significant negative relationship between religion and crime with an average effect of $r = -0.12$. More recent research has also substantiated that religion—as measured through religiosity and church attendance—decreases criminality (Kelly et al. 2015) and alcohol and illicit drug use (Thomson 2016).

Other research also firmly supports that parenthood functions as an informal social control inhibiting crime (Yule, Paré, and Gartner 2015; Monsbakken, Lyngstad, and Skardhamar 2013; Giordano et al. 2011; Michalson 2011; Kreager, Matsuedam and Erosheva 2010; Savolainen 2009; Giordano et al. 2002). Yule et al. (2015) for instance, examined the impact of mothering as a local life circumstance on crime and drug use. It was found that when former female offenders were mothering—or living with and caring for their child(ren)—they were less likely to use drugs and engage in instrumental crimes (e.g., property crime, drug trafficking, and/or prostitution) (Yule et al. 2015). Research by Giordano et al. (2011) reached a different conclusion on the importance of parenthood as a crime-reducing social bond. In particular, this study determined that socio-economic status and pregnancy wantedness were important factors conditioning the effect of parenthood on crime; that is, individuals from higher socio-economic strata were more likely to desist from crime after entering parenthood, as were women who wanted to become pregnant (Giordano et al. 2011).

Lastly, civic participation—in the form of voting and volunteerism—has also been shown to act as a social bond that fosters desistance (Manza and Uggen 2004; Uggen and Janikula 1999). When former offenders are socially integrated into society by having the ability to vote in political elections or being actively involved in the community through volunteerism, they are less likely to be involved in self-reported
criminal behaviours or be arrested (Manza and Uggen 2004; Uggen and Janikula 1999). As a result, the social integration of former offenders through civic participation appears to promote and encourage desistance from crime. Having reviewed the empirical literature testing the tenets of the AGTISC, the next section of this thesis will discuss the limitations of this theory.

**Limitations**

The preceding review of existing tests of the AGTISC has demonstrated that this life-course theory has received wide empirical support in the criminological literature. Despite this support, however, this theory has several limitations. First and foremost, while some studies in the reintegration literature have found various social factors to be strong determinants of successful reintegration, few studies have linked them to Sampson and Laub (1993) and Laub and Sampson’s (2003) AGTISC to understand how these theoretical elements may explain reintegration and desistance. Some studies which have theorized reintegration through the lense of the AGTISC have focused on the effects of education (Blomberg et al. 2012; Lockwood et al. 2012); employment (Duwe 2015a; Pogrebin et al. 2014; Uggen 2000); marriage (Savolainen 2009; Doherty 2006; O’Connell 2006, 2003); family ties (Cobbina et al. 2012; Berg and Huebner 2011); religion (Johnson 2004); parenthood (Yule et al. 2015; Michalson 2011); or, a composite measure of some of the above social bonds in decreasing recidivism (Forkner 2010; Doherty 2006). The consequence is that ambiguity continues to exist in the research community on the extent to which this framework applies to offending populations exiting the correctional system.
Second, Sampson and Laub (1993) and Laub and Sampson (2003) tested, and found support for, their life-course theory using the Glueck’s (1950) data on 500 chronic delinquents comprised of aging, white males. It is, therefore, uncertain whether or not the AGTISC can extend to contemporary samples of ex-offenders who vary in terms of gender, race/ethnicity, or age, as well as to less serious offenders who have only been convicted of one offence. Some literature has demonstrated that the traditional social bonds which explained crime in the Glueck sample do not apply to modern samples of ex-offenders. For instance, Giordano et al. (2002) discovered that both employment and marriage did not predict self-reported crime for both males and females. The point is that, if the explanatory power of this theory is limited only to older white men or chronic offenders, then theoretical elaboration may be in order to make this theory applicable to reintegration as experienced by a wide-array of individuals in today’s society.

Another weakness of the AGTISC is that the research testing this life-course theory on reintegration has neglected to consider the significance of reintegration-specific informal social controls—such as housing needs—in ex-offenders’ lives (cf. Mears, Cochran and Siennick 2013). For example, a major detriment to successful reintegration and desistance identified in the literature is homelessness (Clark 2016, 2015; Lutze et al. 2014; Kirk 2012; Metraux and Culhane 2006, 2004; Grommon 2013; Gaetz and O’Grady 2006; Manzoni et al. 2006; McCarthy and Hagan 1991). However, of the above studies, none have considered housing as a type of informal social control which engenders desistance.

Finally, a body of criminological research from Europe has documented that reductions in crime and deviance may actually precede the establishment of social bonds
or manifest in the absence of such bonds (Aaltonen 2016; Skardhamar and Savolainen 2014; Lyngstad and Skardhamar 2013; Monsbakken et al. 2013). A study by Aaltonen (2016) followed a Finnish sample of former prison releasees over a 5-year timeframe and found that individuals desisted without stable employment. The other three studies noted above also call into question the temporal or causal ordering specified by the AGTISC. It has been established that many individuals begin desisting from crime prior to the turning points of parenthood (Monsbakken et al. 2013), employment (Skardhamar and Savolainen 2014), and marriage (Lyngstad and Skardhamar 2013).

**Summary**

This chapter began by reviewing the existing reintegration literature, which has been predominantly focused on identifying and describing the multitude of risk factors and challenges individuals confront as they exit the correctional system and return to society. It is unequivocal from this literature review that the debate between Sampson and Laub (1993) and Laub and Sampson’s (2003) AGTISC and Gottfredson and Hirschi’s (1990) GTC has been neglected in this field. It then followed by reviewing the AGTISC, the empirical literature that has tested it, and its limitations. Despite its flaws, much literature has been supportive of this theory’s main assumptions. This paper will now turn to Gottfredson and Hirschi’s (1990) GTC, a framework that is diametrically opposed to social explanations of crime and is predicated purely on the individual factor of self-control. It will also review research which has attempted to explain crime and deviance by integrating the AGTISC and the GTC.
Chapter 3: Literature Review and Conceptual Framework Part II

The General Theory of Crime

Individual-level theories of crime argue that offenders possess specific criminogenic characteristics or traits that are absent in non-offenders. Gottfredson and Hirschi (1990) pioneered the concept of self-control in their GTC, which has become the most salient modern individual-level explanation of crime. This theoretical framework rejects Hirschi’s (1969) classical social control theory and, according to Gottfredson and Hirschi (1990), was borne out of the several diverse schools of thought including: the Classical School, Rational Choice Theory, and various strains of Positivism.

The Enlightenment period (1689-1799) and its emphasis on rational thinking facilitated the development of what became known as the Classical School of Criminology. The early writings of Cesare Beccaria and Jeremy Bentham on the nature of crime and punishment were instrumental to this perspective. For these philosophers, individuals relinquish their autonomy and freedoms by entering into a social contract with the sovereign (Beccaria [1764] 2009; Bentham [1780] 2007). In An Essay on Crimes and Punishments, Beccaria ([1764] 2009) maintained that the purpose of the social contract was to not only enable the state to draft laws proscribing particular behaviours as criminal, but also to prevent the possibility of anarchy. In contrast, Bentham ([1780] 2007) perceived the social contract as beneficial for the populace. In An Introduction to the Principles and Morals of Legislation, Bentham ([1780] 2007) put forth the precept of utility to denote any object or action which generates the greatest degree of happiness or good for individuals and the community at large. Despite this difference, congruency existed between Beccaria and Bentham that human beings utilize a hedonistic calculus
when deciding to commit a criminal offence. That is, individuals rationalize their actions by assessing whether or not they will receive greater pleasure or pain from a given act. When more pleasure will be gained, individuals will use their free will and engage in crime. Moreover, Beccaria ([1764] 2009) and Bentham ([1780] 2007) also believed that society should punish law violators according to three precepts: certainty, celerity, and proportionality. By threatening individuals with the certainty of punishment, along with the awareness that punishment would be prompt and commensurate to the crime committed, society could deter prospective offenders from transgressing the social contract.

Rational Choice Theory is a modern variant of the Classical School of Criminology which has also influenced the GTC. Unlike other mainstream criminological theories focusing on the offender and the causes of crime, this perspective emphasizes the importance of the criminal event; precedence is thus placed on understanding the situational inducements that facilitate the occurrence of crime (Cornish and Clarke 1986). Rational Choice Theory assumes that there are no differences between offenders and non-offenders and that all individuals use rational decision-making processes (e.g., a cost-benefit analysis) when contemplating to engage in criminal activity (Cornish and Clark 1986). Generally, this framework assumes that crimes will be committed when an individual has both the opportunity and the perception that the act will yield more benefits than costs.

Two other frameworks relevant to the rational choice perspective are Lifestyle-Exposure Theory and Routine Activity Theory. Although these two theories are distinct, they both focus on three central factors: criminal opportunity, victimization, and social
Hindelang, Gottfredson, and Garofalo’s (1978) lifestyle-exposure model was one of the earliest frameworks to explore the association between victimization and lifestyle. Analyzing U.S. data, Hindelang et al. (1978) found that certain demographic variables—for example, age, gender, marital status, and family income—were correlated with greater instances of victimization. The results indicated that those most likely to be victimized were male, single or divorced, from a lower income bracket, and much younger than their counterparts. In exploring why these groups experienced greater rates of victimization, Hindelang et al. (1978) hypothesized that lifestyles varied according to key demographic characteristics. That is, victims of crime with the aforesaid characteristics tended to frequent public areas (often at night); had lifestyles in common with their acquaintances; were similar to offenders demographically; and, generally associated with individuals outside their families (Hindelang et al. 1978). Thus, Lifestyle-Exposure Theory allocates some blame to crime victims for the transgressions against them based on their lifestyle choices.

Cohen and Felson (1979) also employed a routine activity approach to explain predatory crime and explore how novel social structural changes affected crime rates. According to this theory, spatiotemporal changes to individuals’ daily activities (e.g., leaving one’s residence for work or school) have engendered more opportunities for crime. Predatory crimes are most probable when three sufficient conditions are met: the existence of a motivated offender; a suitable target; and, no guardian to defend against the crime (Cohen and Felson 1979). Consequently, these two frameworks differ somewhat from the rational choice perspective, to the extent that they place special foci
on how changing societal conditions facilitate crime and the role of victims in their own
victimization.

Elements of Positivism are also embedded within the GTC. Not only is this theory
underpinned by the positivistic assumption that all behaviour is caused by some factor or
event, but also by various strains of Positivism which argue that crime is the consequence
of individual differences (e.g., that offenders share particular underlying traits). These
strains include the biological positivism of Lombroso and the psychological positivism of
Wilson and Herrnstein. Early biological explanations of criminality emanate from the
work of Italian criminologist Césare Lombroso. According to Lombroso’s ([1861] 1911)
theory of atavism, individuals were born criminals and were throwbacks with various
biological and psychological irregularities. Criminals, then, had regressed biologically
and were shown to have larger or smaller craniums, disproportionate jaws and
cheekbones, asymmetrical facial features (e.g., eyes, nose, ears), and tattoos; this group
also possessed many psychological characteristics such as impulsivity, licentiousness,
ineptness, and self-indulgence (Lombroso [1861] 1911). Therefore, when compared to
non-criminals, individuals with the aforesaid innate characteristics were viewed as
savages or atavistic beings incapable of reformation.

The psychological positivism of Wilson and Herrnstein (1985) is a more recent
attempt to explain the causes of crime. For these theorists, crime is the corollary of
individual differences which can be explained by a wide-array of biological,
psychological, and social background factors. In essence, this theory presumes that
individuals will have a greater proclivity for carrying out a criminal offence when the
tangible and intangible benefits of crime outweigh the tangible and intangible benefits of
law-abiding behaviour (Wilson and Herrnstein 1985). Although Wilson and Herrnstein (1985) reject the Lombrosian theory of the born criminal, they nevertheless found that the above calculus could be determined by a variety of constitutional factors\textsuperscript{10} conferring certain individuals with a greater predisposition for crime. Such factors, which are also associated with crime, include: physiological features (à la Lombroso), body type (somatotypes), and genetic composition (Wilson and Herrnstein 1985). This theory posits that these biological features are not the direct cause of crime; rather, these enduring characteristics manifest themselves as psychological traits which cause individual differences in crime by exacerbating one’s criminal propensity. Wilson and Herrnstein (1985: 430) make the conclusion that specific psychological traits—such as low intelligence, low “impulse control” (self-control), and possessing an antisocial personality—result from having particular biological characteristics. Ultimately, the interconnection of these constitutional factors and psychological traits influences our social experiences in the family, school, labour market, broader community, as well as our overall human nature (Wilson and Herrnstein 1985). In sum, Positivism has influenced the GTC, as have the above two strains of positivism focused on individual differences and criminality. Consequently, as the above paragraphs have illustrated, the GTC has been influenced by many diverse schools of thought including the Classical School, Rational Choice Theory, and several strains of Positivism.

The raison d’être of the Gottfredson and Hirschi’s (1990) GTC was to explain individual behaviour, and by extension, criminality by linking the Classical School’s

\textsuperscript{10} Constitutional factors are characteristics—whether genetic or not—which exist around the time of birth and manifest to affect individuals’ behavioural outcomes throughout the developmental process (Wilson and Herrnstein 1985).
notion of “rational choice” with the positivist notion of “causation.” Adopting a population heterogeneity and ontogenetic explanation of crime,\(^{11}\) this theory begins with the assumption that individual differences exist between offenders and non-offenders. Consistent with Positivism, the GTC claims to apply to all social and cultural settings, all genders, and all types of crime from the most simple (e.g., minor theft) to the most complex (e.g., white collar crime). The central tenet of this theory is that crime and other analogous acts—such as sexual promiscuity, illicit drug and alcohol consumption, reckless driving, unintentional pregnancies, and other socially deviant and risky behaviours— are caused by two interdependent causal factors: crime and criminality (or the invariant latent trait of self-control).\(^{12}\) Crime refers to short-lived events of “force and fraud undertaken in pursuit of self-interest” dependent upon numerous contextual conditions such as criminal opportunity and proximity to victims and things of value (Gottfredson and Hirschi 1990:15; 137). While nuanced definitions of self-control exist in the psychological literature,\(^{13}\) Gottfredson and Hirschi (1990) define self-control as those invariant differences which exist between individuals in their propensity to engage in such behaviours. Within this framework, the essence of criminality—or low self-control—is defined as individuals’ proclivity to fulfill their immediate desires regardless of the consequences.

\(^{11}\) Population heterogeneity assumes that lawbreakers possess unchanging characteristics or anti-social traits that are absent in non-offenders (Nagin and Paternoster 2000). Similarly, ontogenetic explanations of human development purport that the trajectory of individuals’ behaviour is stable and predicted by invariable causal forces insusceptible to influence by social context (Dannefer 1984). Both perspectives thus reject sociogenic explanations which argue that social context affects adult behaviour over the life-course.

\(^{12}\) For Gottfredson and Hirschi (1990), self-control is tantamount to criminal propensity. As such, this paper uses both terms interchangeably to refer to the same concept.

\(^{13}\) Psychologists conceptualize self-regulation (or self-control) as individuals’ ability to intentionally exert control over their impulses for the achievement of future goals, and to align their behaviour with prevailing social norms and morals (Baumeister, Vohs, and Tice 2007).
of the future ramifications of their actions (Gottfredson and Hirschi 1990). As such, Gottfredson and Hirschi (1990: 137) maintain that “self-control is only one element in the causal configuration leading to a criminal act, and criminal acts are, at best, imperfect measures of self-control.”

Self-control is a unidimensional trait comprised of several rudimentary elements. For those with low self-control, the criminal event is hypothesized to demand few abilities or talents and will bring instantaneous and effortless pleasures; provides minimal future rewards; causes harm and distress to victims; and, produces perils and exhilaration. Overall, individuals with low self-control tend to be “impulsive, insensitive, physical (as opposed to mental), risk-taking, short-sighted, and nonverbal” (Gottfredson and Hirschi 1990: 90). When the opportunity arises, it is likely that those with low self-control will choose to engage in crime and deviance.

Dissimilar to other positivist theories of crime, the GTC asserts that individuals are not genetically predisposed to having low self-control. Rather, low levels of this latent trait are perceived to be primarily the result of weak parenting or ineffective family socialization. Normatively, self-control will be developed in children between the ages of 8 or 10; if it is not, then these children will possess low self-control for the remainder of their lives (Gottfredson and Hirschi 1990). Regarding social relationships, this theory rejects the social learning assumption (see Akers 1998; Sutherland 1939) that individuals learn crime from their intimate social acquaintances. Embracing the Gluecks’ (1950: 164) notion that “birds of a feather flock together,” Gottfredson and Hirschi (1990) suggest that individuals engage in self-selection by associating with persons sharing similar levels of this latent trait. Those with high levels of self-control, for example, will finish their
education and have stable marriages and careers unlike their counterparts. However, such social attachments developed over the life-course will have no effect on crime; any purported correlation would be spurious and attributable to self-selection (Hirschi and Gottfredson 1995). Moreover, while those with low self-control have a proclivity for crime and deviance throughout life, they will eventually age-out\(^{14}\) of such behaviours as per the inverted J-curve distribution (Gottfredson and Hirschi 1990). Because crime naturally decreases with age, this theory believes there is a pressing need for cross-sectional rather than longitudinal research. Therefore, this general theory proposes that individual-differences in levels of self-control produce crime.

Despite being vehemently opposed to theoretical integration, Hirschi (2004) modified the GTC by merging it with his original social control theory. Now viewing individuals as rational beings, Hirschi (2004: 544) re-conceptualized self-control as “the tendency to consider the full range of potential costs of a particular act.” Another substantive change pertained to the connection between social bonds and self-control. In Crime and Delinquency, Hirschi (1969) purported that social bonds were precarious and changeable; however, his modified theory now rests on the assumption that the social bond, like self-control, is invariable thus meaning that “social control and self-control are the same thing” (Hirschi 2004: 544). Although this revised theory has attracted some

\(^{14}\) A significant criminological debate in the late 1980s and early 1990s pertained to the association between age and crime. Criminal career researchers such as Blumstein, Cohen, and Farrington (1988) argue that the probability of crime can be determined by identifying the most chronic, active offenders in society and analyzing their individual levels or frequency (\(\lambda\) or lambda) of criminality. Blumstein et al. (1988) found that the crime rate for this population was not invariable; that is, contrary to the GTC’s assertion on the age-crime association, individuals’ levels of crime did not always peak in late adolescence. Data illustrated that peak rates of crime varied anywhere from age 17 through to age 36, depending of course, on the type of offense.
attention in the extant literature (e.g., Vazsonyi and Huang 2015; Ward, Boman, and Jones 2012; Morris, Gerber, and Menard 2011; Piquero and Bouffard 2007), the original GTC is the most widely tested self-control theory to date and will be the focus of this study. Having reviewed Gottfredson and Hirschi’s (1990) self-control theory, a review of the empirical literature will follow.

**Empirical Research**

Since its inception, the GTC has been tested extensively in the criminological literature and the majority of research has generally been supportive of it (cf. Gottfredson 2006; Pratt, Turner, and Piquero 2004; Pratt and Cullen 2000). Considering that this theory is interested in explaining all crime and analogous activities, research has focused on a wide range of behaviour. With respect to legal violations, low self-control has been found to be correlated with impaired driving (Nagin and Paternoster 1993); gang membership (Kissner and Pyrooz 2009); using force and fraud to fulfill goals (Holtfreter et al. 2010; Grasmick et al. 1993); sexual assault (Franklin, Bouffard, and Pratt 2012); property crimes (Longshore 1998); juvenile delinquency (Brownfield and Sorenson 1993); courtship aggression (Sellers 1999); future involvement with the criminal justice system (Beaver et al. 2009); police deviance on the job (Donner and Jennings 2014); stalking (Fox, Nobles, and Fisher 2016); cyberbullying (Vazsonyi, et al. 2012); white collar crime (Schoepfer, Piquero, and Langton 2014); texting and driving (Quisenberry 2015); parole failure (Langton 2006); and, general delinquency (Gibbs, Giever, and Higgins 2003)
A large body of criminological literature has also studied the effect of self-control on non-criminal or analogous behaviour. The majority of this research has substantiated that low self-control is associated with poor social relationships and tenuous community involvement (cf. Evans et al. 1997); smoking, alcohol consumption, and illicit drug use (Gerich 2014; Ford and Blumenstein 2013); gambling (Arneklev et al. 1993); academic misconduct (Cochran et al. 1998); a wide-array of antisocial behaviours and personalities (Caspi et al. 1995); unemployment and homelessness (Baron 2003); being in an accident (Tremblay et al. 1995); defiance toward the education system (Nakhaie, Silverman, and LaGrange 2000); attenuated police legitimacy (Wolfe 2011); negative attitudes toward police (Baron 2016); victimization (Turanovic and Pratt 2014); and, skipping school (Gibbs and Giever 1995).

The GTC’s assumption that crime is contingent on both opportunity and low self-control has been corroborated in the literature (cf. Baron, Forde, Kay 2007; Longshore 1998; Longshore and Turner 1998; Forde and Kennedy 1997). Grasmick et al. (1993), for instance, ascertained that force and fraud were likely when individuals with low levels of self-control had the opportunity to carry out such acts. Contrary to the above findings, Longshore and Turner (1998) found criminal opportunity to be more significant in explaining crimes of fraud than crimes of force. A recent study by Marshall and Enzmann (2012) also reinforced the significance of opportunity in the commission of crimes. While the effect of opportunity was more pronounced for individuals with attenuated levels of self-control, it also influenced those with increased levels of this latent trait; thus, as an individual variable, opportunity plays a pivotal role in crime causation (Marshall and
Enzmann 2012). These studies, therefore, support the notion that opportunity and self-control are interrelated.

Whether parenting influences the development of self-control, and hence crime and deviance, has received mixed support in the literature. Some studies (cf. Vazsonyi and Huang 2010; Hope, Grasmick, Pointon 2003; Hay 2001; Gibbs, Giever, and Martin 1998) have found evidence in favour of this theoretical assumption. Hay (2001), for instance, established that self-control increased moderately in children whose parents exerted greater oversight over them and provided effective punishments for wayward behaviour. Other literature (Perrone et al. 2004; Pratt et al. 2004), however, has provided contradictory evidence. Although Perrone et al. (2004) found support for the theoretical assumption that effective parenting was a precursor to high self-control, their results demonstrated that a robust direct association existed between parenting and delinquent behaviour, irrespective of one’s criminal propensity. That is, self-control failed to mediate the above relationship. Consequently, research remains divided on the relationship between parenting and self-control.

The generalizability of the GTC has been rigorously debated in the criminological literature. According to Gottfredson and Hirschi’s (1990: 124) “invariance thesis,” self-control is stable across culture, gender, age, and types of crime. It is well documented that offenders generally exhibit lower levels of self-control than non-offenders (DeLisi 2001a). However, when further separating offenders by gender, the vast majority of Western and non-Western research (Ward et al. 2015; Chui and Chan 2013; Steketee, Junger, and Junger-Tas 2013; Özbay 2008; Tittle, Ward, and Grasmick 2003; LaGrange and Silverman 1999; Schreck 1999; Burton Jr. et al. 1998) supports the GTC by showing
that, while self-control affects both genders, females typically have higher levels of self-control than males due to the provision of different socialization practices early in life (see especially, Gottfredson and Hirschi 1990: 147). Overall, males’ diminished levels of self-control have been attributed to their inclination for risk-taking, impulsiveness, and self-centeredness (Chui and Chan 2013; LaGrange and Silverman 1999). As a result, Gottfredson and Hirschi’s (1990) assumption on the gendered nature of self-control has been buttressed by the literature.

A major tenet of the GTC is that self-control transcends cultural and national boundaries. Some research (Chui and Chan 2013; Marshall and Enzmann 2012; Vazsonyi et al. 2012; Özbay 2008; Rebellon, Straus, and Medeiros 2008; Vazsonyi et al. 2001) has illustrated that self-control plays a significant role in crime at both the micro- and macro-levels in various countries in the international community. Rebellon et al. (2008), for example, explored the intersection of self-control, parenting, and criminality across 32 nation-states in both Western (e.g., Canada; the US) and non-Western countries (e.g., Great Britain; Greece; Australia; Japan). At both the micro- and macro-levels, this study found that parenting was robustly related to self-control, which in turn, was correlated with at least one type of crime (Rebellon et al. 2008). This suggests that self-control not only affects individual criminality across diverse cultures, but also that it plays a major role in predicting crime at the national level. Having reviewed the GTC and the literature testing it, the weaknesses of this theory will now be discussed.
Limitations

While the GTC has received strong support in the literature, it is not without its flaws. One major criticism of this theory has been its lack of application to the area of reintegration. In fact, most research testing the GTC has been undertaken on general population and student samples (cf. Burt, Sweeten, and Simons 2014; Connolly and Beaver 2014; Chui and Chan 2013; Ford and Blumenstein 2013; Meldrum, Miller, and Flexon 2013; Bouffard and Kunzi 2012; Beaver, Ratchford, and Ferguson 2009; Beaver et al. 2008; Burt, Simons, and Simons 2006; Grasmick et al. 1993) rather than on offending samples. Some exceptions utilizing offending samples do, however, exist (Malouf et al. 2014; Fox, Lane, and Akers 2010; DeLisi et al. 2008; Piquero et al. 2005; DeLisi 2001a, 2001b; Longshore 1998; Longshore, Chang, and Messina 2004; Langton 2006). Consequently, it is evident that more tests of the GTC on samples of former offenders are necessary to acquire a more comprehensive understanding of the role of self-control in reintegration and desistance.

While Gottfredson and Hirschi’s (1990) invariance thesis has received some support (Morris, Wood, and Dunaway 2006; Turner and Piquero 2002; Arneklev, Grasmick, and Bursick Jr. 1999), recent research has also determined that self-control is malleable and can change over time (Burt et al. 2014; Beaver et al. 2013; Na and Paternoster 2012; Forrest and Hay 2011; Forkner 2010; Piquero et al. 2010; Winfree et al. 2006; Wright et al. 1999). Burt et al. (2014), for example, explored the malleability of self-control by following a sample of African-American youth from late childhood (age 10) into their mid-20s and found that between- and within-individual levels of self-control changed significantly as individuals moved into young adulthood. Within-
individual variations in self-control and two specific elements of this construct—namely, sensation seeking and impulsivity—were also correlated with within-individual variations in self-reported crime (Burt et al. 2014). Moreover, various social bonds such as stronger parent-child relationships (Na and Paternoster 2012), increased religiosity (Desmond, Ulmer, and Bader 2013), peer relationships (Meldrum and Hay 2012), and greater school attachments (Turner et al. 2005) have also been found to increase self-control over the long-term. Similar findings have been located in the psychological literature on self-regulation.\(^\text{15}\) Therefore, a growing body of research has provided negative evidence against the GTC’s assumption that self-control is stable.

Furthermore, the capacity of the GTC to explain all types of criminal offences remains debatable. According to Gottfredson and Hirschi (1987: 970), all offenders share an underlying propensity for crime—regardless of whether they commit a “crime in the street [or a] crime in the suite.” The GTC presumes that, although the frequency of white-collar crime is much lower than street crime, both offences are the corollary of one common source: low self-control. Offenders are thus capable of committing a wide-array of criminal offences. Some research (Schoepfer et al. 2014; Benson and Moore 1992; Steffensmeir 1989) has challenged the assertion that the elements of self-control can explain more sophisticated crimes. For the most part, extant literature has demonstrated that significant differences exist between white-collar offenders and general offenders. In particular, self-control has been found to affect different offenders in different ways. For instance, when white-collar offenders engage in crime and socially deviant acts (e.g.,

\(^\text{15}\) In psychology, the concept of self-control (self-regulation) has been compared to a “muscle” that can get either stronger or weaker depending on whether it is exercised (Baumeister et al. 2007: 352).
inebriation), these acts tend to be the consequence of desire-for-control\textsuperscript{16} rather than low self-control (Schoepfer et al. 2014; Benson and Moore 1992). Alternatively, general or conventional offenders tend to engage more frequently in unspecialized crimes and are influenced more by the latent trait of low self-control (Schoepfer et al. 2014). As a result, no congruency has been reached on the generality of the GTC and its capacity to explain all forms of criminality.

Another limitation of the GTC pertains to poor model specification or the extent to which other confounding variables have strong independent effects on crime and analogous behaviours besides low self-control. Despite the wide-spread support for the GTC, many studies have found that the effect of self-control on criminal and deviant acts is mediated by genetic influences (Boutwell and Boisvert 2014; Nedelec and Beaver 2014; Boisvert et al. 2012); peer relationships (Rebellon et al. 2008; Perrone et al. 2004; Pratt and Cullen 2000); deteriorated neighbourhood conditions (Pratt et al. 2004); social supports/controls (Beaver, Boutwell, and Barnes 2014; Na and Paternoster 2012; Wright et al. 1999); and chronic strains (Baron 2003). In particular, Pratt and Cullen (2000) note that studies including both self-control and social learning variables explain 15.3\% more variance in criminality than studies accounting only for the former variable. Regarding strain, Baron (2003) found that being homeless exerts a tenacious and separate effect on criminality—even in models containing self-control. As such, these studies exemplify that other salient social factors not only affect crime and deviance, but also mediate the effect of self-control on such behaviour.

\textsuperscript{16} Desire-for-control is a psychological term referring to one’s yearning for control over the events, routines, interactions, and happenings of everyday life (Schoepfer et al. 2014).
Finally, the dimensionality and operationalization of self-control in the GTC has also been criticized. Regarding the former issue, Gottfredson and Hirschi (1990) originally formulated self-control as a unidimensional construct containing six basic elements. However, a major debate has blossomed over the dimensionality of this latent trait. Some research has corroborated that, as specified in the GTC, self-control is a single concept comprised of numerous elements or characteristics (Malouf et al. 2014; Meldrum and Hay 2012; Forkner 2010; Baron 2003; Arneklev et al. 1999; Grasmick et al. 1993). Much literature, however, has contested the unidimensionality of this latent trait and supports the notion that self-control is multidimensional (Burt et al. 2014; Connor, Stein, and Longshore 2009; DeLisi et al. 2008; Baron et al. 2007; Winfree et al. 2006; LaGrange and Silverman 1999; Forde and Kennedy 1997). Connor et al. (2009), for example, used the Grasmick et al. (1993) scale on a sample of released male and female offenders to examine whether recidivism and drug use were better predicted by a unidimensional or multidimensional self-control construct. The findings indicated that only two particular subscales of self-control—risk-seeking and volatile temper—were the strongest predictors of the above criminal and deviant behaviours. As the other four subscales (impulsiveness, preference for physical activities, self-centeredness, and preference for simple tasks) were not significant, the findings of this study provide support for a multidimensional, rather than a unidimensional, self-control construct (Connor et al. 2009). Therefore, despite its limitations, the GTC is one of the most prominent individual-level explanations of crime and deviance in the criminological literature.
Integrated Life-Course/Control Theories

Some researchers have taken the logical step of exploring the interdependence of social and individual-level factors, in an effort to better explain crime and deviance over the life-course. Various studies have analyzed the interdependent effects of informal social control and self-control on: alcohol consumption, marijuana use, or both (Desmond et al. 2013; Gerich 2013; Baker 2010; Longshore et al. 2004); friendship quality (Boman IV et al. 2012); crime by street youth (Hagan and McCarthy 1998); criminal opportunity (Hay and Forrest 2008); adolescent offending (Longshore, Chang, and Messina 2005; Nakhaie et al. 2000); adult recidivism (Forkner 2010; Doherty 2006; O’Connell 2006, 2003); and the influence of various social bonds—for instance, peers, marriage, schooling, and parent-child attachment—on the development of self-control (Jennings et al. 2013; Forrest and Hay 2011; Turner, Piquero and Pratt 2005). Overall, the literature has established that, when tested together, both social bonds and self-control interact to predict crime and deviant behaviour (cf. Wright et al. 1999).

With respect to crime and delinquency, Longshore et al. (2005) tested the interaction between social bonds and self-control on a sample of juvenile offenders and found that the interdependence of these factors predicted re-offending for this population. More specifically, the original social bond measures used by Hirschi (1969)—attachment, moral belief, and commitment/involvement in conventional activities—were all negatively related to low self-control in this study. This indicates that persons with low self-control are also more likely to have weaker moral beliefs, attachments, and commitment/involvement. However, only two social control measures (moral belief and
attachment) fully mediated the effect of low self-control on recidivism (Longshore et al. 2005).

Similarly, research by Nakhaie et al. (2000) also provides support for the integration of informal social control and self-control in explaining crime. This study examined a sample of secondary students and determined that the interaction between self-control and social bonds (measured by paternal involvement, school commitment, and peer attachment) was significantly and negatively related to a composite measure of general delinquency as well as several crime subtypes including property crime, violent crime, and drug crime (Nakhaie et al. 2000). Therefore, for this sample of secondary students, offending is least likely when both self-control and informal social control are strong and most likely when self-control and informal social control are weak.

In relation to other problematic behaviours such as substance use, studies integrating the AGTISC and the GTC have predicted both alcohol consumption and/or marijuana use (Gerich 2014; Desmond et al. 2013; Baker 2010; Longshore et al. 2004). A study by Desmond et al. (2013), for instance, used the Add Health data to explore the relationship between the social bond of religion and self-control on marijuana use and problem drinking. Not only was it established that religious adolescents possessed higher levels of self-control, but also that self-control partially mediated the influence of religion on these two forms of substance use (Desmond et al. 2013). After dividing the sample into the categories of low, medium, and high religiosity, it was found that self-control only had a stronger impact on problem drinking for less religious adolescents (Desmond et al. 2013). Studies by Gerich (2014) and Baker (2010) have also found that alcohol
consumption is greater among those individuals with both low self-control and low informal social control.

The major limitation of this emerging body of research is that very few studies have tested an integrated perspective on individuals involved in criminal behaviour, and those who have been convicted for a crime and processed through the criminal justice system. While some research has used an integrated approach to examine ex-offenders (cf. Forkner 2010; Hochstetler, DeLisi and Pratt 2010; Doherty 2006; O’Connell 2006, 2003; Longshore et al. 2005), most studies in this area have relied on general population or student samples (Gerich 2014; Desmond et al. 2013; Forrest and Hay 2011; Baker 2010; Turner et al. 2005; Nakhaie et al. 2000; Wright et al. 1999). The consequence of this is that the effects of these predictors on reintegration and desistance—in terms of recidivism and other social outcomes—continues to remain unclear. More research needs to be conducted to ascertain the ways in which informal social control and self-control affect those persons who have been punished by the judicial system for their criminal actions and have returned to society.

**Summary**

This chapter began by reviewing Gottfredson and Hirschi’s (1990) GTC, the empirical research which has tested it, and its limitations. While an abundance of literature provides strong support for the tenets of this theory, most of the evidence showing that low self-control is associated with crime and deviance has been gleaned from general population and student samples rather than offending samples. This chapter then reviewed some research which has integrated the AGTISC and the GTC in an effort
to explain crime and deviance. While this is only an emerging body of literature, it follows the trend identified in the self-control literature where most studies, unsurprisingly, have used samples other than persons who have engaged in crime or who have been processed through the criminal justice system.

The fact that the AGTISC and the GTC have not been extensively tested on individuals processed through the criminal justice system leaves a major gap in the research literature. The purpose of this dissertation is to fill this gap by testing these frameworks on an American sample of young adults who have violated the law as adults and been punished by the courts for their actions. The objective of this study is not only to predict recidivism, but also two forms of substance use—namely, alcohol consumption and marijuana use—both of which have been linked to criminality. As will become evident in the following chapter, the analytical sample of this study is comprised of less serious law violators most of whom did not recidivate after the completion of their sentence. This is significant because, according to the 2015 US Uniform Crime Report, most crimes committed in the US are less serious in nature (United States Department of Justice 2016). Therefore, exploring the effects of these theories on samples of ex-offenders who have committed less serious offences will have broader implications for addressing the most prevalent forms of crime. The proceeding chapter of this dissertation will describe the data and methods to be employed in the current study.
Chapter 4: Data and Methods

The Add Health Data Set

The data for this study come from the National Longitudinal Study of Adolescent to Adult Health (hereafter, ‘Add Health’), a longitudinal study designed by J. Richard Udry, Peter Bearman, and Kathleen Mullan Harris which followed a nationally representative sample of adolescents in grades 7 through 12 in the US over four waves beginning in the 1994-1995 school year (Harris 2013). The Add Health study relied primarily on a school-based research design (in-school surveys), in addition to in-home surveys. In Wave I, 90,118 adolescents from 132 schools across 80 different communities in the US were selected for inclusion into the sample. Wave I also included an in-home survey component, which was completed by 20,745 students (Harris 2013; National Longitudinal Study of Adolescent Health N.D.). Both surveys collected demographic, biological, social and economic, and mental and physical health data from respondents. In particular, background data on respondents’ romantic and family relationships, as well as contextual data on schools, peer networks, and neighbourhoods and community characteristics we collected during Wave I (Harris 2013).

In 1996, Wave II follow-up data from both the in-school and in-home surveys were collected from 14,738 adolescents who were in grades 7 through 12 during Wave I. About five years later (2001-2002), Wave III in-home interview data were collected from 15,170 respondents who were apart of the original Wave I sample as they were entering adulthood and now ranged from 18 to 26 years of age (Harris 2013). A focus was placed on collecting new data relevant to adulthood—such as information pertaining to respondents’ relationships, education, parenting, community engagement, and labour
market experiences (Harris 2013). Finally, Wave IV data were collected between 2008 and 2009 from 15,701 respondents from the original Wave I sample who were now between 24 and 32 years of age. Overall, the focus of the Add Health study has been on identifying how long-term trajectories of social and health outcomes over the life-course are affected by factors during adolescence.

The Add Health data were used in this thesis, because no comparable data sets of this quality (in terms of its measures and its large sample of individuals processed through the criminal justice system) were found to be available in Canada.\(^\text{17}\) These data have been made available in two forms: a restricted-use data set and a public-use data set. The restricted-use data were used for this study, as it offered a larger sample size and significantly more data than those offered by the public-use data. Access to the restricted-use data required applying to the Carolina Population Centre/University of North Carolina at Chapel Hill, and then entering into a restricted-use data contractual agreement with Add Health. The University of Guelph’s Research Ethics Board has approved this contract and research project. I have permission to use these restricted Add Health data under the supervision of the principal investigator and my advisor, Dr. William L. O’Grady.

\(^\text{17}\) While the Canadian National Longitudinal Survey of Children and Youth (NLSCY) was available, this survey did not contain the necessary variables to answer the research questions of this study. Specifically, the NLSCY contained self-report questions on general delinquency, but did not ask respondents whether they had plead guilty to a crime in court, been convicted of a crime in court, or if they had been formally processed through the criminal justice system. Therefore, because the study at hand seeks to understand reintegration and desistance using a sample of individuals with criminal records, the Add Health data were chosen over the NLSCY because they contained an offender subsample within the broader sample.
The Analytical Sample

This cross-sectional study uses Wave IV of the Add Health restricted-use data that includes a subset of individuals who had previously been convicted of, or plead guilty to, a crime in adult court (at age 18 or over) and sentenced to a period of probation or incarceration. Retrospective data on self-reported crime, criminal convictions, and punishment were used to draw the analytical sample for this study. In Wave IV, respondents were asked “Have you ever been convicted of or pled guilty to any charges other than a minor traffic violation?” The final analytical sample for the current study is 921 individuals who answered “yes” to this question and were convicted as adults over the age of 18 and sentenced to either a period of probation or incarceration.

This cross-sectional study uses Wave IV data to examine ex-offenders during the period of young adulthood. Unlike emerging adulthood (ages 18 to 25) where individuals are continuing to complete their education or find employment, young adulthood is a developmental period defined by Arnett (2000) as beginning in the late twenties and early thirties when individuals have established their social roles, relationships, and careers in society. A prior study by Salvatore and Taniguchi (2012) utilized a cross-sectional design with Wave III of the Add Health data when respondents were transitioning into period of emerging adulthood. More recently, a study by Beaver et al. (2015) used Wave IV of the Add Health data to examine the relationship between psychopathic traits and criminal justice outcomes using a nationally representative sample of over 15,000 respondents. This study will move beyond past research by focusing on ex-offenders as they reintegrate back into society during young adulthood. A cross-sectional study was,
therefore, chosen because Wave IV of the Add Health data was the only wave of data collected from respondents during young adulthood.

Demographic statistics for the full sample are presented in Table 4.1. As evident,

| Table 4.1: Demographic Statistics for the Full Sample (n=921) |
|-----------------|-------|--------|------|-----|-----|
| Variable        | N   | Mean (𝑥) and/or (%) | SD (s) | Min | Max |
| Age             | 921 | 29.02  | 1.78  | 25  | 34  |
| Sex:            |      |        |       |     |     |
| Male            | 658 | 71.5%  | --    | --  | --  |
| Female          | 263 | 28.5%  | --    | --  | --  |
| Race:           |      |        |       |     |     |
| White (1=White) | 536 | 58%    | --    | 0   | 1   |
| Black (1=Black) | 231 | 25%    | --    | 0   | 1   |
| Other Race (1=Other) | 154 | 17%    | --    | 0   | 1   |
| Employment Status (1=Employed) | 814 | 77%    | --    | 0   | 1   |
| Housing Status (1=Has Housing) | 641 | 70%    | --    | 0   | 1   |
| Education Level: |      |        |       |     |     |
| No HS Diploma   | 96  | 10.4%  | --    | --  | --  |
| HS Diploma or Beyond (Post-Secondary Degree) | 825 | 89.6%  | --    | --  | --  |
| Relationship Status: |      |        |       |     |     |
| Single          | 655 | 71.1%  | --    | --  | --  |
| Married or Cohabiting | 129 | 28.9%  | --    | --  | --  |
| Offending History |      |        |       |     |     |
| Number Interviewed in Prison | 921 | 1 %    | --    | 0   | 1   |
| Age when Convicted | 910 | 22.93  | 3.39  | 18  | 32  |
| Time (in years) since Conviction | 910 | 6.09   | --    | --  | --  |
| Types of offences convicted for: |      |        |       |     |     |
| Property Crime  | --  | 10.5%  | --    | --  | --  |
| Fraud           | --  | 2.6%   | --    | --  | --  |
| Violent Crime   | --  | 8.5%   | --    | --  | --  |
| Alcohol-Related Offences/DUI | --  | 31.5%  | --    | --  | --  |
| Drug Crime      | --  | 19.2%  | --    | --  | --  |
| Other Offences  | --  | 27.8%  | --    | --  | --  |
| Type of punishment rendered: |      |        |       |     |     |
| Probation       | 523 | 56.8%  | --    | --  | --  |
| Imprisonment    | 349 | 37.9%  | --    | --  | --  |

the sample was roughly 70 % male and 30% female, with the average age being 29 years.
Whites (58%) made up most of the sample, followed by Blacks (25%) and then persons of other races (Hispanics, Native Americans, and Asians) who comprised the remaining 17%. In terms of education levels, most respondents (close to 90%) reported having a high school diploma or a post-secondary degree. Only about 10% of individuals lacked a high school diploma.

An examination of respondents’ criminal histories reveals that this sample is comprised of individuals who self-reported committing, and having been convicted for, a variety of felony and misdemeanor crimes. Most respondents in this study were originally convicted for alcohol-related offences—such as driving under the influence of alcohol—other offences (a residual category), or drug offences. Few individuals reported being convicted for fraud, property crime, or violent crime. Respondents’ mean age when convicted was 23 years. By Wave IV, just over 6 years had passed since respondents’ convictions occurred. Just under two-thirds of the punishments rendered for these crimes were sentences of probation (56.8%), followed by just over one-third for sentences of imprisonment (37.9%).

It should be noted that the prisoner subsample is not entirely reflective of US state and federal prison populations. Based on the most recently available statistics collected

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18 In the US, Congress has the legislative authority to enact federal laws which govern the nation. Federal criminal laws—both felonies and misdemeanors—are set out in Title 18 (Chapters 1 through 123) of the United States Code. According to Amendment X of the US Constitution, states are also allocated power to draft their own independent laws. As such, what is defined as a felony or misdemeanor varies between each state. In the US, felonies are more serious crimes and carry sentences of one year or more, whereas misdemeanors are less serious crimes with sentences of less than one year (United States Department of Justice, N.D.). In Canada, a felony would equate to an indictable offence, while a misdemeanor would equate to a summary offence. In Wave IV, Add Health does not indicate whether these offences were under federal or state jurisdiction, nor whether the individuals had violated federal or state law.
by the US Bureau of Justice Statistics (2015) in 2014, state and federal correctional populations were 93% male and 7% female. The mean age of these populations fell between 30 and 34 years of age, and is similar to the mean age of the analytical sample of this study. In terms of race, most incarcerated persons in US state and federal facilities were Black (36%), followed by Whites (34%), and Other Races (31%) (Hispanic, Native Americans, and Asians). Moreover, just over 85.9 million criminal record histories\textsuperscript{19} are contained in both state repositories and the Interstate Identification Index which is managed by the Federal Bureau of Investigation (US Department of Justice, 2015). In Wave IV of the Add Health data, only about 6% (or n=921) of the entire sample of 15,701 respondents self-reported having a criminal record. The remaining respondents either legitimately skipped or refused to answer whether they had ever been convicted of or plead guilty to a crime in the survey.

**Measures**

This dissertation uses several key independent, dependent, and control variables from the Wave IV data. The main independent variables are self-control and informal social control. The seven dependent variables exploring respondents’ participation in criminal activity and substance use at Wave IV include: general crime, property crime, violent crime, drug crime, financial crime, alcohol consumption, and marijuana use. Finally, this study will control for the following demographic correlates of crime: age, sex, and race/ethnicity as all have been shown to be correlates of crime and/or

\textsuperscript{19} This figure is based on the number of active criminal records across the United States in 2014, as identified by the Department of Justice (2015).
involvement with the criminal justice system (cf. Pratt et al. 2016; Nedelec and Beaver 2014; Craig and Foster 2013)

**Self-Control.** The GTC proposes that individual differences—in terms of levels of self-control—exist between individuals in their propensity for crime and deviance. Gottfredson and Hirschi (1990) argue that individuals with low self-control tend to engage in risky, impulsive, and physical actions in order to fulfill their short-term pleasures. Exactly how self-control should be operationalized, however, has been debated in the criminological literature. In presenting their general theory, Gottfredson and Hirschi (1990) argue vehemently that behavioural measures of self-control are superior to attitudinal measures, as specific behaviours serve as key indicators of this concept. Some scholars remain committed to using behavioural indicators for measuring self-control (Connolly and Beaver 2014; Donner and Jennings 2014; Hay, Meldrum, and Piquero 2013; Na and Paternoster 2012; Gottfredson 2006; Marcus 2003).

Other scholars, however, argue that cognitive or attitudinal measures of self-control are more valid because of their focus on everyday exertions of self-control instead of various behaviours (Malouf et al. 2014; Grasmick et al. 1993). As such, these measures purportedly avoid the tautological critique of using behavioural measures—namely, that low self-control (as manifested in criminal, antisocial, and risky actions) causes low self-control. A large proportion of research has tested the GTC using cognitive/attitudinal measures of self-control (Fox, Nobles, and Fisher 2016; Turanovic, Reisig, and Pratt 2015; Nedelec and Beaver 2014; Grasmick et al. 1993).

Despite this methodological division, and the fact that neither measure has been deemed to be accepted as being the most valid, some studies have tested self-control
using both types of measures (cf. Zimmerman et al. 2015; Burt et al. 2014; Tittle et al. 2003). Interestingly, research illustrates that both measures have similar effects on crime and analogous behaviour (Pratt and Cullen 2000). Therefore, given the state of existing research, one measure is arguably no better than the other for explaining criminality. For the current study, various cognitive/attitudinal measures from two reliable self-control scales—specifically, the Grasmick et al. (1993) and Beaver et al. (2009) self-control scales—will be used because identical, or nearly identical, measures of self-control from these scales were available in Wave IV of the restricted-use Add Health data.

The composite measure of self-control used in this study is comprised of 11 items from Wave IV. These items questioned respondents’ proclivity for risk-taking, shortsightedness, impulsivity, temperament, and self-centeredness. Descriptive statistics for these individual items are found in Table 4.2. All items had a range of 1 to 5 (1=strongly agree to 5=strongly disagree), and were then summed together to create this standardized composite measure of self-control ($\bar{x}=36.33$, $s=5.46$). Each item had equal weight in this scale, and lower values on the self-control scale represent lower levels of self-control.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean ($\bar{x}$)</th>
<th>SD(s)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I like to take risks.</td>
<td>2.74</td>
<td>1.02</td>
<td>1-5</td>
</tr>
<tr>
<td>2. I go out of my way to avoid having to deal with problems in my life.</td>
<td>3.32</td>
<td>1.01</td>
<td>1-5</td>
</tr>
<tr>
<td>3. When making a decision, I go with my 'gut feeling' and don't think much about the consequences of each alternative.</td>
<td>3.20</td>
<td>1.10</td>
<td>1-5</td>
</tr>
<tr>
<td>4. I live my life without much thought for the future.</td>
<td>3.70</td>
<td>.95</td>
<td>1-5</td>
</tr>
<tr>
<td>5. I am the life of the party.</td>
<td>2.65</td>
<td>.99</td>
<td>1-5</td>
</tr>
<tr>
<td>6. I get angry easily.</td>
<td>3.33</td>
<td>1.07</td>
<td>1-5</td>
</tr>
<tr>
<td>7. I am not interested in other people's problems.</td>
<td>3.73</td>
<td>.79</td>
<td>1-5</td>
</tr>
<tr>
<td>8. I get upset easily.</td>
<td>3.40</td>
<td>1</td>
<td>1-5</td>
</tr>
<tr>
<td>9. I get stressed out easily.</td>
<td>3.26</td>
<td>1.04</td>
<td>1-5</td>
</tr>
<tr>
<td>10. I lose my temper.</td>
<td>3.47</td>
<td>1.01</td>
<td>1-5</td>
</tr>
<tr>
<td>11. I am not really interested in others.</td>
<td>3.45</td>
<td>.99</td>
<td>1-5</td>
</tr>
</tbody>
</table>
To assess the reliability and predictive validity of this self-control scale, Cronbach’s alpha and the zero-order correlations between self-control and each dependent variable were analyzed. In terms of reliability, this scale had a Cronbach’s alpha value of .69, indicating that this composite measure of self-control had acceptable internal consistency. In determining whether the scale has predictive validity, it is necessary to examine the correlation coefficients between the predictor and each of the dependent variables (Cronbach and Meehl 1955). This scale was weakly correlated with all dependent variables except for financial crime ($r = -0.06, p < .10$). Self-control was significantly associated with general crime ($r = -0.18, p < .01$), property crime ($r = -0.12, p < .01$), violent crime ($r = -0.17, p < .01$), drug crime ($r = -0.11, p < .01$), alcohol consumption ($r = -0.08, p < .01$), and marijuana use ($r = -0.19, p < .01$). The above analyses demonstrate that the composite measure of self-control is reliable and has adequate predictive validity indicated by its negative relationship to, and weak association with, the predictor variables. This is consistent with other criminological research (e.g., Tangney et al. 2012) which has found that significant weak correlations (in the hypothesized direction) between predictors and dependent variables yielded modest predictive validity.

**Informal Social Control.** Sampson and Laub (1993) and Laub and Sampson (2003) argue that past trajectories of antisocial behaviour during childhood and adolescence can be changed through various life-course transitions or “turning points” in adulthood which are conducive to conventional, law-abiding behaviour. Traditionally, most research has tested the independent effects of various social controls on criminality (Bersani and DiPietro 2016; Theobald and Farrington 2011; Laub and Sampson 2003; Wright et al. 2001; Sampson and Laub 1993). However, some recent studies (Forkner
2010; Doherty 2006) have taken the logical step of examining the comprehensive effect of multiple social bonds on the desistance process. A study by Forkner (2010), for example, constructed a 4-item composite social connection scale to analyze the simultaneous effects of church attendance, marriage, employment, and attending school on recidivism. Forkner’s (2010) results revealed that this measure of social connection did not predict subsequent re-offending over the follow-up period. Doherty (2006), however, merged Sampson and Laub’s (1993) original measures of marital attachment, job stability, and military service into a composite measure of informal social control and found that increased social integration decreased re-offending among the Glueck men.

Despite the mixed support for composite measures of informal social control, this study will adopt a version of Doherty’s (2006) binding life event scale to capture individuals’ overall degree of informal social control at Wave IV. While Doherty tested her binding life event scale on the Glueck data that were originally collected around 1940 and used in Unraveling Juvenile Delinquency (1950), it is necessary to use this composite measure of informal social control in order to establish if it can explain crime and substance use on contemporary samples of offenders in the US. This validated scale from the literature is composed of a various binary social bonds, whose scores are then summed together to obtain an individual’s total degree of informal social control (Doherty 2006:816). The binding life event scale used in this study is comprised of 4-items which assessed the cumulative effect of housing stability, employment, education, and relationship status (being married or cohabiting) on individuals since completing
In Wave IV, respondents were asked, “Where do you live now? That is, where do you stay most often?” Responses ranged from ‘your parents’ home’, ‘another person’s home’, ‘your own place (apartment, house, trailer, etc.)’, ‘group quarters (dormitory, barracks, group home, hospital, communal home, prison or penitentiary, etc.)’, ‘homeless (measured as no regular place to stay)’, and ‘other.’ The dummy variable Housing Stability was constructed based on the definition of housing used by the Canadian Observatory on Homelessness (COH). According to the COH (2012:1), homelessness refers to “the situation of an individual or family without stable, permanent, appropriate housing, or the immediate prospect, means and ability of acquiring it.” Although individuals may have a place to stay, it is often provisional or temporary accommodation—for example, through interim housing or short-term rental agreements, with family or friends, or in an institution such as a prison, medical or mental health institution, group home, or treatment center (COH 2012). This recoded variable summed up the number of respondents who have stable housing (live in “their own place”) and those who characterized by housing instability (live at “your parents’ home”, “another person’s home”, “group quarters”, are “homeless”, or “other”). Responses were dummy coded ‘0=Housing Instability’ and ‘1=Housing Stability.’

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It should be noted that this scale differs slightly from Doherty’s (2006) in two respects. First, this study uses raw scores to quantify how many life events each respondent is currently experiencing, with more total life events equating to higher informal social control. Doherty (2006), however, elected to convert the raw scores into proportions so that respondents with a higher proportion of life events had higher social control. Whether raw scores or proportions are used in the binding life event scale, Doherty (2006:817) found that both produced nearly identical results. Second, the scale in this study will not examine military service, but will consider the effects of housing stability and education—both of which are pivotal to successful reintegration (Mears et al. 2013).
In Wave IV, respondents were asked, “Are you currently working for pay at least 10 hours a week?” Responses were dummy coded ‘0=No’ and ‘1=Yes.’ The dummy variable Employment sums up the number of individuals currently employed and currently unemployed. Respondents were also asked in Wave IV, “What is the highest level of education that you have achieved to date?” This measure of education is a dummy variable summing up the number of respondents with an education (high school or beyond) and those with no education (has no high school diploma or post-secondary degree). Responses were dummy coded ‘0=No High School Diploma’ and ‘1=High School Diploma or Beyond (Post-Secondary Degree).’ The reason for transforming education into a dummy variable is two-fold: 1) research corroborates that a large proportion of offenders who drop out of high school are at a greater risk of recidivating (Lockwood et al. 2012); and, 2) the effect of having a high school diploma or post-secondary degree on criminal behaviour is relatively similar (Lockwood et al. 2012), hence why these two types of education could be placed in the same category. Finally, the dummy variable Relationship Status was constructed using a Wave IV question asking respondents, “Are you currently married to {initials of partner}? and “Are you currently cohabiting with {initials of partner}?” Responses for both variables were dummy coded ‘0=No’ and ‘1=Yes.’ This dichotomous variable distinguishes between respondents who are married or in a cohabiting relationship and those respondents not married or not in a cohabiting relationship.

Descriptive statistics for the binding life event scale are found in Table 4.3. The scale ranges from 0 to 4 and is based on the total number of life events an individual is currently experiencing. Lower scores on this scale represent lower levels of overall
informal social control. A respondent who is uneducated, unemployed, lacks stable housing, and is not in a relationship, for example, would have no informal social control (zero life events) according to this measure. In contrast, an individual with an education (a high school diploma and/or a post-secondary degree), a job, stable housing, and who is in a relationship would have the strongest informal social control (four life events) according to this measure.

<table>
<thead>
<tr>
<th>Number of Binding Life Events</th>
<th>Score</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four of four</td>
<td>4</td>
<td>151</td>
<td>16.4%</td>
</tr>
<tr>
<td>Three of four</td>
<td>3</td>
<td>329</td>
<td>35.7%</td>
</tr>
<tr>
<td>Two of four</td>
<td>2</td>
<td>234</td>
<td>25.4%</td>
</tr>
<tr>
<td>One of four</td>
<td>1</td>
<td>89</td>
<td>9.7%</td>
</tr>
<tr>
<td>Zero of four</td>
<td>0</td>
<td>11</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

The predictive validity of the binding life event scale was evaluated in the same manner as the self-control scale—specifically, through an examination of the correlations between this scale and the dependent variables. With the exception of selling drugs ($r = -0.03, p > .10$), informal social control was significantly correlated with general crime ($r = -0.14, p < .01$), property crime ($r = -0.10, p < .01$), violent crime ($r = -0.12, p < .01$), financial crime ($r = -0.13, p < .01$), alcohol consumption ($r = -0.13, p < .01$), and marijuana use ($r = -0.11, p < .01$). Again, even though the size of the correlations between the predictor and each dependent variable are small and weak, they do demonstrate modest predictive validity as has been found in other criminological research (e.g., Tangney et al. 2012). Therefore, the scale used in this study was adopted from Doherty (2006) and appears to have predictive validity based on its relationship to the dependent variables.
**General Crime.** In Wave IV, respondents were asked to self-report their involvement in numerous types of crimes such as theft, vandalism, drunk driving, selling drugs, using physical force with or without a weapon, writing bad cheques, and using someone’s credit card without permission. In this study, general crime is a composite scale made up of 11 items which have been used in other research using the Add Health data (e.g., Salvatore and Taniguchi 2012; Boisvert 2009). Descriptive statistics for these subscale items are located in Table 4.4. As these statistics show, the means for each item are very low indicating that many respondents refrained from participating in these unlawful activities at Wave IV. These 11 items were coded from 0 to 3 (0=Never, 1=1 or 2 times, 2=3 or 4 times, and 3=5 or more times) and were summed together to create a composite measure of general crime ($\bar{x}=1.01, s=2.07$). Lower values on the general crime scale reflect lower levels of general crime. The distribution for general crime was positively skewed with a low mean and most values falling near zero. Despite the fact that many respondents reported little to no involvement in crime—hence, the low means for the individual crime measures—other research using the Add Health data have used these measures in constructing composite measures of crime and delinquency given the relatively large sample size (e.g., Beaver et al. 2016; Beaver et al. 2015; Barnes et al. 2014; Boisvert et al. 2009).

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21 One of the major problems with the literature using these measures from the Add Health data has been the failure of scholars to report the means for individual items comprising their composite crime/delinquency scales. Most studies in the literature have simply reported the overall mean of their crime/delinquency scale (e.g., Wright et al. 2017; Beaver et al. 2016; Pratt et al. 2016; Ranapuwala, Casteel, and Peek-Asa 2016; Beaver et al. 2015; Turanovic, Reisig, and Pratt 2015; Barnes et al. 2014; Boisvert et al. 2009). Only one unpublished doctoral dissertation by Boisvert (2009:98) was found which specified the separate means for some of the crime measures found in Table 4.4.
Table 4.4: Descriptive Statistics for Items in the Measurement of General Crime

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean ((\bar{x})) and/or ((%))</th>
<th>SD(s)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In the past 12 months, how often did you deliberately damage property that didn't belong to you?</td>
<td>.08 (7.1%)</td>
<td>.31</td>
<td>0-3</td>
</tr>
<tr>
<td>2. In the past 12 months, how often did you steal something worth more than $50?</td>
<td>.06 (4.9%)</td>
<td>.32</td>
<td>0-3</td>
</tr>
<tr>
<td>3. In the past 12 months, how often did you go into a house or building to steal something?</td>
<td>.03 (1.9%)</td>
<td>.20</td>
<td>0-3</td>
</tr>
<tr>
<td>4. In the past 12 months, how often did you use or threaten to use a weapon to get something from someone?</td>
<td>.02 (1.4%)</td>
<td>.16</td>
<td>0-3</td>
</tr>
<tr>
<td>5. In the past 12 months, how often did you sell marijuana or other drugs?</td>
<td>.22 (11.1%)</td>
<td>.69</td>
<td>0-3</td>
</tr>
<tr>
<td>6. In the past 12 months, how often did you steal something worth less than $50?</td>
<td>.09 (6.9%)</td>
<td>.38</td>
<td>0-3</td>
</tr>
<tr>
<td>7. In the past 12 months, how often did you take part in a physical fight where a group of your friends was against another group?</td>
<td>.09 (8.2%)</td>
<td>.33</td>
<td>0-3</td>
</tr>
<tr>
<td>8. In the past 12 months, how often did you buy, sell, or hold stolen property?</td>
<td>.09 (9.5%)</td>
<td>.38</td>
<td>0-3</td>
</tr>
<tr>
<td>9. In the past 12 months, how often did you use someone else's credit card, bank card, or automatic teller card without their permission or knowledge?</td>
<td>.03 (1.8%)</td>
<td>.20</td>
<td>0-3</td>
</tr>
<tr>
<td>10. In the past 12 months, how often did you deliberately write a bad check?</td>
<td>.05 (3.4%)</td>
<td>.28</td>
<td>0-3</td>
</tr>
<tr>
<td>11. In the past 12 months, how often did you get into a serious physical fight?</td>
<td>.14 (11.9%)</td>
<td>.41</td>
<td>0-3</td>
</tr>
</tbody>
</table>

Note: Percentages refer to the proportion of individuals reporting having engaged in a particular criminal act.

The reliability of the general crime scale was assessed using Cronbach’s alpha and the zero-order correlations between this scale and the other dependent variables. Reliability estimates showed an acceptable level of internal consistency with a Cronbach’s alpha of .69. General crime was also positively and significantly correlated with two other dependent variables: alcohol consumption (\(r = .31, p < .01\)) and marijuana use (\(r = .09, p < .05\)). Overall, these analyses suggest that this measure of general crime is both reliable and valid.
Crime Subtypes. In order to inspect how each independent variable affects different types of crime, this study breaks down general crime into four major offence subtypes: property, violent, drug, and financial crime. It should be noted that, like the distribution for general crime, the distributions for each of these crime subtypes were all positively skewed with low means and most values falling toward zero which is consistent with other research using the Add Health data set (see the above discussion on the general crime measure).

Property Crime. This composite scale was constructed by summing up responses to 5 items ($\bar{x} = .34, s=1.06$) asking respondents “In the past 12 months, how often did you ... ‘deliberately damage property that didn't belong to you?’, ‘steal something worth more than $50?’, ‘go into a house or building to steal something?’, ‘steal something worth less than $50?’, and ‘buy, sell, or hold stolen property?’” This scale had a Cronbach’s alpha value of .69.

Violent Crime. This composite scale was constructed by summing up responses to 3 items ($\bar{x} = .33, s=.84$) asking respondents “In the past 12 months, how often did you ... ‘use or threaten to use a weapon to get something from someone?’, ‘take part in a physical fight where a group of your friends was against another group?’, and ‘how often did you get into a serious physical fight?’” This scale had a Cronbach’s alpha of .57.

Drug Crime. This variable is comprised of a single item ($\bar{x} = .22, s= .69$) asking respondents “In the past 12 months, how often did you sell marijuana or other drugs?

Financial Crime. This is a 2 item composite scale ($\bar{x} = .07, s=.38$) which was constructed by summing up responses asking respondents “In the past 12 months, how often did you ... ‘deliberately write a bad cheque’ and ‘use someone else's credit card,
bank card, or automatic teller card without their permission or knowledge?’” This scale had a Cronbach’s alpha of .36.

**Alcohol Consumption.** The effects of self-control and informal social control on alcohol consumption are of interest to this study. Alcohol consumption is a composite scale constructed by summing up responses to 3 items ($\bar{x}=7.68$, $s= 4.22$) asking respondents “During the past 12 months . . . ‘on how many days did you drink alcohol?’, ‘on how many days did you drink five or more drinks in a row?’, and ‘on how many days have you been drunk or very high on alcohol?’” These 3 items were coded from 0=Never, 1=1 or 2 days in the past 12 months, 2=once a month or less (3 to 12 days in the past 12 months), 3=2 or 3 days a month, 4=1 or 2 days a week, 5=3 to 5 days a week, to 6= every day or almost every day). As evident by an inspection of the histogram and the skewness and kurtosis statistics, the distribution for alcohol consumption was relatively normal.22 These measures are identical to those used by Baker (2010) when examining the Add Health data. This scale had a Cronbach’s alpha of .86.

**Marijuana Use.** The roles of self-control and informal social control on marijuana use are also of significance to this study. Marijuana use is a single item measure ($\bar{x}= 2.18$, $s= 2.35$) asking respondents “During the past 12 months, on how many days did you use marijuana?” This item was coded from 0=Never, 1=1 or 2 days in the past 12 months, 2=once a month or less (3 to 12 days in the past 12 months), 3=2 or 3 days a month, 4=1 or 2 days a week, 5=3 to 5 days a week, to 6=every day or almost every day). The distribution for marijuana use was relatively flat (based on the kurtosis

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22 Statistical output available by request.
value of -1.31) and non-symmetrical with the largest proportion of values being zero (39.7%).

Control Variables. This study will control for three demographic correlates of crime: age, sex, and race/ethnicity. Age was a continuous variable and was measured in years. Sex was a dichotomous dummy variable distinguishing between males and females in the sample and was coded 0=female, 1=male. In this study, males will serve as the reference group. Finally, race/ethnicity consisted of three separate dichotomous dummy variables of all respondents belonging to each of the following racial/ethnic categories: White, Black, and Other Race (Hispanic, American Indian/Native American, and Asian/Pacific Islander). Because there were very few Hispanics (12.5%), American Indian/Native Americans (1.3%), and Asian/Pacific Islanders (2.9%), these three categories were combined to form the Other Race dummy variable. This has been done in recent research using the Add Health data (Beaver et al. 2015). In polytomous dummy variable regression where a dummy contains more than two categories, only \( j-1 \) dummy variables are required in the regression model to capture the necessary information between the categories; the excluded category or dummy variable becomes the reference group to which the other dummies are compared (Fox 2014; Hardy 1993). Hardy (1993) recommends selecting the category with the largest number of cases to function as the reference group. In this study, the dummy variable “White” (comprising 58% of the

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23 Statistical output available by request.
24 \( j \) represents the number of categories in an observation of interest. In this study, there are three race/ethnicity categories \( (j=3) \). Thus, \( j(3)-1=2 \) indicates that only two dummy variables (Black and Other Race) are required to make a comparison between these categories and the reference group, White.
sample) will serve as the reference group to which Blacks and Other Races will be compared.

**Descriptive Statistics**

Table 4.5 contains descriptive statistics for all IVs and DVs under study. Regarding the two main IVs being tested in this study, the number of valid cases for self-control and informal social control was 920 and 814, respectively. As illustrated, respondents in the full sample possessed moderate levels of self-control ($\bar{x} = 36.33$, $s = 5.46$, range 15-53) and informal social control ($\bar{x} = 2.64$, $s = .95$, range 0-4). In Wave IV, just over one-third of respondents (34.8%) had engaged in general crime ($\bar{x} = 1.01$, $s = 2.07$, range 0-20). Just under one-fifth of respondents (15.9%) reported engaging in property crime ($\bar{x} = .34$, $s = 1.06$, range 0-11). Eighteen-and-a-half percent of the sample reported committing a violent criminal act ($\bar{x} = .33$, $s = .84$, range 0-8), while about one-tenth (11.1%) reported engaging in drug crime ($\bar{x} = .22$, $s = .69$, range 0-3). Only 4.5% of the sample reported being involved in financial crime ($\bar{x} = .07$, $s = .38$, range 0-5). For the two measures of substance use, all (100%) respondents reported consuming alcohol ($\bar{x} = 7.68$, $s = 4.22$, range 1-18), while two-thirds (60.1%) had used marijuana ($\bar{x} = 2.18$, $s = 2.35$, range 0-6). In terms of general crime and each crime subtype, these figures show that the full sample is comprised mostly of less serious recidivists, most of whom have desisted from criminality since their first criminal conviction. In considering the extent of alcohol use among the sample, the range for alcohol consumption (1-18) shows that all respondents used alcohol to some degree. Finally, while marijuana was used by two-thirds of the sample, the mean for this variable shows that respondents used marijuana, on average,
about once a month or less (3 to 12 days in the past 12 months) based on the coding of the variable.

Table 4.5: Descriptive Statistics of all IVs and DVs for the Full Sample of Individuals with Criminal Histories in Wave IV of the Add Health Study

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Mean ((\bar{x})) and/or (%)</th>
<th>SD(s)</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Control</td>
<td>920</td>
<td>36.33</td>
<td>5.46</td>
<td>15</td>
<td>53</td>
</tr>
<tr>
<td>Informal Social Control</td>
<td>814</td>
<td>2.64</td>
<td>.95</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Crime</td>
<td>858</td>
<td>1.01 (34.8%)</td>
<td>2.07</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>Property Crime</td>
<td>919</td>
<td>.34 (15.9%)</td>
<td>1.06</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Violent Crime</td>
<td>859</td>
<td>.33 (18.5%)</td>
<td>.84</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Drug Crime</td>
<td>920</td>
<td>.22 (11.1%)</td>
<td>.69</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Financial Crime</td>
<td>920</td>
<td>.07 (4.5%)</td>
<td>.38</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Alcohol Consumption</td>
<td>709</td>
<td>7.68 (100%)</td>
<td>4.22</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>Marijuana Use</td>
<td>634</td>
<td>2.18 (60.1%)</td>
<td>2.35</td>
<td>0</td>
<td>6</td>
</tr>
</tbody>
</table>

Note: Percentages refer to the proportion of individuals reporting having engaged in a particular criminal or deviant act.

Note: The minimum and maximum values for each range is based on the actual values observed in the data.

Plan of Analysis

Using SPSS, this study will first proceed by employing a generalized linear model (GLM) to examine the effects of informal social control and self-control on general crime, each crime subtype, and marijuana use for the full sample. In particular, this study will use a GLM called negative binomial maximum likelihood (NB2 MLE) with a natural log link function to estimate the parameters of the models (Cameron and Trivedi 1998). This statistical technique was borne out of the Poisson regression model and is used for modelling count data and when the distribution of the dependent variable is non-normal and right-skewed (Hilbe 2007). The above response variables are not only positively skewed\(^2\), but they are also counts of rare events such as the number of crimes committed

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\(^{2}\) It should be noted that an attempt was made to log transform these non-normal dependent variables, in the hopes of normalizing the distributions. However, even after the transformation of the variables, the distributions remained skewed. Output is available from the author by request.
and the number of times using marijuana. While Poisson distributions assume equidispersion or equality between the mean and conditional variance, negative binomial algorithms are used in cases of overdispersion—that is, distributions where the conditional variance of the dependent variable is much larger than its mean (Hilbe 2007; Cameron and Trivedi 1998). In this study, the distributions for general crime, each crime subtype, and marijuana use were all overdispersed and each variable’s variance exceeds its mean.\textsuperscript{26} Second, this study will use ordinary least squares (OLS) regression to examine the effects of each predictor on alcohol consumption for the full sample. Because most reintegration research tends to study either samples of probationers or prisoners (Duwe 2015; Malouf et al. 2014; De Li and MacKenzie 2003), this study will also separate the full sample into a probationer subsample and prisoner subsample during all analyses to capture any between-group differences.

For general crime, marijuana use, and alcohol consumption five regression models will be presented. Model 1 will explore the main effect of self-control on each dependent variable. Model 2 will add relevant demographic controls in addition to self-control. Model 3 will analyze the main effect of informal social control on each outcome variable. Model 4 will add relevant demographic controls in addition to informal social control. Model 5 will test both self-control and informal social control concurrently with controls, in order to assess which theory is the strongest predictor of each dependent variable. Finally, for each of the crime subtypes, all models will contain both self-control and informal social control along with controls. Stepwise regression will not be used in these models, because this study is most interested in the total effects of the key

\textsuperscript{26} Variance statistics are not reported in this chapter, but are available upon request.
predictors on each crime subtype. Parameters for all NB2 MLE models will be interpreted in the form of incident rate ratios (IRR), which indicate the probability of an event occurring (Pratt et al. 2016; Salvatore and Taniguchi 2012; see especially, Hilbe 2007, 2008). SPSS calculates IRR values simply by exponentiated the value of b (Exp (B)). These values are commensurate to “odds ratios” in logistic regression and are interpreted in the same fashion (Hilbe 2008). For instance, an IRR value of .75 indicates that a one-unit change in the predictor is expected to decrease the expected count of the dependent variable by 25%, whereas an IRR value of 1.25 indicates that a one-unit change in the predictor is expected to increase the expected count of the dependent variable by 25%. Parameters for all OLS regressions will be interpreted using traditional regression coefficients—namely, beta (b) and the coefficient of determination ($R^2$).
Chapter 5: Results

This chapter presents findings from 12 negative binomial (NB) and OLS regression analyses on the effects of self-control and informal social control on general crime, four crime subtypes, alcohol consumption, and marijuana use. As noted in the prior chapter, analyses will be conducted for the full sample, the probation subsample, and the imprisoned subsample at Wave IV. The reason for this two-fold: 1) most research has used either a sample of probationers or incarcerated persons; and, 2) to capture any between-group differences in informal social control and self-control. While running the same models for all three groups will involve several different analyses—in terms of the number of tables and write-ups required—it is necessary to do this in order to establish if self-control and informal social control vary by sanction type. This chapter will proceed by reporting the findings from regression analyses for each dependent variable for the full sample, the former probationers, and finally the formerly incarcerated persons.27

Results for the Full Sample

General Crime

Regression results for all NB models for the full sample of ex-offenders are presented in Table 5.1.

27 This study also conducted several interaction analyses to determine if any of the main predictors—namely, self-control and informal social control—or the demographic correlates of crime functioned interdependently in reintegration. A self-control and informal social control interaction product term was created and was tested on general crime, alcohol consumption, and marijuana use. No significant findings from these interactions emerged. Furthermore, interaction terms between each race variable and age, each race variable and sex, and sex and age were also created. Again, no significant interactions emerged from the regressions. As such, research questions 4, 8, and 12 will not be discussed, as there are no significant interaction results to report.
Table 5.1: Negative Binomial Regression Models for the Effects of Self-Control and Informal Social Control on General Crime for the Full Sample

<table>
<thead>
<tr>
<th>IVs</th>
<th>Model 1 (n=756)</th>
<th>Model 2 (n=756)</th>
<th>Model 3 (n=756)</th>
<th>Model 4 (n=756)</th>
<th>Model 5 (n=756)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>SE</td>
<td>IRR</td>
<td>b</td>
<td>SE</td>
</tr>
<tr>
<td>Self-Control</td>
<td>-.07</td>
<td>.01</td>
<td>.93***</td>
<td>-.07</td>
<td>.01</td>
</tr>
<tr>
<td>Informal Social Control</td>
<td>-.27</td>
<td>.08</td>
<td>.76***</td>
<td>-.25</td>
<td>.07</td>
</tr>
<tr>
<td>Controls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.12</td>
<td>.04</td>
<td>.89**</td>
<td>-.12</td>
<td>.04</td>
</tr>
<tr>
<td>Sex (1=Male)</td>
<td>.13</td>
<td>.16</td>
<td>1.14</td>
<td>.18</td>
<td>.16</td>
</tr>
<tr>
<td>Race: Black</td>
<td>.36</td>
<td>.17</td>
<td>1.44*</td>
<td>.28</td>
<td>.18</td>
</tr>
<tr>
<td>Race: Other</td>
<td>-.14</td>
<td>.21</td>
<td>.87</td>
<td>-.10</td>
<td>.21</td>
</tr>
</tbody>
</table>

* P<.05, **P<.01, ***P<.001 (two-tailed test)

Research Question 1: Does Self-Control Predict Post-Release Recidivism (as measured by general crime)?

For the full sample, two NB models (Models 1 and 2) explored the extent to which self-control affected recidivism. Model 1 showed that self-control significantly predicted general crime (IRR= .93, p<.001). Even after including several control variables in Model 2, self-control continued to significantly predict general crime at Wave IV (IRR= .93, p<.001). For each unit increase in self-control, participation in general crime decreased by 7%. Significant control variables in this model were Age (IRR=.89, p<.01) and the race variable Black (IRR=1.44, p<.05). For every additional year in age, there was an 11 % decrease in general crime. This is consistent with the age-crime relationship identified by other academics in the discipline (Gottfredson and Hirschi 2016; Gottfredson and Hirschi 1990; Hirschi and Gottfredson 1983).

Participation and frequency in criminal behaviour peaks during late adolescence and
decreases thereafter. Blacks were also 44% more likely than Whites (the reference group) to be involved in general crime.

Research Question 2: Does Informal Social Control Predict Post-Release Recidivism (as measured by general crime)?

For the full sample, two NB models (Models 3 and 4) captured the effect of informal social control on general crime. Model 3 indicated that informal social control significantly predicted general crime (IRR=.76, p=<.001). When controls were added to Model 4, informal social control continued to significantly predict general crime (IRR=.78, p=<.001). At Wave IV, involvement in general crime decreased by 22% for every one-unit increase in informal social control. In this model, Age (IRR=.89, p=<.01) was significant, showing that for each additional year in age, general crime decreased by 11%.

Research Question 3: Is Self-Control or Informal Social Control a Stronger Predictor of Post-Release Recidivism (as measured by general crime)?

NB regression (Model 5) was used to examine whether self-control or informal social control was a stronger predictor of general crime. As shown in Model 5, when both independent variables were placed in the model together with controls, both self-control (IRR=.94, p=<.001) and informal social control (IRR=.85, p=<.05) were significant predictors of general crime. When the effect sizes of these two theories are compared, informal social control had a stronger effect on general crime than self-control. Again, for every one-unit increase in informal social control, general crime was reduced by 15%.
Like previous models, Age (IRR=.90, p=<.01) remained significant and showed that for each additional year in age, general crime decreased by 10%.

**Crime Subtypes**

Regression results for all NB models for the full sample of ex-offenders are presented in Table 5.2. As noted in the former chapter, stepwise regression will not be used in examining the crime subtypes as the focus is on the total effects of each predictor on each dependent variable.

| Table 5.2: Negative Binomial Regression Models for the Effects of Self-Control and Informal Social Control on Crime Subtypes for the Full Sample |

<table>
<thead>
<tr>
<th>IVs</th>
<th>Property Crime (n=811)</th>
<th>Violent Crime (n=757)</th>
<th>Drug Crime (n=812)</th>
<th>Financial Crime (n=812)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>SE</td>
<td>IRR</td>
<td>b</td>
</tr>
<tr>
<td>Self-Control</td>
<td>-.06</td>
<td>.01</td>
<td>.95***</td>
<td>-.06</td>
</tr>
<tr>
<td>Informal Social Control</td>
<td>-.21</td>
<td>.08</td>
<td>.81**</td>
<td>-.19</td>
</tr>
<tr>
<td>Controls</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.10</td>
<td>.04</td>
<td>.91*</td>
<td>-.16</td>
</tr>
<tr>
<td>Sex (1=Male)</td>
<td>-.01</td>
<td>.15</td>
<td>.99</td>
<td>.58</td>
</tr>
<tr>
<td>Race:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black (1=Black)</td>
<td>.01</td>
<td>.17</td>
<td>.1.01</td>
<td>.56</td>
</tr>
<tr>
<td>Other (1=Other)</td>
<td>.10</td>
<td>.19</td>
<td>1.10</td>
<td>.08</td>
</tr>
</tbody>
</table>

* P<.05, **P<.01, ***P<.001 (two-tailed test)

For property crime, both self-control (IRR=.95, p=<.001) and informal social control (IRR=.81, p=<.01) were significantly and negatively associated with this DV.

When comparing the IRRs for each predictor, it is clear that informal social control was the stronger predictor. Property crime was shown to decline by 19% for every one-unit increase in individuals’ informal social control. This suggests, for the full sample, that lower informal social control predicted greater involvement in property crime than self-control. The sole significant control variable in this model was Age (IRR=.91, p=<.05), where property crime decreased by 9% for each additional year in age.
For violent crime, both self-control (IRR=.94, p=<.001) and informal social control (IRR=.83, p=<.01) were significantly related to violent crime. For the full sample, informal social control had the stronger effect size, where each additional unit increase in informal social control was associated with a 17% decrease in violent criminality. Three control variables—Age, Sex, and Black—were significant in this model. For each additional year in age, violent crime decreased by 15% (IRR=.85, p=<.001). Males were also 78% more likely to be involved in violent crime than females (IRR=1.78, p=<.01). This finding is consistent with existing literature demonstrating that, while the gap in violent crime may be narrowing between males and females, males are still more likely to be involved in violent crime (Steffensmeier et al. 2006). Finally, Blacks were 76% more likely (IRR=1.76, p=<.001) than Whites to be involved in violent crime.

For drug crime, only self-control was significantly associated with this DV (IRR=.95, p=<.001). This suggests that, for the full sample, each one-unit increase in self-control predicted a 5% reduction in drug crime. Informal social control was insignificant in this model (IRR=.99, p=.90). The control variables Age (IRR=.89, p=<.05) and Other Race (IRR=.43, p = <.01) were also significant in this model. For each additional year in age, drug crime decreased by 11%. Similarly, those of other races were 57% less likely than Whites to be involved in drug crime.

Finally, for financial crime, only informal social control (IRR=.58, p=<.001) significantly predicted this DV. This suggests that, as an individual's level of social bonds increased by one-unit, they were 42% less likely to engage in financial crime. The only significant control variable in this model was Sex (IRR=.50, p=<.01). This finding
suggests that males were 50% less likely than females to have engaged in financial crimes.

**Alcohol Consumption**

Research findings and OLS regression coefficients for the full sample of ex-offenders are presented in Table 5.3. Across all models, r-squared values ranged between .00 and .05, indicating that these models explained between 0% and 5% of the variance in the DV. Again, tolerance and VIF values were close to 1 indicating no multicollinearity.

<table>
<thead>
<tr>
<th>Table 5.3: OLS Regression Models for the Effects of Self-Control and Informal Social Control on Alcohol Consumption for the Full Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IVs</strong></td>
</tr>
<tr>
<td><strong>Self-Control</strong></td>
</tr>
<tr>
<td><strong>Informal Social Control</strong></td>
</tr>
<tr>
<td>Controls</td>
</tr>
<tr>
<td><strong>Age</strong></td>
</tr>
<tr>
<td><strong>Sex</strong> (1=Male)</td>
</tr>
<tr>
<td><strong>Race:</strong></td>
</tr>
<tr>
<td><strong>Black</strong> (1=Black)</td>
</tr>
<tr>
<td><strong>Other</strong> (1=Other)</td>
</tr>
<tr>
<td><strong>R²</strong></td>
</tr>
<tr>
<td><strong>Adj. R²</strong></td>
</tr>
</tbody>
</table>

* P<.05, **P<.01, ***P<.001 (two-tailed test)

**Research Question 5: Does Self-Control Predict Post-Release Alcohol Consumption?**

Bivariate (Model 1) and multiple (Model 2) OLS regression were used to assess the relationship between self-control and alcohol consumption for the full sample of ex-offenders. In Model 1, self-control was insignificant ($b=-.04$, $p=.15$) and did not predict alcohol use post-release. With control variables included in Model 2, the effect of self-
control on alcohol consumption was unchanged and remained insignificant \( (b = -.04, p = .18) \). Two control variables—Sex and the race variable Black—were significant in this model. Males were significantly more likely \( (b = 1.35, p < .001) \) than females to use alcohol, while Black persons were significantly less likely \( (b = -1.14, p < .01) \) than Whites to consume alcohol. It should be noted that only Model 2 accounted for variance (4%) in the DV.

**Research Question 6: Does Informal Social Control Predict Post-Release Alcohol Consumption?**

Bivariate (Model 3) and multiple (Model 4) OLS regression were used to assess the effect of informal social control on alcohol consumption for the full sample of ex-offenders. In Model 3, social bonds were significantly and negatively related to alcohol use \( (b = -.40, p < .05) \). With controls added to Model 4, the effect size of informal social control became stronger and this IV continued to significantly predict alcohol use in the hypothesized direction \( (b = -.52, p < .01) \). For every one-unit increase in informal social control, alcohol consumption decreased by about one-half of a unit. Similar to Model 2 above, the control variables Sex \( (b = 1.59, p < .001) \) and the race variable Black \( (b = -1.18, p < .01) \) were significant. These models explained 1% and 5% of the variance in the DV, respectively.

**Research Question 7: Is Self-Control or Informal Social Control a Stronger Predictor of Post-Release Alcohol Consumption?**

Multiple regression (Model 5) was utilized to assess whether self-control or informal social control was the more robust predictor of alcohol consumption. As shown
in Table 5.3, informal social control was significantly and negatively related to alcohol use ($b = -0.46, p = <0.01$), while the effect of self-control was weak and insignificant ($b = -0.02, p = 0.53$). Having strong social bonds appears to be a more significant factor than individual-level traits in reintegration for determining alcohol use. Both Sex ($b = 1.53, p = 0.001$) and the race variable Black ($b = -1.13, p = <0.05$) were significant control variables in this model. Thus, ex-offenders who were White males were more likely to consume greater amounts of alcohol, whereas those who were Black were less likely to consume alcohol. This model explained 5% of the variance in the DV.

**Marijuana Use**

Regression results for all NB models for the full sample of ex-offenders are presented in Table 5.4.

<table>
<thead>
<tr>
<th>Table 5.4: Negative Binomial Regression Models for the Effects of Self-Control and Informal Social Control on Marijuana Use for the Full Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model 1</strong></td>
</tr>
<tr>
<td>(n=558)</td>
</tr>
<tr>
<td><strong>IVs</strong></td>
</tr>
<tr>
<td>Self-Control</td>
</tr>
<tr>
<td>Informal Social Control</td>
</tr>
<tr>
<td>Controls</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Sex (1=Male)</td>
</tr>
<tr>
<td>Race: Black (1=Black)</td>
</tr>
<tr>
<td>Other (1=Other)</td>
</tr>
</tbody>
</table>

* $p<0.05$, **$p<0.01$, ***$p<0.001$ (two-tailed test)
Research Question 9: Does Self-Control Predict Post-Release Marijuana Use?

For the full sample, two NB regression models (Models 1 and 2) assessed the effect of self-control on marijuana use for the full sample. In Model 1, self-control was a significant predictor of marijuana use (IRR=.97, \( p =<.001 \)). In Model 2 which contained demographic control variables, the effect of self-control remained significant and was unchanged (IRR=.97, \( p =<.001 \)). This indicates that, for each additional unit in self-control, marijuana use decreased by 3%. Three control variables were significant in this model: Age (IRR=.96, \( p <.01 \)), the race variable Black (IRR=1.29, \( p <.05 \)), and the race variable Other (IRR=.64, \( p =<.01 \)). Like prior results, each additional year in age decreased marijuana use by 4%. In terms of race, Blacks were 29% more likely than Whites to use marijuana, whereas ex-offenders of other races (Hispanic, Native American, or Asian) were 36% less likely than Whites to use marijuana.

Research Question 10: Does Informal Social Control Predict Post-Release Marijuana Use?

Two NB regression (Models 3 and 4) were utilized to explore the impact of social bonds on marijuana use for the full sample. In Model 3, informal social control was significantly related to marijuana use (IRR=.89, \( p =<.05 \)). When controls were added to Model 4, the effect size of informal social control became insignificant (IRR=.91, \( p =.09 \)). The race variables Black (IRR=1.31, \( p =<.05 \)) and Other (IRR=.65, \( p =<.01 \)) were significant in Model 4. This reveals that Black ex-offenders were 31% more likely than Whites to use marijuana, whereas ex-offenders of other races (Hispanic, Native American, or Asian) were 35% less likely than Whites to use marijuana.
Research Question 11: Is Self-Control or Informal Social Control a Stronger Predictor of Post-Release Marijuana Use?

NB regression (Model 5) was used to assess whether self-control or informal social control was the stronger predictor of marijuana use for the full sample of ex-offenders. In Model 5, which tested the theoretical constructs against one another, only self-control remained a significant predictor of marijuana use (IRR=.97, \( p < .01 \)) while informal social control was insignificant (IRR=.95, \( p = .15 \)). This demonstrates that for each unit increase in self-control, marijuana use decreased by 3%. Again, the race variables Black (IRR=1.27, \( p = .05 \)) and Other (IRR=.63, \( p = .01 \)) remained significant and had nearly the same effects as those in Models 2 and 4.

Results for the Probationer Subsample

General Crime

Regression results for all NB models for the probationer subsample are presented in Table 5.5.

Table 5.5: Negative Binomial Regression Models for the Effects of Self-Control and Informal Social Control on General Crime for the Probation Subsample

<table>
<thead>
<tr>
<th>IVs</th>
<th>Model 1 (n=437)</th>
<th>Model 2 (n=437)</th>
<th>Model 3 (n=437)</th>
<th>Model 4 (n=437)</th>
<th>Model 5 (n=437)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>SE</td>
<td>IRR</td>
<td>b</td>
<td>SE</td>
</tr>
<tr>
<td>Self-Control</td>
<td>-.05</td>
<td>.02</td>
<td>.95**</td>
<td>-.05</td>
<td>.02</td>
</tr>
<tr>
<td>Informal Social Control</td>
<td>-.24</td>
<td>.11</td>
<td>.78*</td>
<td>-.20</td>
<td>.11</td>
</tr>
<tr>
<td>Controls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.16</td>
<td>.05</td>
<td>.85**</td>
<td>-.14</td>
<td>.05</td>
</tr>
<tr>
<td>Sex (1=Male)</td>
<td>.01</td>
<td>.22</td>
<td>1.01</td>
<td>.06</td>
<td>.22</td>
</tr>
<tr>
<td>Race: Black (1=Black)</td>
<td>.46</td>
<td>.22</td>
<td>1.58*</td>
<td>.40</td>
<td>.23</td>
</tr>
<tr>
<td>Other (1=Other)</td>
<td>-.23</td>
<td>.30</td>
<td>.79</td>
<td>-.32</td>
<td>.31</td>
</tr>
</tbody>
</table>

* \( P < .05 \), ** \( P < .01 \), *** \( P < .001 \) (two-tailed test)
Research Question 1a: Does Self-Control Predict Post-Release Recidivism (as measured by general crime)?

To determine if the effect of self-control on recidivism varied by sanction type, two NB regression (Models 1 and 2) analyses were conducted on the subsample of individuals sentenced to probation by the courts. In Model 1, self-control significantly predicted general crime (IRR=.95, \( p = <.01 \)). When controls were added to Model 2, self-control continued to be significantly associated with general crime (IRR=.95, \( p = <.01 \)). Therefore, for probationers, a one-unit increase in self-control decreased general crime by 5%. The only significant control variables in Model 2 were Age (IRR=.85, \( p = <.01 \)) and the race variable Black (IRR=1.58, \( p = <.05 \)). This indicates that for each additional year in age, general crime decreased by 15%. In addition, Blacks were 58% more likely to be involved in general crime than Whites.

Research Question 2a: Does Informal Social Control Predict Post-Release Recidivism (as measured by general crime)?

For the probationer subsample, two NB regression analyses (Models 3 and 4) explored the role of informal social control on recidivism. As shown in Model 3, informal social control significantly predicted general crime (IRR=.78, \( p = <.05 \)) indicating that general crime decreased by 22% for every one-unit increase in informal social control. With controls added to Model 4, informal social control became an insignificant predictor of general crime (IRR=.82, \( p = .07 \)). Only Age (IRR=.87, \( p = <.01 \)) was significant showing that each additional year in age decreased general crime by 13% for probationers. Thus, the effect of this predictor was mitigated by the addition of these demographic controls.
Research Question 3a: Is Self-Control or Informal Social Control a Stronger Predictor of Post-Release Recidivism (as measured by general crime)?

NB regression (Model 5) was used to assess whether self-control or informal social control was a more robust predictor of general crime for probationers. With controls added to the model, self-control was significantly related to general crime (IRR=.95, \( p < .05 \)), while informal social control was insignificant in this model (IRR=.86, \( p = .19 \)). In Model 5, Age (IRR=.86, \( p < .01 \)) was significant revealing that each additional year in age was associated with a 14% decline in general crime. Again, this is consistent with prior research (Gottfredson and Hirschi 2016).

**Crime Subtypes**

Regression results for all NB models for the probationer subsample are presented in Table 5.6. Again, like the full sample, stepwise regression is not used due to the focus on the total effects of the predictors on each crime subtype.

| Table 5.6: Negative Binomial Regression Models for the Effects of Self-Control and Informal Social Control on Crime Subtypes for the Probation Sample |
|---|---|---|---|---|---|---|---|
| IVs | Property Crime (n=461) | Violent Crime (n=461) | Drug Crime (n=461) | Financial Crime (n=461) |
| Self-Control | b | SE | IRR | b | SE | IRR | b | SE | IRR | b | SE | IRR |
| Informal Social Control | -.28 | .11 | .76** | -.11 | .11 | .90 | .13 | .12 | 1.14 | -.02 | .03 | .99 |
| Controls | | | | | | | | | | | | |
| Age | -.15 | .05 | .86** | -.19 | .05 | .83*** | -.18 | .06 | .84** | .07 | .10 | 1.08 |
| Sex (1=Male) | -.14 | .21 | .87 | .61 | .24 | 1.84** | .03 | .24 | 1.03 | -1.04 | .35 | .35** |
| Race: Black (1=Black) | .05 | .23 | 1.05 | .71 | .21 | 2.02*** | .20 | .24 | 1.22 | .94 | .38 | 2.56** |
| Other (1=Other) | .05 | .29 | 1.05 | -.33 | .34 | .72 | -.75 | .43 | .48 | .70 | .53 | 2.01 |

* P<.05, **P<.01, ***P<.001 (two-tailed test)

For property crime, both self-control (IRR=.95, \( p < .01 \)) and informal social control (IRR=.76, \( p < .01 \)) were significantly associated with this DV. Evidently, based on the IRR values, informal social control had a stronger effect on property crime than
self-control. While each one-unit increase in self-control decreased property crime by 5%, a one-unit increase in informal social control for probationers lowered their involvement in property crime by 24%. Similar to the above analyses, Age (IRR=.86, \( p \leq .01 \)) was significant in this model.

For violent crime, neither self-control (IRR=.97, \( p = .10 \)) nor informal social control (IRR=.90, \( p = .30 \)) were significantly related to violent crime for probationers. Age (IRR=.83, \( p = .001 \)), Sex (IRR=1.84, \( p = .01 \)), and the race variable Black (IRR=2.02, \( p = .001 \)) were significant in this model, however. Each additional year in age predicted a 17% decrease in violent crime. Males were also 84% more likely to be involved in violent crime than females. Finally, for race, Blacks were over 102 times more likely than Whites to commit violent crime.

For drug crime, only self-control was significantly related to this DV (IRR=.95, \( p = .01 \)). As such, a one-unit increase in self-control decreased drug crime by 5%. Informal social control was insignificant in this model (IRR=1.14, \( p = .27 \)). Age (IRR=.84, \( p = .01 \)) was the sole significant control, showing that each additional year in age was associated with a 16% decrease in drug crime.

Finally, for financial crime, only informal social control (IRR=.50, \( p = .001 \)) was significantly associated with financial crime. Therefore, as probationers’ increased their informal social control by one-unit, their participation in general crime decreased by 50%. Self-control was an insignificant predictor in this model (IRR=.99, \( p = .65 \)). Only Sex (IRR=.35, \( p = .01 \)) and the race variable Black (IRR=2.56, \( p = .01 \)) were significant control variables associated with financial crime. This suggests that males were 65% less
likely than females to be involved in financial crime. Moreover, Blacks were 156 times more likely to participate in financial crime than Whites.

**Alcohol Consumption**

Research findings and OLS regression coefficients for the subsample of individuals who were sentenced to probation are presented in Table 5.7. R-squared values ranged from .00 to .03 across the five regression models, meaning that the models explained between 0% to 3% of the variance in the DV. Collinearity statistics were also inspected to look for high correlations among predictors. As tolerance and VIF values were close to 1, multicollinearity was not a problem in these models.

<table>
<thead>
<tr>
<th></th>
<th>Model 1 (n=378)</th>
<th>Model 2 (n=378)</th>
<th>Model 3 (n=330)</th>
<th>Model 4 (n=330)</th>
<th>Model 5 (n=330)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IVs</td>
<td>b SE</td>
<td>b SE</td>
<td>b SE</td>
<td>b SE</td>
<td>b SE</td>
</tr>
<tr>
<td>Self-Control</td>
<td>-.01 .04</td>
<td>-.01 .04</td>
<td>-.01 .04</td>
<td>.03 .04</td>
<td>.04</td>
</tr>
<tr>
<td>Informal Social Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Controls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.06 .11</td>
<td>-.03 .12</td>
<td>-.03 .12</td>
<td>-.03 .12</td>
<td>-.03 .12</td>
</tr>
<tr>
<td>Sex (1=Male)</td>
<td>1.21** .47</td>
<td>1.08* .38</td>
<td>1.14* .51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black (1=Black)</td>
<td>-.72 .58</td>
<td>-.72 .62</td>
<td>-.74 .62</td>
<td>-.74 .62</td>
<td></td>
</tr>
<tr>
<td>Other (1=Other)</td>
<td>-.06 .66</td>
<td></td>
<td></td>
<td>-.71 .71</td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>.00</td>
<td>.02</td>
<td>.01</td>
<td>.03</td>
<td>.03</td>
</tr>
<tr>
<td>Adj. R²</td>
<td>.00</td>
<td>.01</td>
<td>.01</td>
<td>.01</td>
<td>.01</td>
</tr>
</tbody>
</table>

* P<.05, **P<.01, ***P<.001 (two-tailed test)

**Research Question 5a: Does Self-Control Predict Post-Release Alcohol Consumption?**

Bivariate (Model 1) and multiple (Model 2) OLS regression were employed to assess the effect of self-control on alcohol consumption for the subsample of
probationers. In Model 1, self-control was insignificant \((b=-.01, p=.83)\) and had only a weak effect on alcohol use. With demographic controls included in Model 2, the effect of self-control was unchanged \((b=-.01, p=.88)\). A gender effect was identified in Model 2, as male ex-offenders were shown to be significantly more likely than female ex-offenders \((b=1.21, p=.01)\) to consume alcohol. Models 1 and 2 explained 0% and 2% of the variance in the DV, respectively.

**Research Question 6a: Does Informal Social Control Predict Post-Release Alcohol Consumption?**

Bivariate (Model 3) and multiple (Model 4) OLS regression were utilized to explore the impact of social bonds on alcohol use amongst individuals sentenced to probation. In Model 3, informal social control was not significantly associated with alcohol consumption \((b=-.48, p=.06)\). When controls were added to Model 4, informal social control became a significant predictor of alcohol use \((b=-.56, p=.05)\). A gender effect was, again, found in Model 4 as males were significantly more likely \((b=1.08, p=.05)\) to consume higher levels of alcohol than females. Models 3 and Model 4 explained 1% and 3% of the variance in alcohol consumption, respectively.

**Research Question 7a: Is Self-Control or Informal Social Control a Stronger Predictor of Post-Release Alcohol Consumption?**

Multiple OLS regression (Model 5) was utilized to assess whether self-control or informal social control was the most robust predictor of alcohol consumption. In Model 5, social bonds were significantly and negatively related to alcohol consumption \((b=-.61, p=.05)\), while self-control was insignificant and had only a small effect size \((b=-.03, p=.88)\).
This demonstrates that for each one-unit increase in informal social control, alcohol consumption declined by nearly one-half of a unit. As in Models 2 and 4, Sex ($b=1.14, p<.05$) was significant. Male probationers were significantly more likely than their female counterparts to engage in heavy drinking ($b=1.14, p<.05$). This Model accounted for 3% of the variance in the DV.

**Marijuana Use**

Regression results for all NB models for the subsample of individuals who were sentenced to probation are presented in Table 5.8.

<table>
<thead>
<tr>
<th>Table 5.8: Negative Binomial Regression Models for the Effects of Self-Control and Informal Social Control on Marijuana Use for the Probation Subsample</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model 1</strong> (n=326)</td>
</tr>
<tr>
<td><strong>IVs</strong></td>
</tr>
<tr>
<td>Self-Control</td>
</tr>
<tr>
<td>Informal Social Control</td>
</tr>
<tr>
<td>Controls Age</td>
</tr>
<tr>
<td>Sex (1=Male)</td>
</tr>
<tr>
<td>Race: Black (1=Black)</td>
</tr>
<tr>
<td>Other (1=Other)</td>
</tr>
</tbody>
</table>

* $P<.05$, **$P<.01$, ***$P<.001$ (two-tailed test)

**Research Question 9a: Does Self-Control Predict Post-Release Marijuana Use?**

Two NB regression analyses (Models 1 and 2) examined the effect of self-control on marijuana use for the subsample of probationers. In Model 1, self-control was insignificant and not associated with marijuana use (IRR=.98, $p=.22$). In Model 2, self-control remained insignificant and had the same effect size (IRR=.98, $p=.23$). Only the race variable Other was found to be significant (IRR=.63, $p<.05$), meaning that
probationers of other races (Hispanic, Native American, or Asian) were 37% less likely than White probationers to use marijuana.

*Research Question 10a: Does Informal Social Control Predict Post-Release Marijuana Use?*

Two NB regression (Models 3 and 4) explored the impact of social bonds on marijuana use for the former probationers. In Model 3, informal social control was insignificant (IRR=.94, \( p = .44 \)). When controls were added to Model 4, informal social control remained an insignificant predictor of marijuana use for probationers (IRR=.96, \( p = .59 \)). As in Model 2, the race variable Other continued to be significant (IRR=.63, \( p < .05 \)) and reinforced the difference between Whites and other races (Hispanics, Native American, and Asians) in terms of marijuana use.

*Research Question 11a: Is Self-Control or Informal Social Control a Stronger Predictor of Post-Release Marijuana Use?*

NB regression (Model 5) was employed to assess whether self-control or informal social control was the stronger predictor of marijuana use for probationers. When both IVs were placed in Model 5 together with controls, neither self-control (IRR=.99, \( p = .27 \)) nor informal social control (IRR=.98, \( p = .78 \)) were found to be significant. As with Models 2 and 4, the race variable Other was the sole significant control variable (IRR=.63, \( p < .05 \)) in this model.
Results for the Imprisoned Subsample

**General Crime**

Regression results for all NB models for the subsample of individuals who were incarcerated are presented in Table 5.9.

Table 5.9: Negative Binomial Regression Models for the Effects of Self-Control and Informal Social Control on General Crime for the Prisoner Subsample

<table>
<thead>
<tr>
<th></th>
<th>Model 1 (n=289)</th>
<th>Model 2 (n=289)</th>
<th>Model 3 (n=289)</th>
<th>Model 4 (n=289)</th>
<th>Model 5 (n=289)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IVs</td>
<td>b (SE)</td>
<td>IRR</td>
<td>b (SE)</td>
<td>IRR</td>
<td>b (SE)</td>
</tr>
<tr>
<td>Self-Control</td>
<td>-.06 (.02)</td>
<td>.94**</td>
<td>-.06 (.02)</td>
<td>.94**</td>
<td>-.05 (.02)</td>
</tr>
<tr>
<td>Informal Social Control</td>
<td>-.48 (.11)</td>
<td>.62***</td>
<td>-.42 (.12)</td>
<td>.66***</td>
<td>-.36 (.12)</td>
</tr>
<tr>
<td>Controls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.15 (.06)</td>
<td>.86*</td>
<td>-.11 (.06)</td>
<td>.90</td>
<td>-.11 (.06)</td>
</tr>
<tr>
<td>Sex (1=Male)</td>
<td>-.06 (.25)</td>
<td>.94</td>
<td>-.07 (.24)</td>
<td>.93</td>
<td>-.09 (.24)</td>
</tr>
<tr>
<td>Race:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black (1=Black)</td>
<td>.60 (.27)</td>
<td>1.82*</td>
<td>.36 (.27)</td>
<td>1.43</td>
<td>.40 (.27)</td>
</tr>
<tr>
<td>Other (1=Other)</td>
<td>.05 (.30)</td>
<td>1.05</td>
<td>-.09 (.30)</td>
<td>.91</td>
<td>-.10 (.29)</td>
</tr>
</tbody>
</table>

* P<.05, **P<.01, ***P<.001 (two-tailed test)

Research Question 1b: Does Self-Control Predict Post-Release Recidivism (as measured by general crime)?

Two NB regression analyses (Models 1 and 2) were conducted to examine the influence of self-control on recidivism for the subsample of incarcerated persons. In Model 1, self-control was a significant predictor of general crime for formerly incarcerated persons (IRR=.94, p<.01). When controls were added to Model 2, the effect of self-control remained unchanged (IRR=.94, p<.01). This shows that for each one-unit increase in self-control, prisoners’ involvement in general crime decreased by 6%. In Model 2, Age was significant (IRR=.86, p<.05) suggesting that for each additional year in age, general crime decreased by 14%. This is consistent with the
existing literature (Hirschi and Gottfredson 1983) and prior findings found in this study. Lastly, the race variable Black was also significant (IRR=1.82, \( p < .05 \)), indicating that Blacks were 82% more likely than Whites to be involved in general crime.

**Research Question 2b: Does Informal Social Control Predict Post-Release Recidivism (as measured by general crime)?**

Two NB regression analyses (Models 3 and 4) explored the impact of social bonds on recidivism for the incarcerated subsample. In Model 3, when no controls were in the analysis, informal social control was significantly associated with general crime (IRR=.62, \( p < .001 \)). In Model 4, which had controls added, the effect size of informal was nearly unchanged (IRR=.66, \( p < .001 \)). Therefore, as prisoners’ informal social control increased by one-unit, their participation in general crime decreased by 34%.

**Research Question 3b: Is Self-Control or Informal Social Control a Stronger Predictor of Post-Release Recidivism (as measured by general crime)?**

NB regression analysis (Model 5) was used to assess whether self-control or informal social control had a stronger effect on general crime. With controls added to Model 5, informal social control was significant and had a stronger effect size (IRR=.70, \( p < .01 \)) than self-control which was also significant but had a weaker effect on the DV of interest (IRR=.95, \( p < .05 \)). Thus, while a one-unit increase in self-control decreased general crime by 5%, a one-unit increase in informal social control decreased general crime by 30%.
Crime Subtypes

Regression results for all NB models for the subsample of individuals who were incarcerated are presented in Table 5.10. Similar to the method used for the full sample and probation subsample, stepwise regression will not be used for analyzing the crime subtypes.

Table 5.10: Negative Binomial Regression Models for the Effects of Self-Control and Informal Social Control on Crime Subtypes for the Prisoner Subsample

<table>
<thead>
<tr>
<th></th>
<th>Property Crime (n=312)</th>
<th>Violent Crime (n=289)</th>
<th>Drug Crime (n=312)</th>
<th>Financial Crime (n=312)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>SE</td>
<td>IRR</td>
<td>b</td>
</tr>
<tr>
<td>Self-Control</td>
<td>-.03</td>
<td>.02</td>
<td>.97</td>
<td>-.05</td>
</tr>
<tr>
<td>Informal Social</td>
<td>-.54</td>
<td>.14</td>
<td>.58***</td>
<td>-.37</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Controls</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.19</td>
<td>.07</td>
<td>.83**</td>
<td>-.13</td>
</tr>
<tr>
<td>Sex (1=Male)</td>
<td>-.48</td>
<td>.26</td>
<td>.62</td>
<td>.34</td>
</tr>
<tr>
<td>Race:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black (1=Black)</td>
<td>.44</td>
<td>.29</td>
<td>1.55</td>
<td>.42</td>
</tr>
<tr>
<td>Other (1=Other)</td>
<td>.37</td>
<td>.32</td>
<td>1.44</td>
<td>-.05</td>
</tr>
</tbody>
</table>

* P<.05, **P<.01, ***P<.001 (two-tailed test)

For property crime, only informal social control (IRR=.58, p=<.001) was statistically significant. A one-unit increase in informal social control was associated with a 42% decrease in property crime for prisoners. Self-control had no significant effect on this DV (IRR=.97, p=.22). Only Age (IRR=.83, p=<.01) was significantly related to property crime.

For violent crime, both self-control (IRR=.96, p=<.05) and informal social control (IRR=.69, p=<.01) were significant, but the latter variable was the stronger predictor of the two. While a one-unit increase in self-control lowered violent crime by 4%, each one-unit increase in prisoners’ informal social control decreased violent crime by 31%.

In relation to drug crime, neither predictor was significantly related to this DV. Both self-control (IRR=.96, p=.14) and informal social control (IRR=.84, p=.19) had no
significant effect on drug crime. Only the race variable Other was significant in this model (IRR=.36, \( p=\lt .05 \)).

Finally, for financial crime, only informal social control was significantly (IRR=.58, \( p=\lt .01 \)) associated with this DV. Thus, a one-unit increase in informal social control was associated with a 42% decrease in financial crime. Self-control was not a significant predictor of financial crime (IRR=.95, \( p=.11 \)). In the regression model for financial crime, the sole significant control variable was Sex (IRR=.30, \( p=\lt .01 \)). This indicates that males were 70% less likely than females to be involved in this type of criminal behaviour. Notably, this finding has remained constant for the full sample, the probationers, and the incarcerated persons.

**Alcohol Consumption**

Research findings and OLS regression coefficients for the subsample of individuals who were incarcerated are presented in Table 5.11. Across the six models, \( r^2 \)-squared values ranged from .01 to .06, meaning that between 1% and 6% of the variation in the DV was accounted for in the models. Tolerance and VIF values were around 1, suggesting no multicollinearity amongst the predictors.
Table 5.11: OLS Regression Models for the Effects of Self-Control and Informal Social Control on Alcohol Consumption for the Incarcerated Subsample

<table>
<thead>
<tr>
<th></th>
<th>Model 1 (n=255)</th>
<th>Model 2 (n=255)</th>
<th>Model 3 (n=228)</th>
<th>Model 4 (n=228)</th>
<th>Model 5 (n=228)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IVs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Control</td>
<td>-.11* .05</td>
<td>-.10* .05</td>
<td>-.07 .05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informal Social Control</td>
<td>-.45 .29</td>
<td>-.46 .29</td>
<td>-.31 .30</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Controls</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.14 .14</td>
<td>-.12 .15</td>
<td>-.12 .15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex (1=Male)</td>
<td>1.14* .57</td>
<td>1.36* .59</td>
<td>1.29* .59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black (1=Black)</td>
<td>-1.19 .83</td>
<td>-1.12 .88</td>
<td>-1.04 .88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (1=Other)</td>
<td>.65 .76</td>
<td>.69 .79</td>
<td>.78 .79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>.02</td>
<td>.06</td>
<td>.01</td>
<td>.05</td>
<td>.06</td>
</tr>
<tr>
<td>Adj. R²</td>
<td>.02</td>
<td>.04</td>
<td>.01</td>
<td>.03</td>
<td>.04</td>
</tr>
</tbody>
</table>

* P<.05, **P<.01, ***P<.001 (two-tailed test)

**Research Question 5b: Does Self-Control Predict Post-Release Alcohol Consumption?**

Bivariate (Model 1) and multiple (Model 2) OLS regression were employed to assess the effect of self-control on alcohol consumption for the subsample of prisoners. In Model 1, self-control was significantly and negatively associated with alcohol use ($b =-.11$, $p<.05$). With controls added to Model 2, the effect of self-control was nearly unchanged ($b =-.10$, $p<.05$). The only significant control variable was Sex ($b =1.14$, $p<.05$), indicating that males were more likely than females to engage in heavy drinking. Models 1 and 2 explained 2% and 6% of the variance in the DV, respectively.

**Research Question 6b: Does Informal Social Control Predict Post-Release Alcohol Consumption?**

Bivariate (Model 3) and multiple (Model 4) OLS regression were utilized to explore the impact of social bonds on alcohol use amongst formerly incarcerated persons. In Model 3, informal social control did not significantly predict alcohol use ($b =-.45$, $p<.05$), indicating...
With controls included in Model 4, informal social control remained an insignificant predictor of this DV ($b = -0.46, p = 0.12$). Sex was, again, significant with males ($b = 1.36, p < 0.05$) being more likely than females to drink heavily.

**Research Question 7b: Is Self-Control or Informal Social Control a Stronger Predictor of Post-Release Alcohol Consumption?**

Multiple OLS regression (Model 5) was utilized to assess whether self-control or informal social control was the most robust predictor of alcohol consumption for those sentenced to imprisonment. In Model 5, neither self-control ($b = -0.07, p = 0.14$) nor informal social control ($b = -0.31, p = 0.30$) were found to be significant, despite being in the hypothesized direction. The control variable Sex was the only significant variable ($b = 1.29, p < 0.05$), illustrating that males were more likely than females to be consume increased levels of alcohol.

**Marijuana Use**

Regression results for all NB models for the subsample of individuals who were sentenced to incarceration are presented in Table 5.12.
Table 5.12: Negative Binomial Regression Models for the Effects of Self-Control and Informal Social Control on Marijuana Use for the Prisoner Subsample

<table>
<thead>
<tr>
<th>Model 1 (n=326)</th>
<th>Model 2 (n=326)</th>
<th>Model 3 (n=209)</th>
<th>Model 4 (n=209)</th>
<th>Model 5 (n=209)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IVs</td>
<td>b</td>
<td>SE</td>
<td>IRR</td>
<td>b</td>
</tr>
<tr>
<td>Self-Control</td>
<td>-0.04</td>
<td>0.02</td>
<td>.96**</td>
<td>-0.04</td>
</tr>
<tr>
<td>Informal Social Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.07</td>
<td>0.05</td>
<td>.94</td>
<td>-0.06</td>
</tr>
<tr>
<td>Sex (1=Male)</td>
<td>-0.02</td>
<td>0.21</td>
<td>.99</td>
<td>-0.01</td>
</tr>
<tr>
<td>Race: Black (1=Black)</td>
<td>0.29</td>
<td>0.23</td>
<td>1.34</td>
<td>0.29</td>
</tr>
<tr>
<td>Other (1=Other)</td>
<td>-0.39</td>
<td>0.28</td>
<td>0.67</td>
<td>-0.37</td>
</tr>
</tbody>
</table>

* P<.05, **P<.01, ***P<.001 (two-tailed test)

Research Question 9b: Does Self-Control Predict Post-Release Marijuana Use?

Two NB regression models (Models 1 and 2) assessed the effect of self-control on marijuana use for the subsample of formerly incarcerated persons. In Model 1, self-control was significantly related to marijuana use (IRR=.96, p=<.01). With controls added into Model 2, self-control remained significant and had the same effect size (IRR=.96, p=<.01). As such, a one-unit increase in self-control decreased marijuana use by 4%. These results are consistent with those found for the full sample. No control variables were significant in these models.

Research Question 10b: Does Informal Social Control Predict Post-Release Marijuana Use?

Two NB regression analyses (Models 3 and 4) investigated the impact of social bonds on marijuana use for those sentenced to incarceration. In Model 3, informal social control was significantly associated with marijuana use (IRR=.82, p=<.05). With controls included in Model 4, informal social control remained significant and the effect size was...
roughly the same (IRR=.83, \( p < .05 \)). For each one-unit increase in informal social control, marijuana use decreased by 17%. No control variables were significant in these models.

Research Question 11b: Is Self-Control or Informal Social Control a Stronger Predictor of Post-Release Marijuana Use?

NB regression (Model 5) was employed to assess whether self-control or informal social control was the stronger predictor of marijuana use for formerly incarcerated persons. When both IVs were placed in the Model 5 together along with the control variables, self-control was significant (IRR=.97, \( p < .05 \)) while informal social control became insignificant (IRR=.88, \( p = .20 \)). This shows that as prisoners’ self-control increases by one-unit, their rate of marijuana use decreased by 3%. Once again, no controls were significant in this model.

Summary of Results

This chapter has reported findings from 12 NB and OLS regression analyses on the effects of self-control and informal social control on general crime, four crime subtypes, alcohol consumption, and marijuana use. A complete summary of all statistical results can be found below in Table 5.13. Based on an examination of the findings in Table 5.13, it is clear that informal social control was a stronger predictor (based on the size of each respective IRR value) of various forms of recidivism and alcohol consumption than self-control across the full sample and prisoner subsample. The effect of self-control cannot be understated, however. Self-control was a more significant predictor of recidivism for the probation subsample. It also significantly predicted
marijuana use for the full sample and prisoner subsample, as well as drug crime across the full sample and probation subsample. In conclusion, the results of this study provide the most support for Sampson and Laub’s AGTISC and demonstrate that self-control is only an important dynamic in reintegration for probationers and for predicting drug crime and marijuana use.
Table 5.13 Summary of Results

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Full Sample</th>
<th>Probation Subsample</th>
<th>Prisoner Subsample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Significant Variables</td>
<td>Dependent Variable</td>
<td>Significant Variables</td>
</tr>
<tr>
<td>General Crime</td>
<td>SC (IRR=.94)***</td>
<td>General Crime (n=756)</td>
<td>SC (IRR=.95)*</td>
</tr>
<tr>
<td></td>
<td>ISC (IRR=.85)*</td>
<td>Age (IRR=.90)**</td>
<td>ISC (IRR=.70)**</td>
</tr>
<tr>
<td>Property Crime</td>
<td>SC (IRR=.95)***</td>
<td>Property Crime (n=811)</td>
<td>SC (IRR=.95)**</td>
</tr>
<tr>
<td></td>
<td>ISC (IRR=.81)**</td>
<td>Age (IRR=.91)**</td>
<td>ISC (IRR=.76)**</td>
</tr>
<tr>
<td>Violent Crime</td>
<td>SC (IRR=.94)***</td>
<td>Violent Crime (n=757)</td>
<td>Age (IRR=.83)***</td>
</tr>
<tr>
<td></td>
<td>ISC (IRR=.83)**</td>
<td>Age (IRR=.85)**</td>
<td>ISC (IRR=.76)***</td>
</tr>
<tr>
<td></td>
<td>Sex (IRR=.188)**</td>
<td>Sex (IRR=.50)**</td>
<td>Sex (IRR=1.84)**</td>
</tr>
<tr>
<td>Drug Crime</td>
<td>SC (IRR=.95)***</td>
<td>Drug Crime (n=812)</td>
<td>SC (IRR=.95)***</td>
</tr>
<tr>
<td></td>
<td>Age (IRR=.89)*</td>
<td>Age (IRR=.84)**</td>
<td>Age (IRR=.84)**</td>
</tr>
<tr>
<td></td>
<td>Other Race (IRR=.43)**</td>
<td>ISC (IRR=.58)**</td>
<td>ISC (IRR=.58)**</td>
</tr>
<tr>
<td>Financial Crime</td>
<td>ISC (IRR=.58)***</td>
<td>Financial Crime (n=812)</td>
<td>ISC (IRR=.50)***</td>
</tr>
<tr>
<td></td>
<td>Sex (IRR=.50)**</td>
<td>Sex (IRR=.35)**</td>
<td>Sex (IRR=.35)**</td>
</tr>
<tr>
<td></td>
<td>ISC (b=.46)**</td>
<td>Black (IRR=2.56)**</td>
<td>ISC (b=0.61)**</td>
</tr>
<tr>
<td>Alcohol Consumption</td>
<td>ISC (b=.53)**</td>
<td>Alcohol Consumption (n=590)</td>
<td>ISC (b=1.14)*</td>
</tr>
<tr>
<td></td>
<td>ISC (b=.13)*</td>
<td>Black (IRR=1.29)*</td>
<td>Black (IRR=1.29)*</td>
</tr>
<tr>
<td>Marijuana Use</td>
<td>SC (IRR=.97)**</td>
<td>Marijuana Use (n=585)</td>
<td>Other Race (IRR=.63)*</td>
</tr>
<tr>
<td></td>
<td>Black (IRR=1.27)*</td>
<td>Other Race (IRR=.63)**</td>
<td>SC (IRR=.97)*</td>
</tr>
</tbody>
</table>

Note: IRRs and regression coefficients presented are from the final models (Model 5) in each analysis, in order to draw a comparison between the theories.

* P<.05, **P<.01, ***P<.001 (two-tailed test)
Chapter 6: Discussion

The objective of this study was to advance the reintegration literature by going beyond prevailing factor-based accounts of reintegration by theorizing reintegration through the lens of sociological criminology. This was accomplished by exploring reintegration within the context of Sampson and Laub (1993) and Laub and Sampson’s (2003) AGTISC and Gottfredson and Hirschi’s (1990) GTC. In particular, it sought to explore the effects of self-control and informal social control on reintegration and desistance among a sample of American adult offenders in terms of seven outcomes: general crime, four crime subtypes, alcohol consumption, and marijuana use.

Because the full sample in this study contained both probationers and formerly incarcerated persons, the logical step was taken to break down the full sample and investigate how these theoretical constructs affected individuals differently based on the type of sanction they received—probation or incarceration. As some research shows that both self-control and informal social control are important predictors of recidivism for both offenders sentenced to community-based sanctions (Langton 2006; MacKenzie and De Li 2002) and offenders sentenced to prison (Malouf et al. 2014), this study attempted to ascertain whether the AGTISC or GTC was more important for explaining recidivism and substance use for probationers and prisoners. Overall, the results of this study provided the most support for Sampson and Laub (1993) and Laub and Sampson’s (2003) AGTISC, although Gottfredson and Hirschi’s (1990) GTC was supported in relation to the probation subsample and certain types of crime and substance use. An interesting and unexpected finding from this study was that the effects of informal social control and self-control varied by sanction type. In particular, informal social control was the stronger
predictor of general crime, property crime, violent crime, and financial crime for the prison subsample, as well as property crime and financial crime for probationers. The effects of self-control, however, were found to be restricted to mainly to probationers. Self-control was the more robust explanatory variable of general crime and drug crime among those sentenced to probation. Finally, while some research has determined that self-control and informal social control function interdependently (Wright et al. 1999), this study found no support for this contention.

*Informal Social Control and Recidivism (General Crime and Crime Subtypes)*

Overall, an important finding in this study for the full sample of ex-offenders was the strong relationship between informal social control and general crime. When testing the AGTISC and the GTC in the same model (see Table 5.1), informal social control—a composite measure constructed which tested the cumulative effect of housing, employment, education, and relationship status—significantly predicted involvement in general crime. Informal social control had a stronger effect size than self-control, as it decreased the rate of general crime by 9% more than self-control. This means that ex-offenders who had stable, secure housing, employment, an education, and/or were in an intimate relationship were less likely to engage in general crime after release than those who had not yet established such social bonds.

These results are consistent with prior research on the relationship between various social bonds and criminality (Bersani and DiPietro 2016; Craig 2015; Forrest 2014; Salvatore and Markowitz 2014; Uggen and Shannon 2014; Duwe 2012; Hochstetler et al. 2010). Noteworthy, is that other literature which has used these Add
Health data has found similar results (Barnes et al. 2014; Craig and Foster 2013; Salvatore and Taniguchi 2012). These findings also underscore the fact that it is not one particular social bond that matters in desistance, but several interdependent binding life events or social factors—in this case, stable housing, stable employment, possessing a high school diploma or post-secondary degree, and/or being in a cohabiting or marital relationship. This is congruent with Doherty’s (2006) study, which found that a composite measure of social integration (including job stability, marriage, and military service) significantly predicted both short- and long-term offending. In sum, this finding illustrates that, for the full sample of ex-offenders at least, an amalgam of social elements have a larger impact on successful reintegration and desistance than differences in individual levels of self-control.

When exploring the effects of social bonds on the four major crime subtypes for the full sample (see Table 5.2), both self-control and informal social control significantly predicted property crime and violent crime. When tested concurrently, informal social control had a stronger effect size for both types of crime than self-control, as it lowered the rate of property crime and violent crime by 14% and 11% respectively. This suggests that informal social control is the better predictor of these types of crime; that is, the more an individual is bonded to society, the less likely they are to engage in property crime or violent crime. This study’s finding for violent criminality is consistent with Doherty’s (2006) research which found that overall social integration was related to a composite measure of crime including violent criminality. It is also similar to other studies which have found that various social bonds are related to violent crime. For example, a study by Sampson et al. (2006) re-analyzed the Glueck (1950) data and found that marriage
reduced levels of violent crime. More recently, Rocque et al. (2015) analyzed the association between marriage and violent crime at the county-level, and determined that higher marriage rates were related to decreased levels of violent criminality.

For the full sample, the findings of this study demonstrate that informal social control also reduces financial crime. This has clearly been corroborated by other research. MacKenzie and De Li (2002), for example, conducted a longitudinal study and found over a 6-month follow-up that offenders who were employed, attended school, and lived with their spouse or boy/girlfriend showed lower rates of forgery.

**Self-Control and Recidivism (General Crime and Crime Subtypes)**

This study found a significant relationship between self-control and general crime for the full sample (see Table 5.1), which corroborates an extensive body of literature showing that low self-control significantly predicts criminality (Flexon et al. 2016; Ha and Beauregard 2016; Malouf et al. 2014; Beaver et al. 2010; Vaughn et al. 2009; Gottfredson 2006; Pratt and Cullen 2000). However, when self-control was tested in the same model as informal social control, self-control had a smaller effect size and was the weaker explanatory variable. Clearly, social bonds were slightly more important in predicting involvement in general crime than the individual-level trait of self-control, as it reduced the rate of general crime by 9% more than self-control.

After separating the measures in the general crime scale into four crime subtypes—property crime, violent crime, drug crime, and financial crime—self-control significantly predicted various offense types for the full sample with the exception of financial crime (see Table 5.2). As noted above, self-control was associated with property
crime and violent crime, but when tested concurrently with informal social control, it exhibited a weaker effect size than informal social control and was thus the weaker explanatory variable. However, in terms of drug crime, self-control was the only significant predictor of this outcome variable. This suggests that individuals with low self-control had greater involvement in drug crime, whereas those with higher self-control had lesser involvement in such criminal acts. The finding that those with low self-control are more likely to engage in drug trafficking is consistent with extant research (Beaver et al. 2010; LaGrange and Silverman 1999). Finally, the finding that self-control did not predict financial crime was both unexpected and contrary to research by Holtfreter et al. (2010). It should be remembered that, while self-control was the stronger predictor of drug crime, informal social control had the greatest effects in the models for property crime and violent crime than self-control and was the stronger predictor of these outcome variables.

**Recidivism (General Crime and Crime Subtypes) and the Importance of Sanction Type**

A significant finding in this study was that the effects of informal social control and self-control varied by sanction type. That is, while it was clear for the full sample that individuals’ degree of social bonds was a stronger predictor of general crime and most crime subtypes (with the exception of drug crime) than self-control, further analyses which divided the sample by sanction type—probation or incarceration—showed that these theoretical constructs affected former probationers and formerly imprisoned persons differently. For formerly imprisoned persons, when testing both informal social control and self-control concurrently on general crime, both predictors were significant
but informal social control had a much larger effect size than self-control as it lowered the rate of general crime for prisoners by 25% more than self-control (see Table 5.9). Specifically, ex-offenders who had served a past sentence of incarceration who had developed strong social bonds post-release were more likely to follow a pro-social, conventional lifestyle after serving their sentence. This is similar to the finding for the full sample, and emphasizes the importance of ex-offenders developing an intimate relationship, acquiring an education, finding employment, and/or having access to suitable housing. Conversely, those offenders who lacked the above social bonds were more likely to be involved general criminality. Reintegration research that has used samples of prison releasees to examine the relationship between social bonds and post-prison recidivism has found similar results (Abeling-Judge 2016; Duwe 2015a, 2015b; Blomberg et al. 2012; Cobbina et al. 2012; Duwe 2012; Lockwood et al. 2012; Zoutewelle-Terovan et al. 2012; Berg and Huebner 2011; Van Der Geest et al. 2011; Carbone-Lopez and Kruttschnitt 2010)

When examining the effect of informal social control on crime subtypes for the formerly imprisoned sample, informal social control predicted involvement in three of the four crime subtypes: property crime, violent crime, and financial crime (see Table 5.10). Thus, prison releasees who had overall stronger social bonds—as measured by housing stability, employment, education, and relationship status—were less likely to be involved in these three forms of recidivism post-release. These findings align with other research showing that various social bonds—for instance being employed or in an intimate relationship (Doherty and Ensminger 2013; MacKenzie and De Li 2002; Kruttschnitt et
al. 2000) are associated with decreases in property crime, violent crime, and financial criminality.

The probationer subsample provides a different picture than the full sample and the formerly incarcerated subsample by highlighting the importance of self-control in the prediction of certain forms of recidivism. The most significant finding for the sample of probationers was that self-control significantly predicted general crime, while informal social control did not (see Table 5.5). That is, low self-control was associated with greater levels of general crime for those having served a sentence of probation. This finding is consistent with other research which has found that self-control was an important determinant of both desistance from, and persistence in, crime for individuals serving alternative sanctions (community-based) such as probation, parole, or electronic monitoring (Langton 2006; Cauffman, Steinberg, and Piquero 2005; Piquero et al. 2005; Finn and Muirhead-Steves 2002; DeLisi 2001a, 2001b; Gainey and Payne 2000; Raynor 1998; Longshore, Turner, and Stein 1996). This finding, however, also contradicts other literature showing the significance of social bonds for reducing recidivism in the lives of probationers or parolees (Craig et al. 2016; Vito et al. 2015; Tripodi 2010; De Li and MacKenzie 2003; Piquero, et al. 2002; MacKenzie and De Li 2002). Craig et al. (2016), for instance, determined that for those individuals having served a community-based sanction, stronger social attachments were related to lower incidents of rearrest compared to those with more tenuous social attachments. Overall, in this subsample of probationers, only the individual-level trait of self-control predicted participation in general crime—social ties were shown to have no effect on recidivism, bolstering the notion that, for former probationers anyway, recidivism is an individual rather than social matter.
Although speculative, what may account for this finding is the (in)stability of self-control. Although Gottfredson and Hirschi (1990) purport that self-control is a stable, invariant trait determined early in life, a growing body of research has began to examine whether this trait is capable of being changed over time through various interventions (Burt et al. 2014; Beaver et al. 2013; Na and Paternoster 2012; Forrest and Hay 2011; Forkner 2010; Piquero et al. 2010; Burt et al. 2006; Wright et al. 1999). Various types of programming have been shown to improve individuals’ self-control and lessen recidivism including cognitive behavioural therapy (Hyatt 2013; Landenberger and Lipsey 2005; Gendreau et al. 2000), educational supports (Na and Paternoster 2012), and parenting classes (Burt et al. 2006).

Quite possibly, the former probationers may have had greater access to reintegration programs necessary to alter their levels of self-control than formerly incarcerated persons. In the US, for example, correctional agencies have had to contend with smaller budgets; the consequence has been reduced expenditures for institutional reintegration programming—such as funding for behavioural programs and mental health and substance abuse treatment (Osher et al. 2012). In the Canadian context, the Correctional Investigator of Canada, Howard Sapers, has also identified a similar trend in the federal correctional system in his 2014-2015 annual report. As such, it is plausible that reintegration programming was more accessible to the former probationers than it was to the formerly incarcerated persons. If this was the case, probationers who completed such behavioural programming could have increased their levels of self-control and thus remained recidivism-free during the post-release period.
Consistent with the above finding that self-control, rather than informal social control, is important for understanding recidivism for probationers, self-control predicted involvement in two crime subtypes—specifically, property crime and drug crime (see Table 5.6). Self-control was the only significant predictor of drug crime when tested in the same model as informal social control, which is congruent with other criminological literature showing that low self-control is associated with drug offending (Beaver et al. 2010; LaGrange and Silverman 1999). However, when predicting probationers’ involvement in property crime, more support was garnered for the AGTISC. Although both self-control and informal social control were significant in the same model, informal social control had a larger effect size than self-control as it lowered the rate of property crime by 19% more than self-control. This is consistent with other research (e.g., Craig and Foster 2013) which has found social bonds to be associated with desistance using similar property crime measures from the Add Health data set.

Unexpectedly, however, self-control and informal social control did not account for involvement in violent crime. This is inconsistent with studies by Salvatore and Taniguchi (2012) and Piquero et al. (2005) showing that social bonds and self-control are associated with violent criminal behaviour. For the subsample of probationers, it is conceivable that broader social structural (or macro) theories may be able to provide insight into the correlates of violent crime than both the individual-level (e.g., self-control) and social factors (e.g., social bonds) tested in this thesis. The extant literature demonstrates that a variety of neighbourhood characteristics (Sampson 2012; St. Jean 2007; Sampson, Raudenbush, and Earls 1997; Sampson and Groves 1989) are shown to predict criminality.
It is widely acknowledged, particularly among US reintegration scholars, that a vast proportion of offenders are concentrated in a very small number of states and cities\textsuperscript{28} (Morenoff and Harding 2014; Travis 2005). As such, some research in the reintegration literature has started to pay attention to the social context or social ecology of reintegration, and how this affects the ability of offenders to adjust in the community (Berg and Cobbina 2016; Kirk 2012; Mears et al. 2008; Kubrin and Stewart 2006; LaVigne 2005). A study by Kubrin and Stewart (2006), for example, provides support for the claim that the broader social context and social structure matter for reintegration. Kubrin and Stewart (2006) found that those ex-offenders who returned to neighbourhoods with greater rates of social and economic inequality—measured by the proportion under the poverty line, the proportion on social assistance, the proportion of people unemployed, and the average family income—had 12 percent greater odds of reoffending. In comparison, those ex-offenders returning to more prosperous neighbourhoods had 62 percent lower odds of reoffending (Kubrin and Stewart 2006). Therefore, the failure of self-control and informal social control to predict violent crime for probationers may possibly be explained by one or more of the social context theories described above.

Finally, only informal social control significantly predicted involvement in financial crime for probationers. This is consistent with other research (e.g., MacKenzie and De Li 2002) but opposes some research illustrating that self-control is related to committing fraud (Holtfreter et al. 2010). Overall, when examining the effects of these

\textsuperscript{28}According to Morenoff and Harding (2014), these locales include, but are not limited to, inner-city neighbourhoods in Californi Arnia; Chicago, Illinois; Florida; Ohio; New Orleans, Louisiana; and, Philadelphia, Pennsylvania.
predictors on recidivism by sanction type, it is clear that informal social control had the greatest effect on the prisoner subsample while self-control was a more relevant predictor for the probation subsample.

Informal Social Control, Alcohol Consumption, and Marijuana Use

In addition to several recidivism measures, this study also explored the effect of informal social control on two forms of substance use: alcohol consumption and marijuana use. Results for the full sample showed that social bonds significantly predicted ex-offenders’ alcohol use, while self-control did not (see Table 5.3). Those ex-offenders with stronger social bonds were less likely to use alcohol, while those ex-offenders with more tenuous social bonds were more likely to drink alcohol. This finding supports other criminological research showing that social bonds may reduce problem drinking (Durkin, Wolfe, and Clark 1999; Nielsen 1999; Sampson and Laub 1993). It also supports Laub and Sampson’s (2003) claim that alcohol use attenuates individuals’ social bonds—particularly, by severing the bonds of employment and family. Relevant to the measure of housing stability utilized in this study, recent research by Calcaterra et al. (2014) has found that prison releasees experiencing housing instability (and homelessness) were more likely to binge drink during the reintegration period. It should also be acknowledged that the relationship between social bonds and alcohol use has also been documented in the alcohol abuse literature. Several studies have shown that transitioning into adult social institutions such as employment (Kandel 1980) and marriage (Schulenberg et al. 1996) are related to decreased alcohol use.
Turning to illicit substance use, informal social control significantly predicted marijuana use independently for the full sample but became insignificant when tested in the same model as self-control (see Table 5.4). This contradicts the findings of Maume, Ousey, and Beaver (2005) who found that the social bond of marriage was associated with desistance from marijuana. In the present study, social bonds were only important when tested separately along with demographic controls; the addition of self-control to the model diminished the overall power and significance of social bonds. In relation to explaining marijuana use, the results of this study for the full sample provide more support for the GTC than the AGTISC.

Self-Control, Alcohol Consumption, and Marijuana Use

The effect of self-control on alcohol consumption and marijuana was also assessed for the full sample of ex-offenders. From the result of this study, it is clear that, for the full sample, self-control had no impact on the intensity of individuals’ post-release alcohol use (see Table 5.3). This contradicts a large body of research which supports the claim that low self-control is linked to increased alcohol consumption (Ford and Blumenstein 2013; Desmond, Bruce, and Stacer 2012; Gibson, Schreck, and Miller 2004; Tangney, Baumeister, and Boone 2004; Piquero et al. 2002; LaGrange and Silverman 1999; Gibbs and Giever 1995; Arneklev et al. 1993; Keane et al. 1993). Tangney et al. (2004), for instance, determined that self-control was negatively related to a variety of behaviours such as excessive drinking.

Moving from licit to illicit substance use (as defined by law), the relationship between self-control and marijuana use for the full sample was much more interesting.
This study found that, while both self-control and informal social control were significant when tested separately, only the latent trait of self-control remained a significant predictor of marijuana use when tested concurrently with informal social control (see Table 5.4). As such, those ex-offenders with low self-control were more likely to use marijuana, whereas their counterparts with higher self-control were more likely to refrain from using marijuana post-release. These findings are consistent with other research (Ford and Blumenstein 2013; Jones et al. 2011; Baron 2003; Wood et al. 1993) on the relationship between self-control and marijuana use. Research by Ford and Blumenstein (2013), for example, determined that low self-control and opportunity were key predictors of marijuana use.

Substance Use and the Importance of Sanction Type

The effects of self-control and informal social control on two forms of substance use were found to differ by sanction type. Overall, this study found that informal social control was the stronger predictor of alcohol consumption (see Tables 5.3 and 5.7), while self-control was the most important predictor of marijuana use (see Tables 5.4 and 5.12). For probationers, having stronger social bonds was associated with lower levels of alcohol consumption. This suggests that probationers who developed pro-social attachments—for instance, to a spouse or a cohabiting partner, an attachment to one’s job, educational aspirations, and/or stable housing—were more likely to refrain from the irresponsible use of alcohol. The possibility of losing any one of the aforesaid social ties could have possibly compelled ex-offenders to avoid overdrinking. However, for prison releasees, self-control was associated with marijuana use post-release. This finding
illustrates that those former prisoners with low self-control were more likely to use marijuana, while those with more developed self-control were less likely to use marijuana. This result is consistent with other research (e.g., Baron 2003), which has established a link between self-control and illicit substance use.

For probationers, neither self-control nor informal social control significantly predicted marijuana use (see Table 5.8). For the prison releasees, neither theory was again capable of explaining alcohol consumption (see Table 5.11); across all models, males were significantly more likely than females to consume alcohol. These findings suggest that, since neither self-control nor informal control could explain these behaviours, other theoretical factors not included in this study must be considered. Intuitively, a variety of criminological factors may be able to explain such behaviour.

One relevant body of theory focuses on the social processes through which behaviours are learned—specifically, through interaction with other human beings. The most salient theories are Sutherland’s (1939) differential association theory and Akers’ (1998) social learning theory. While Sutherland’s (1939) differential association theory is comprised of nine tenets, the most important tenets of the theory can be summed up as follows: criminal behaviour is learned through interaction with others in intimate group settings and is the result of an excess of definitions favourable to law-breaking over definitions unfavourable to law-breaking. As a result, criminality is not inherent in individuals; rather, one becomes assimilated into a law-breaking lifestyle by associating with others who espouse criminal behaviour and inculcate them on how to carry out such acts. Akers’ (1998) rendition of social learning theory extends Sutherland’s work and rests on four major pillars: 1) differential association; 2) differential reinforcement; 3) imitation; and,
4) definitions. This theory proposes that criminal and deviant behaviour will ensue when individuals associate with, and are influenced by, others who possess criminal and deviant definitions and behaviours; when criminal behaviour is reinforced and rewarded by the group; when an individual imitates criminal and deviant behaviour; and, when one possesses definitions favourable to criminal and deviant behaviour and knows the techniques required to engage in such behaviours (Akers 1998:47-89).

The substance abuse literature may also be pertinent to this study. Similar to social learning theory, much research has focused on the effect of both direct and indirect peer influence on alcohol use (Rimal and Real 2003; Borsari and Carey 2003). In this literature, direct peer influence refers to the act of offering alcohol to another individual, whereas indirect peer influence is multifaceted and deals with modelling (imitation) and perceived norms (both descriptive and injunctive norms) (Borsari and Carey 2003). Descriptive norms or “popular norms” denote one’s view of the prevalence (intensity and regularity) of their peers’ drinking (Borsari and Carey 2003:402). In contrast, injunctive norms refer to one’s view of how much their peers’ endorse drinking (Borsari and Carey 2003). Therefore, when an individual perceives that his or her peers drink heavily (descriptive norms) and endorse such drinking habits (injunctive norms), it is more likely that they will consume greater quantities of alcohol. A study by Wood et al. (2001), for instance, found that direct peer influence—in the form of offering alcohol to someone—was associated with greater alcohol use. In term of perceived norms, Rimal and Real (2013) determined that injunctive norms predicted greater alcohol consumption. Similarly, Flom et al. (2001) found that peer norms (whether their peers would support or encourage illicit substance use) were associated with marijuana use among a sample of
young adults from a low-income neighbourhood in the US. Thus, as social learning theory and other research on peer norms have been shown to explain both excessive alcohol consumption and marijuana use, it follows that these theoretical perspectives may be able to account for why ex-offenders in this study engaged in these forms of substance use.

A Note on the Effects of Race and Sex on Recidivism (General Crime and Crime Subtypes) and Substance Use

In several analyses in this study, some demographic controls variables—specifically, Age, Sex, and Race—had significantly large effects (refer to Table 5.13 for a comprehensive summary of results). In all models where Age was significant, younger offenders were always more likely than older offenders to participate in particular acts. This finding is consistent with the age-crime curve, showing that crime peaks in adolescence and declines over time (Gottfredson and Hirschi 1990).

In terms of race, Blacks in the full sample and probation subsample were 76 % and 102 % more likely than Whites to engage in violent crime, respectively. Black probationers were also 156 % more likely to commit a financial crime than their White counterparts. Several explanations may provide insight into these findings. Western (2006), for example, argues that crime is the result of young Black people being segregated in poor urban communities or “ghettos” which suffer concentrated disadvantage including unemployment, poverty, tenuous social connections, and rampant criminality. Similarly, Goffman’s (2014) qualitative research from a Philadelphia ghetto (‘6th Street’) emphasizes how the social environment in which Black males live affects their chances of coming into contact with the criminal justice system. Through her
fieldwork, Goffman (2014) found that social disorder, crime, and impoverishment—for instance, drug use, gun violence, and a lack of access to adequate employment—were common in the 6th Street neighbourhood. As such, it is possible that Black males’ involvement in crime may be the result of broader social structural processes including social disorganization and neighbourhood strain. In sum, Goffman’s (2014) work draws attention to the fact that crime is an intricate social problem for this population, and may be linked more to the broader social environment than factors such as self-control and informal social control.

Finally, in terms of sex, males differed from females with respect to several outcome variables. In particular, males were between 78 % and 84 % more likely than females to engage in violent crime. This is congruent with research by Lauritsen, Heimer, and Lynch (2009) who found that, although the gender gap in violent crime has narrowed, males are still more likely to commit aggravated assault, simple assault, and robbery than females. In relation to alcohol consumption, males were again significantly more likely to drink alcohol than females. This finding has also been corroborated in research by Nielsen (1999). Across all three samples, males were between 50% and 70% less likely than females to be involved in financial crime. A gendered explanation may account for this result. Recent criminological research exploring gender differences in financial crimes has found that females are more likely than males to be involved in fraudulent activities such as writing bad cheques and engaging in other petty fraudulent activities (Steffensmeier, Harris, and Painter-Davis 2015; Steffensmeier and Allen 1996). This may be due, in part, to an amalgam of factors or “pathways” to crime (Wattanaporn and Holtfreter 2014; Daly 1994, 1992) such as physical abuse, associating with other law
violators, and economic hardships induced by low paying employment opportunities, poverty, and being the head of a single parent family.

The Interdependence of Self-Control and Informal Social Control

Since the mid-20th Century, a group of criminologists have accepted that crime and deviance is caused by a multitude of factors rather than one single factor (cf. Farrington 2011; Laub and Sampson 2003; Colvin 2000; Bernard and Snipes 1996; Tittle 1995; Sampson and Laub 1993; Thornberry 1987; Glueck and Glueck 1950). This has compelled these theorists to pursue theoretical integration—the combining of theories rather than relying a solitary theory—in an effort to better explain complex behaviours such as crime. This study sought to explore whether self-control and informal social control interacted to explain recidivism, alcohol consumption, and marijuana use. The results found no significant interaction effects between these predictors across all outcome variables. That is, when a self-control by informal social control interaction product term was created and tested on each outcome variable, the effect of this interaction was not significant and weaker than the independent effects of each predictor on their own. This finding is consistent with other research that did not establish an interaction or mediating effect between these variables using an offender sample (Forkner 2010; Doherty 2006) or a general population sample (Welch et al. 2008). However, this also contradicts various other studies which have corroborated that self-control and informal social control are interdependent factors which influence one another (Baker 2010; Longshore et al. 2005; De Li 2004; Nakahe et al. 2000; Wright et al. 1999; Polakowski 1994). Of the above studies, most tested an interaction effect using general or
student populations; the sole exception was the research by Longshore et al. (2005) and Polakowski (1994) which used an offender sample. Longshore et al. (2005), for example, found that the effect of self-control on recidivism was completely mediated by the traditional social bonds of moral belief and attachment. More recently, Baker (2010) found that social attachment interacted with self-control in determining problem drinking using an adolescent sample from the Add Health data set. Although no interaction effects were found in this study, the significant and positive correlation between the measures of self-control and informal social control ($r=.20, p<.01$)—and the fact that few studies have tested the interdependence of these variables on offending samples—suggests that further research is needed to ascertain how, if at all, these variables affect reintegration and desistance. Overall, this study provides strong negative evidence for theory integrationists and bolsters the position of Hirschi (1979:34) who steadfastly argues that, in terms of theory testing, “separate and unequal is better.

The Status of the AGTISC and the GTC in the Reintegration Literature

The results of this study demonstrate that, despite very few theoretical tests of these mainstream criminological theories on reintegration and desistance, both Sampson and Laub (1993) and Laub and Sampson’s (2003) AGTISC and Gottfredson and Hirschi’s (1990) GTC both have relevance to understanding why some ex-offenders make a successful transition to the community while others continue to engage in crime and deviance after release. However, when comparing the results for each theory, it is clear that this study provides more support for the AGTISC and its main theoretical assumptions than the GTC. For both the full sample and the subsample of prison
releasees, it was found that ex-offenders who made the necessary turning points in young adulthood since their criminal conviction were more likely to “knife off” their past patterns of crime and desist from recidivism (general crime, property crime, violent crime, and financial crime). As noted by Mears et al. (2013), the ability of ex-offenders to obtain mental and physical health treatment, acquire secure housing, and complete their schooling (whether it be a GED, high school diploma, or post-secondary education) may serve as key turning points in their lives influencing their trajectories of post-release behaviour. This study determined that those ex-offenders who made the necessary turning points of securing a job, an education, stable housing, and/or entering into a marital or cohabiting relationship were more likely to remain crime-free after completing their sentence. In terms of substance use, the AGTISC was only able to explain alcohol consumption for the full sample and the subsample of probationers.

One caveat with this study’s findings pertains to the composition of the sample. Unlike other reintegration studies which have examined self-control or informal social control on high-risk, serious offenders from disadvantaged backgrounds (e.g., Malouf et al. 2014; O’Connell 2006), the analytical sample of this study is more reflective of the average American than the typical offender re-entering society in the US. As noted in Chapter 4 (Table 4.1), over two-thirds of the sample was employed and had stable housing, while about 90% possessed a high school diploma or post-secondary degree. In terms of recidivism, just over one-third (34.8%) had engaged in general crime at Wave IV since their past conviction (see Table 4.5). As discussed in Chapters 1 and 2, many American ex-offenders face numerous obstacles to reintegration—for example, little to no education, unemployment, and homelessness—which are important contributing
factors to the large recidivism (~68%) rate in the US. The major difference between the sample in this study and the typical American ex-offender is that most of this sample desisted from crime—mostly, of a less serious nature—and was not burdened by the above risk factors.

Despite this support, however, the AGTISC fell short in insofar as it failed to explain some of the outcome variables for the probationer subsample. It is unclear why social bonds were more important for prison releasees and the sample as a whole than they were for the former probationers. Generally, individuals are sentenced to community-based sanctions such as probation for less serious crimes. It is possible that this group of former probationers already had established social bonds in the community—which are often mitigating factors during sentencing—that did not function as turning points after the completion of their sentence. If a person on probation is continuing in the same job he had before his conviction, for example, this bond was pre-existing and thus could not have served as a turning point. This could explain why the latent trait of self-control was more important for some recidivism measures for probationers. However, this does not hold the same for incapacitated persons in correctional facilities whose social bonds to conventional society have become severed. While not all prison releasees have to start their lives over when returning to society, many are faced to rebuild their lives by finding housing, employment, and completing their education amongst other things. The main point is that prison releasees may develop new social bonds that they had never had before their incarceration, thus making informal social control significant for successful reintegration.
This study also contributes to, and progresses, the operationalization of informal social control currently used in the criminological literature. Originally, Sampson and Laub (1993) and Laub and Sampson (2003) measured informal social control using marriage, military service, and employment. Most studies to date have continued to operationalize informal social control using separate constructs—for example marriage, cohabitation, employment, or education. The measurement of informal social control in this study follows a trend in recent research (e.g., Forkner 2010; Doherty 2006) which utilizes a composite measure of social bonds to examine the cumulative effect of social bonds on re-offending. This is advantageous insofar as it aligns with other research espousing a focus on multiple, rather than single, risk factors for explaining behavioural outcomes (Gutman, Sameroff, and Cole 2003; cf. Rutter 1979 and Wachs 2000). As such, this study’s measure of informal social control focuses on the cumulative effect of multiple broken or strong social bonds on various criminal and antisocial outcomes in the post-release period.

Furthermore, the results of this study reveal the importance of a new form of informal social control not identified by Sampson and Laub (1993), Laub and Sampson (2003), or other researchers: housing stability. Several studies have been undertaken in an effort to understand the significance of housing in reintegration (Clark 2016, 2015; Lutze et al. 2014; Grommon 2013); however, none of them have linked the concept of housing stability to the AGTISC and considered the tenacity of housing as an informal social control in the desistance process. A case in point is a study by Lutze et al. (2014) which determined that the provision of supportive housing to prison releasees lowered the prevalence of reconviction and reincarceration. Similarly, Clark (2016, 2015) has found
that the type of post-release housing is a strong determinant of rearrest and community supervision revocations. In particular, prison releasees using public shelters and transitional housing had the highest rates of rearrest at 45% and just over 35%, while those residing in work release and treatment centers had the lowest rearrest rates at 26% and 29%. The rearrest rate for those living in residential housing was just over 30% (Clark 2016, 2015). In relation to revocation rates, residential housing was the lowest (25%), followed by work release (around 28%), shelters (31%), treatment centers (42%), and finally transitional housing (50%) (Clark 2016, 2015). Therefore, this study is unique in that it is believed to be one of the first studies in the criminological and reintegration literatures to consider housing as an informal social control. Not only does this advance Sampson and Laub (1993) and Laub and Sampson’s (2003) AGTISC, but it also expands the criminological community’s theoretical knowledge on the link between recidivism and homelessness.

The results of this study also found mixed support for Gottfredson and Hirschi’s (1990) GTC. While self-control was a significant predictor for many forms of recidivism across all three samples, the effect size of this variable was normally weaker than informal social control. Self-control exhibited the strongest effects on general crime and drug crime for the probation subsample, as well as marijuana use for the full sample and prisoner subsample. These results thus confirm the GTC’s assumption that low self-control—manifested through impulsive and risky behaviour—is an underlying cause of crime and analogous behaviour.

According to Gottfredson and Hirschi (1990), social factors are spurious correlates of crime and analogous behaviour and will have no effect whatsoever on these
outcomes. The results of this study firmly contradict this tenet of the GTC and provide negative evidence against this theory. As clearly outlined above, social factors had powerful explanatory effects when tested simultaneously with self-control. When testing both theories on general crime for the full sample and the subsample of prison releasees, self-control and informal social control were both significant when tested against one another. However, informal social control had a significantly larger effect size than self-control in these models; this indicates that social dynamics are not only an important factor in desistance, but also that they may be more important than individual-level factors such as self-control. Social factors were also found to be strong predictors of alcohol consumption for the full sample and probation subsample. Consequently, while some support for the GTC in predicting recidivism and substance use was found in this study, the results overall indicate that social bonds were more significant for reducing recidivism which reinforces the theoretical assumptions of Sampson and Laub (1993) and Laub and Sampson’s (2003) AGTISC.
Chapter 7: Conclusion

To date, the reintegration literature has largely been atheoretical (Lafleur and O’Grady 2016; Lynch 2006) and inundated with descriptive studies outlining the major barriers to successful reintegration that exist for persons exiting the correctional system. As very few studies have sought to explain these factors theoretically, front-end service providers, criminologists, and policy-makers remain unsure of most effective means of successfully reintegrating offenders back into society after their sentence is complete. The purpose of this retrospective, cross-sectional study was too add theoretical vigour to this body of literature by linking reintegration to a salient criminological debate between Sampson and Laub (1993) and Laub and Sampson’s (2003) Age-Graded Theory of Informal Social Control and Gottfredson and Hirschi’s (1990) General Theory of Crime. This study did so by using the Add Health study examine the main effects and interdependent effects of self-control and informal social control on general crime, four crime subtypes, alcohol consumption, and marijuana use on a sample of adult offenders from the US who had previously been convicted of a crime in adult court.

The results of this study provide support for Sampson and Laub (1993) and Laub and Sampson’s (2003) AGTISC. This framework predicted most forms of recidivism for the full sample and prisoner subsample. For the full sample and prisoner subsample, individuals bound by stronger informal social control—through housing stability, employment, education, and/or an intimate relationship—were less likely to engage in general crime, property crime, violent crime, and financial crime after release. This finding is congruent with studies from the reintegration literature noting that these factors serve as impediments to successful reintegration (Travis 2005; Visher, LaVigne, and
Travis 2004; Petersilia 2003), as well as a small amount of criminological research which has found that social bonds are associated with lower recidivism (Clark 2016; Uggen and Shannon 2014; Cobbina et al. 2012; Lockwood et al. 2012). On the other hand, Gottfredson and Hirschi’s (1990) GTC also yielded some support from this study, particularly in relation to the probation subsample. For probationers, self-control significantly predicted general crime and drug crime. That is, probationers with increased levels of self-control were less likely to be involved in these two forms of crime. This construct also explained drug crime for the full sample. Those offenders who possessed higher self-control were less likely to commit a drug crime than those with lower self-control. These findings are consistent with prior research showing that self-control predicts recidivism for individuals sentenced to a form of community-based sanction (Langton 2006; DeLisi 2001a, 2001b). In terms of the effect of social bonds on the probationer subsample, social factors were only related to certain types of recidivism—namely, property crime and financial crime—which is also congruent with other research (MacKenzie and De Li 2002; LaGrange and Silverman 1999).

Turning to substance use, individuals from the full sample and probation subsample with stronger social bonds were less likely to consume greater amounts of alcohol post-release. In regards to marijuana use, self-control significantly predicted this dependent variable for the full sample and prisoner subsample. These findings do align with existing research which has explored the relationship between these predictors and alcohol and marijuana use (Ford and Blumenstein 2013; Maume et al. 2005; Baron 2003). In sum, it is clear from these findings that the effects of these predictors varied by sanction type.
A final important finding was that no significant interdependent relationship between self-control and informal social control was found to affect any of the outcomes variables in this study. All interactions testing the interdependence hypothesis were non-significant, suggesting that these two constructs are separate factors which both contradicts (e.g., Wright et al. 1999) and confirms some criminological research (e.g., Doherty 2006).

The results of this study also provide important directions for future research. In particular, future studies should explore and disentangle how and why self-control and informal social control vary by sanction type in the desistance process. While possible reasons have been speculated in this study, it remains unclear as to why self-control was more relevant to probationers than informal social control in terms of certain recidivism measures. Research could look retrospectively at probationers’ parents and whether or not they utilized effective childrearing practices—a key determinant of self-control according to Gottfredson and Hirschi (1990) which has been substantiated in the empirical literature (Lattimore, Tittle, and Grasmick 2006; Brannigan et al. 2002; Hay 2001; Gibbs et al. 1998). Alternatively, it would be fruitful to examine whether probation, as a community-based sanction, allows more opportunity—in terms of reintegration programming—for individuals to alter their levels of self-control. Since research exists showing that self-control is malleable and capable of change (Burt et al. 2013; Na and Paternoster 2012), it could be that probationers had more access to behavioural programs known to improve self-control (Landenberger and Lipsey 2005). With respect to formerly incarcerated persons, a main question is why informal social control was significantly more important than self-control in lowering recidivism. It is
well-established that the process of reintegration should commence directly after an individual is sentenced (Seiter and Kadela 2003; Travis 2000). Research should therefore explore the (in)accessibility of institutional reintegration programming and services—specifically, as it relates to housing, education, and employment—for imprisoned persons. Not all individuals have equal access to institutional reintegration programming because of their jurisdiction (e.g., federal, state/provincial, local), the amount of funding earmarked for such programs, or the overall degree of political support for assisting imprisoned persons in reintegrating back into society. It is possible that the incarcerated subsample in this study had much greater access to such programs and services, thus allowing them establish these social bonds and make the necessary turning points in the transitional process.

Various policy implications arise from the results of this research. For those individuals exiting prisons, it is imperative that reintegration programs tailored towards developing social bonds be available early on in the prison sentence. This may include connecting this population with community-based agencies who provide supportive housing, mental health and/or substance abuse treatment, and employment or educational opportunities. Fostering such connections while in prison may allow these individuals to make the requisite turning points on the outside, therefore bolstering the likelihood of a successful transition into society.

Moreover, efforts to improve the self-control of less serious offenders sentenced to probation are also in order. If future research substantiates that ineffective parenting is the underlying cause of low self-control, educational efforts aimed at improving parenting skills is one option that could be taken in early childhood to increase children’s
levels of self-control (Na and Paternoster 2012; Piquero et al. 2009). Another useful method would involve the educational system identifying those youth and adolescents with, or at-risk of developing, low self-control in order to divert them into one of several self-control improvement programs which have been shown to increase self-control (Piquero et al. 2016; Piquero and Jennings 2010). Since this sample was comprised of adult recidivists, a similarly effective method tailored towards adults is cognitive behavioural therapy. As noted earlier, this form of treatment has been widely substantiated in both the criminological and offender treatment literatures for ameliorating individuals’ self-control (Landeberger and Lipsey 2005; Wilson, Bouffard, and MacKenzie 2005). As the existing literature has found self-control to be a changing latent trait that can be moulded by external influences, the above interventions could enable former probationers to have greater self-control and, subsequently, less involvement in crime.

Finally, while this study has drawn important conclusions on the roles of self-control and informal social control in reintegration, it does contain several inherent limitations. First, the cross-sectional research design of this study only permitted an analysis into the association between the independent and dependent variables—not causality. Therefore, while self-control and social bonds were associated with a lower prevalence of recidivism and substance use, it cannot be stated that these predictors actually caused lower rates of recidivism and substance use. As per previous recommendations (Lafleur and O’Grady 2016), it would have been preferable to examine the effects of the AGTISC and the GTC on recidivism using a longitudinal research design which used a 12- or 24-month follow-up period and collected both pre- and post-
test levels of self-control and informal social control from ex-offenders as these factors may fluctuate across waves of data collection. It should be remembered that the purpose of this study was to examine recidivism during young adulthood. However, Wave IV of the Add Health data were the only available data that contained information during this developmental period. Therefore, this made a longitudinal analysis of the reintegration process impossible. When Wave V of the Add Health data becomes available sometime in 2019 (Harris 2016), researchers will then have the ability to conduct a longitudinal analysis on this sample of ex-offenders as they progress through life and ascertain whether self-control and informal social control actually cause changes in recidivism over time.

Second, the composite measure of informal social control used in this study was adopted from Doherty (2006) and comprised of four items (housing stability, employment, education, and relationship status). This measure was a key predictor of recidivism for the full sample and incarcerated subsample, as well as alcohol consumption depending on the sample under analysis. Until future studies can replicate these findings on other offender samples using the same measure, the results of this study yielded from this composite scale should be taken with caution.

Third, some relevant variables were either not available in Wave IV of the Add Health data set or were not included in the analyses of this study. These data, for example, did not contain any variables on the extent to which ex-offenders had participated in any reintegration programs or had access to reintegration services when returning to society. It would be useful for future research to explore the effects of comprehensive discharge planning and connections to housing, employment, behavioural
programming, and treatment programs on recidivism and other social outcomes. In addition, while variables pertaining to mental health were available in the Add Health data, these variables were not used to explore the effect of mental health on recidivism and substance use. As a large proportion of offenders—particularly, those who are imprisoned—suffer from mental health issues (Baillargeon et al. 2010), future research should incorporate mental health measures when examining the factors related to successful reintegration.

Finally, like many other studies which have tested the AGTISC using binary measures of informal social control (e.g., Bersani and DiPietro 2016; Cobbina et al. 2012; Forrest and Hay 2011; Huebner and Berg 2011; Forkner 2010; Doherty 2006; Yeager 2004; O’Connell 2003, 2006), this study was unable to tap into the strength, quality, or importance of individuals’ social bonds. Sampson and Laub’s (1993) original research study was criticized on this ground, and it was not until their later work (Laub and Sampson 2003) that they incorporated methods to address this criticism. In this study, the measures of housing stability, employment, education, and relationship status were binary variables (Yes/No) and only indicated if an individual had a particular social bond. Once these variables were summed in the binding life event scale, each social bond was given an equal weight and was no more important than the others. One limit of this study is that it could not account for ex-offenders’ subjective accounts regarding the significance of these factors in their lives. To obtain such qualitative data, it is necessary for future research to employ a mixed methods approach involving the use of qualitative, semi-structured interviews (Lafleur and O’Grady 2016). By separating a subsample of ex-offenders into recidivists and non-recidivists, researchers will be able to gain valuable
insight into the factors which influenced why some individuals re-offended and why others did not (Lafleur and O’Grady 2016).

Therefore, the evidence gleaned from this study is most supportive of Sampson and Laub (1993) and Laub and Sampson’s (2003) AGTISC. In this study, informal social control was shown to be an important theoretical dynamic which affected reintegration and whether an individual successfully transitioned from the correctional system back into the community. While self-control was also a significant explanatory variable in this study, it had lower explanatory power than informal social control and its significance was largely restricted to probationers and certain types of crime and deviance such as drug crime and marijuana use. It would be fruitful for policy-makers to consider developing reintegration policies within the context of Sampson and Laub (1993) and Laub and Sampson’s (2003) AGTISC and Gottfredson and Hirschi’s (1990) GTC, so that the implementation of effective reintegration programming and services specifically tailored towards probationers and imprisoned persons can take place. By providing probationers with access to self-control improvement programs and prisoners with programs and services allowing them to make key turning points in their lives, correctional authorities and the community itself can facilitate and foster successful reintegration by ensuring that ex-offenders are not “lost in transition” (Lafleur and O’Grady 2016:51) when returning to society.
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