ABSTRACT

Title:	ASSESSING AN AGE-GRADED THEORY OF INFORMAL SOCIAL CONTROL: ARE THERE CONDITIONAL EFFECTS OF LIFE EVENTS IN THE DESISTANCE PROCESS?
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In 1993, Sampson and Laub presented their age-graded theory of informal social control in *Crime in the Making: Pathways and Turning Points Through Life*. In essence, Sampson and Laub state that, among offenders, strong social bonds stemming from a variety of life events predict desistance from criminal offending in adulthood. In the past decade, there has been a growing amount of research supporting this general finding. However, little research has examined the potential conditional effects of life events on desistance. Using Sheldon and Eleanor Gluecks' *Unraveling Juvenile Delinquency* data, their follow-up data to age 32, and the long-term follow-up data collected by John Laub and Robert Sampson, this research focuses on the potential conditional effects of marital attachment, stable employment, honorable military service, and long-term juvenile incarceration on criminal offending over the life course.

Specifically, the present study tests Sampson and Laub's notion that strong social bonds predict desistance by asking two fundamental questions that bear on both theory and policy surrounding desistance from crime. First, does a high level of social integration as evidenced by the accumulation of social bonds stemming from life events within the same individual influence a person's level of offending and/or rate of desistance? Second, does the individual risk factor of low self-control or the related protective factor of adolescent competence interact with life events such that they differentially influence adult offending patterns?

Using the longitudinal methodologies of semiparametric mixed Poisson modeling and hierarchical linear modeling, the analyses find additional support for Sampson and Laub's theory. First, a person's level of social integration significantly affects his future offending patterns even after controlling for criminal propensity and prior adult crime. Second, no significant interaction effects emerge between life events and individual characteristics on future offending patterns. The conclusion then is that a high level of social bonding within the same individual influences offending, regardless of a person's level of self-control or adolescent competence. The implications of this research for life-course theories of crime, future research, and policies regarding desistance are discussed.

ASSESSING AN AGE-GRADED THEORY OF INFORMAL SOCIAL CONTROL:
ARE THERE CONDITIONAL EFFECTS OF LIFE EVENTS IN THE
DESISTANCE PROCESS?

by

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CHAPTER 1: INTRODUCTION

In 1993, Sampson and Laub presented their age-graded theory of informal social control in *Crime in the Making: Pathways and Turning Points Through Life*. This book not only explicitly outlines their theory of crime but also tests its key hypotheses. In essence, Sampson and Laub draw on the life-course framework (see Elder, 1985) and Travis Hirschi's social control theory (1969) and find that, among offenders, strong social bonds stemming from a variety of life events predict desistance from criminal offending in adulthood. In the past decade, there has been a growing amount of research supporting this general finding. However, little research has examined the potential conditional effects of life events in the desistance process.

The present study further tests Sampson and Laub's finding that there are independent effects of life events and their subsequent social bonds on desistance by investigating the sensitivity of this finding to two different conditions. First, this study examines whether the accumulation of social bonds within the *same* individual is associated with a greater reduction in criminal offending. Second, this study examines the potential interactive effects between social bonds and the individual characteristics of self-control and adolescent competence.

BACKGROUND: LIFE-COURSE CRIMINOLOGY

Beginning in the early 1990s, Sampson and Laub applied the life-course framework to criminological issues and shifted the traditional focus from asking why people begin offending to questions relating to the dimensions of criminal offending over

the entire life course (Sampson and Laub, 1992). For instance, why do most juvenile delinquents stop offending? Why do others continue to offend?

According to the life-course perspective, lives are shaped by multiple trajectories over the life span that are bound by both social and structural context and represent different dimensions of life's components (e.g., family, career, health, offending, etc.). Embedded within these long-term trajectories are transitions, which are short-term discrete events. Examples of transitions include first marriage, high school graduation, or entrance into the military, to name a few. These transitions have the potential to become turning points that redirect a trajectory or these transitions can be adapted to the existing trajectory direction allowing for continuity (Elder, 1985).

In *Crime in the Making*, Sampson and Laub draw on this life-course framework and present their age-graded theory of informal social control which emphasizes the importance of social bonds at all ages. According to their theory, the strength of a person's bonds to social institutions (e.g., family, school, work, etc.) will predict criminal involvement over the entire life course. Thus, social bonds in adulthood stemming from life events will explain persistence in or desistance from crime despite early childhood propensities or antisocial behavior (see Sampson and Laub, 1993; Laub, Nagin, and Sampson, 1998, Laub and Sampson, 2003). Their theory and supporting empirical research answers the question "why do offenders stop offending?" by emphasizing social bonds stemming from marriage, employment, and military service. Therefore, these key life events and the subsequent social bonds that are generated can become turning points which reshape trajectories of criminal offending (Sampson and Laub, 1992, 1993, 1996, Laub and Sampson, 2003).

In the wake of Sampson and Laub's findings presented in *Crime in the Making*, life-course criminology and the effect of life events on offending careers has become a "hot topic" in the field. As a result, several studies have empirically investigated discrete life events (e.g., school completion, military service, marriage, employment, parenthood, etc.) and their impact on criminal outcomes. Overall, these studies agree that life events influence a person's offending trajectory (see e.g., Farrington and West, 1995; Horney, Osgood, and Marshall, 1995, Warr, 1998, Uggen, 2000, Giordano, et al, 2002).

However, the possible conditional effects of these types of events and their subsequent social bonds have been under-researched in the field of life-course criminology. Not all transitions (or life events) become turning points. As Rutter (1996) explains, while life transitions may change one or more of a person's life trajectories, transitions may also accentuate pre-existing characteristics as opposed to promoting change. The question then becomes, Are there identifiable factors that can predict whether a life event will become a turning point and lead to desistance? Specifically, 1) Is the influence of a life event and its subsequent social bond on offending conditioned on the accumulation of social bonds and 2) Is the impact of a social bond on an individual's offending conditioned on his or her personal characteristics?

DEFINING "LIFE EVENTS"

For clarification, some definitions are necessary at this time. First, transitions are marked by life events. The term life event, then, implies a single event whose timing is precisely measured. While the current study is measuring the social bonds stemming from a life status as opposed to the exact timing of a life event, the use of the term life

event is used for consistency. The literature on social bonds and desistance utilizes this terminology even though the transition is often measured as a life status such as a person's marriage or employment experience over several years as opposed to a life event in a single point in time (see, e.g., Sampson and Laub, 1993).

Second, this study focuses on four life events --- marriage, military service, employment, and incarceration. These four events represent only a sample of the several life events that are theoretically and/or empirically linked to persistence in and desistance from crime (e.g., school entrance, separation or divorce, parenthood, etc.) (see, e.g., Horney, Osgood, and Marshall, 1995, Farrington and West, 1995). Third, not all life events that have the potential to affect persistence in and desistance from crime can be labeled positive or negative, a priori. For instance, incarceration, which is usually thought of as a negative event, could act as a deterrent, indicating a positive outcome, and thus could be considered a positive life event. On the other hand, a parallel example would be the idea that marriage, typically considered a positive life event, could be an abusive marriage and thus would be retrospectively labeled a negative event. To avoid confusion, this research abandons these value-laden terms of "positive" and "negative" to characterize a life event. Fourth, several researchers have distinguished between the quality of a life event as influencing criminal offending patterns as opposed to the mere presence of an event. Consistent with Sampson and Laub's theory, those who experience good relationships and stable jobs are predicted to desist from crime as opposed to those with unstable relationships or jobs. Therefore, the current study also distinguishes between the quality of each life event. Here, the quality of each life event is defined as a cohesive marriage, an honorable discharge from military service, stable employment, and

long-term juvenile incarceration (more than two years spent in reform school between ages 7 and 17). The first three, as a group, are labeled "binding" events since they are experienced in a way that bind a person to at least one aspect of conventional society. Long-term juvenile incarceration is labeled a "non-binding" life event since this event removes a juvenile from conventional society for a significant portion of their adolescent development. Given the concept of binding and non-binding life events, which is discussed in greater detail in the following chapters, the primary questions become, (1) Is the impact of a life event on an individual's future offending conditioned on that person's accumulation of binding life events (i.e., level of social integration) and (2) Does the impact of a binding or non-binding life event on an individual's future offending interact with that person's level of self-control or adolescent competence?[1] The following sections briefly introduce each of these areas, their application to criminology, and the research questions posed in this study.

CUMULATIVE ADVANTAGE/SOCIAL INTEGRATION

Using the binding life event language just introduced, Sampson and Laub's finding is that a binding life event in adulthood elicits a reduction in criminal offending over time, independent of childhood differences. Indeed, Sampson and Laub found evidence of independent effects of job stability and marital attachment on desistance from offending (1993: Chapter 7). As an extension to this conclusion, the current study asks

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[1] Many researchers have noted the importance of the ordering of life events as a predictor of whether a transition becomes a turning point (e.g., Hogan, 1978). Unfortunately, the Glueck data lack substantial variation in the ordering of these life events. In addition, the data do not allow an ordering of the quality of attachment to society for each of these events making it impossible to establish the timing of *binding* events.

the principal question of whether or not the impact of social bonds on this reduction in crime is affected by the degree of social integration in a person's life as evidenced by the proportion of binding events experienced by the same individual.

The idea of cumulative advantage predicts that with some success comes more resources and in turn continued success (see Merton, 1968, Dannefer, 1987, 2003). Thus, those who experience one binding life event are more likely to experience another binding life event. The idea of social integration (Durkheim, 1951) predicts that those with more social relationships or social ties will have better outcomes than those with fewer social ties (see also House, Umberson, and Landis, 1988). Therefore, experiencing a greater proportion of life events as binding will produce greater social integration into conventional society creating increased constraints (i.e., controls) and a greater reduction in criminal and deviant behavior. In other words, drawing on classic social control theory (Hirschi, 1969), high social integration creates a stronger attachment to conventional society than low social integration, which in turn predicts the influence of these events on desistance.[2]

PERSON-SITUATION INTERACTIONS

Another key question with respect to the possible conditional effects of life events on desistance is how these experiences interact with a person's individual characteristics. As Rutter states, "another possible reason for diversity in outcome is the existence of

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[2] While Laub and Sampson (2003) clearly state that desistance can occur through multiple pathways, the question here is whether the relationship between binding life events and desistance is *stronger* given a greater proportion of life events experienced as binding by the same person as opposed to a lower proportion.

individual differences in susceptibility to the stress experiences" (1994a: 933).[3]

However, few empirical tests of the impact of life events on criminal offending go beyond the direct effects of life events while controlling for individual factors. In addition, researchers recently have indicated that there is a need to include interactions to main effect models when studying crime over the life course because "it is not simply that behaviors and settings add to one another in their effects but that the effects of behavior and setting are contingent on one another and produce unique outcomes in particular ways" (Hagan, 1998: 505).

As Rutter (1994b) explains, there are several ways that a transition can affect a person's life. The first is as a turning point that directly redirects a life trajectory. For instance, a person may move from criminal to non-criminal or non-healthy to healthy due to a life event or experience. The second is through the accentuation principle which states that negative events have their biggest impact on the most vulnerable by strengthening or amplifying the pre-existing vulnerability (see also Caspi and Moffitt, 1993). Specifically, "when individuals are in situations that are characterized by novelty, uncertainty and unpredictability, but yet require some sort of action or response, they necessarily must have recourse to their own inner resources in deciding how to negotiate the change" (Rutter, 1994b: 6-7). The third mechanism is through the effect of a protective factor that moderates a situation.   A protective factor can be a trait or an experience which changes an unconventional trajectory into a more adaptive or conventional one (Rutter, 1987).

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[3] This notion can be expanded to include all types of life experiences, not just stress experiences, since again there is no a priori indication whether a life event will be positive or negative.

This study investigates some potential interactions between individual characteristics and binding life events. While there have been calls to investigate these types of interaction effects in the past, there have been few hypotheses presented and little direct analyses of the types of questions posed in this study. Therefore, this portion of the study is an exploratory one in which possible interactions between binding and non-binding life events and self-control and adolescent competence will be analyzed in an attempt to explain differential outcomes in adult offending.

Self-Control

The first personal characteristic examined is self-control. Low self-control is a well-known and empirically established risk factor of crime (Gottfredson and Hirschi, 1990, Pratt and Cullen, 2000). It entails being impulsive, taking risks, having low tolerance for frustration, and being short-sighted, among others. Wright, Caspi, Moffitt, and Silva (2001) find evidence of an interaction between low self-control and prosocial ties. In their study, those with low self-control are affected more strongly from prosocial ties than those with high self-control. There are several speculative explanations for this relationship. For instance, with respect to marriage, those with low self-control may be "protected" more strongly by a stable marriage than those with high self-control. In a recent interview, Travis Hirschi suggested that the monitoring aspect of marriage might affect those with low self-control more strongly than those with high self-control in its influence on offending patterns (see Laub, 2002: xxxvi). In addition, stable employment may promote a change in social relationships or create a stronger bond through informal social control that in turn may redirect the manifestations of a person's low self-control tendencies toward more conventional avenues. Regardless of the exact mechanism, there

is suggestive evidence that those with low self-control may be differentially affected by binding life events than those with high self-control.

Wright, et al (2001) also find an interaction between low self-control and antisocial ties with those low in self-control being affected more strongly by antisocial ties (i.e., delinquent peers) than those with high self-control. The antisocial tie in the current study is long-term incarceration, which is defined as two years or more in reform school by age 17. Several studies have found that those who show psychological difficulties tend to react more adversely to challenging and stressful situations --- the accentuation principle (Caspi and Moffitt, 1993). Thus, when those with low self-control are placed in a stressful situation, such as reform school, for a large portion of their adolescence, their low self-control attributes may be exacerbated by the experience resulting in increased offending or a stabilization of offending as opposed to desistance.

Adolescent Competence

The second personal characteristic examined is adolescent competence. Although adolescent competence and self-control are similar and related, adolescent competence is considered a protective factor as opposed to a risk factor (Rutter, Giller, Hagell, 1998). Adolescent competence has been indicated by self-confidence, intellectual investment, and dependability. It entails knowing who you are and what you are capable of, having the ability to look futuristically when making decisions, and showing reliability by fulfilling one's commitments (Clausen, 1991, 1993). Similar to the questions posed with low self-control, possible interaction effects may occur between adolescent competence and binding life events. First, marriage represents "the acceptance of a lasting personal commitment to another person, together with the taking on of financial, and potentially

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family, responsibilities" (Rutter, 1994b: 18). However, marriage is not a homogeneous experience in that a person's personal characteristics may interact with the situation. A stable marriage may affect the offending patterns of individuals with low adolescent competence more strongly than those with high competence. The logic here is that the offending patterns of a person who is less planful and less responsible will be more affected by the external structure and support of a stable marriage since marriage requires these same characteristics that are lacking in the individual. Military service and employment can also be characterized as representing a commitment that takes on a great deal of responsibility and obligation. Thus, adolescent competence may similarly interact with these binding life events to produce differential outcomes in criminal trajectories over time.

Finally, adolescent competence has also been theorized to interact with life challenges such that those high in adolescent competence will have more favorable outcomes through their reluctance to make decisions that will negatively impact their life in the long-term (Clausen, 1993, Laub and Sampson, 1998). As one researcher theorizes, "having a positive way of interpreting and adjusting to life events is as essential as the occurrence of positive life events" (Park, 2004: 31). Thus, adolescent competence should serve as a protection, or buffer, against the non-binding event of long-term juvenile incarceration since the adolescent years are tumultuous and often require parental, school, and community support and socialization to negotiate through them successfully. Those with high adolescent competence are expected to maneuver through the challenging world of reform school more successfully than those with low adolescent competence

given their higher level of self-assurance and their ability to make better decisions inside and outside of reform school.

CONCLUSION

In the past 10 to 15 years, a number of studies have found evidence supporting Sampson and Laub's conclusion that strong social bonds stemming from life events affect criminal trajectories of offending, above and beyond childhood risk factors. However, these studies do not investigate if the accumulation of these binding events or the interactive effects between these binding events and selected characteristics impact offending patterns over time. To extend the current literature, this study asks two fundamental questions that bear on both theory and policy surrounding desistance from crime. First, does a high level of social integration as evidenced by a greater proportion of life events experienced as binding within the same individual impact a person's level of offending and/or rate of decline? Second, does the individual risk factor of low self-control or the related protective factor of adolescent competence interact with binding or non-binding life events such that they differentially influence adult criminal offending patterns?

The outline for this dissertation is as follows: Chapter 2 reviews the literature on discrete life events and offending outcomes, as well as the current literature regarding cumulative advantage, social integration, self-control, and adolescent competence. Chapter 3 presents the data and the analytic methods. This study employs the rich dataset from the Gluecks' *Unraveling Juvenile Delinquency* archive (Glueck and Glueck, 1950, 1968, see also, Sampson and Laub, 1993) and the follow-up data collected by John Laub

and Robert Sampson (Laub and Sampson, 2003). While the total sample is comprised of 500 juvenile delinquent males selected from two reform schools in Massachusetts and 500 matched non-delinquent males selected from the Boston public school system, this study focuses on the delinquent sample and the change in offending patterns among these delinquents. The analyses utilize two longitudinal methodologies: the semiparametric group-based method (see Nagin, 1999, 2005) and hierarchical linear modeling (see Raudenbush and Bryk, 2002). Chapters 4 and 5 present the results of the analyses followed by a concluding chapter, which summarizes the research and offers an assessment of its implications for future theory, research, and policy.

CHAPTER 2: LINKING LIFE EVENTS AND DESISTANCE

The concept of desistance from crime has a long history dating back to the Gluecks' research in the 1930s and 1940s (see, e.g., Glueck and Glueck, 1930, 1940, 1943). However, it wasn't until the 1970s and 1980s when interest in desistance increased dramatically --- a time when subjects from several longitudinal research studies on crime and delinquency were reaching adulthood. For instance, the 1945 Philadelphia birth cohort subjects were 25 in 1970 (see Wolfgang, Thornberry, and Figlio, 1987), the boys in the Cambridge Study in Delinquent Development were 25 in 1978 (see Farrington, 1983), and the 1958 Philadelphia birth cohort subjects were 25 in 1983 (see Tracy and Kempf-Leonard, 1996).

Accumulating evidence from these studies and others reveal the now commonly cited paradox that while there is continuity in offending from adolescence to adulthood, change is also evident in that most juvenile offenders do not become adults offenders (see Blumstein, Cohen, Farrington, and Visher, 1986). Recently, Laub and Sampson (2001) conducted an extensive review of qualitative and quantitative criminal-career and recidivism research which documents the fact that desistance is a phenomenon worthy of study (2001: 12-30). Overall, the consensus is that there is heterogeneity in criminal outcomes among juvenile delinquents in their offending patterns over the life course.

LIFE EVENTS AND DESISTANCE

So, why do some juvenile delinquents desist while others continue offending into adulthood? One commonly found relationship among desisters is the presence of life events and their corresponding social bonds that mark the transition into adulthood. For

instance, marriage is often discussed as a "rite of passage" into adulthood. A stable job that allows financial independence is another example of adult status. Serving in the military can also provide independence and a mark of adulthood. Initial explorations of these transitional life events have shown them to be linked to a decline or termination of criminal activity.

Some of the first investigations into desistance were studies of recidivism (the opposite of desistance) among parolees. These initial explorations found that those who did not recidivate were more likely to have steady employment and were more likely to be married. For instance, Irwin (1970) interviewed several parolees from California's prison system in the late 1960s and discovered that a good relationship with a woman was a crucial component to successful desistance. Also, a good job was seen as an important mechanism to terminating crime. Similarly, Reitzes (1955) found that among a sample of male parolees, the 104 men who were labeled as non-recidivists were more likely than the 46 recidivists to have steady employment in better jobs, were more likely to be married, and more likely to report good relationships with their wives. Meisenhelder (1977) also found that positive interpersonal relationships and a good job were key components in terminating criminal activity among the 20 parolees he interviewed. Similarly, Glaser (1969) also found that recidivism among parolees was associated with job instability. [4]

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[4] However, not all studies have found evidence of a relationship between life events and desistance. For example, Knight, Osborn, and West (1977) studied 411 males from the Cambridge Study in Delinquent Development and found no differences in criminal convictions among married and single males matched on birthday and number of prior convictions. However, there was a relationship between marriage and lower levels of drinking and drug use. In addition, Rand (1987) analyzed 106 males from the 1945 Philadelphia Birth Cohort follow-up sample of 945 males with respect to a number of life events. While she found a relationship between marriage and desistance, her results varied based on certain demographic characteristics of the offender.

Research on military service and recidivism shows similar results. For instance, Mattick (1960) found that men paroled to the civilian population violated parole four times more often than those paroled to the army. In addition, eight years after parole the recidivism rate among men paroled to the army was much lower than the national average at the time (10.5 percent versus 66.6 percent). While these components of conventional life were found to be related to criminal desistance, this body of research is lacking in three major ways. First, these studies often use relatively small samples. Second, they are simplistic in their design in that they do not introduce any control variables. Third, the researchers do not attempt to identify the specific processes of desistance to explain the empirical findings.

Another key life event that can occur in a criminal's lifetime is incarceration. Incarceration, whether as an adult or as a juvenile, places a person in an oppressive environment. Prisons are "total institutions" where the inmates are removed from their community, stripped of their possessions, and are at the whim of the prison staff (Goffman, 1961). In his classic study, Sykes (1958) provides a detailed analysis of the "primary pains" of imprisonment. He explores the effects of deprivations of liberty and deprivation of autonomy which threatens the self-image. These "pains" can be especially detrimental to incarcerated juveniles who are beginning to assert their autonomy and develop their self-concept in adolescence. Thus, not only does the physical deprivation of liberty affect a person, the deprivations that accompany the physical imprisonment, such as deprivations of autonomy, goods and services, and security, can also be damaging.

Sampson and Laub have investigated the indirect role of incarceration on future crime and found that long-term incarceration positively impacts crime through subsequent job instability (Sampson and Laub, 1993, 1997; Laub and Sampson, 1995). In general, jobs and other life chances are cut off from delinquents, which increases the likelihood of future crime. Thus, the life event of incarceration, or long-term incarceration, has been found to preclude desistance from crime through deteriorating social bonds.[5]

THEORETICAL EXPLANATIONS OF DESISTANCE

In the 1990s, research shifted from studying the existence of a relationship between life events and desistance to theorizing about the mechanisms of this relationship (see Sampson and Laub, 1993, Laub and Sampson, 2003, Shover, 1996). According to Laub and Sampson (2001), the theoretical framework that best explains the relationship between transitional life events and desistance is the life-course framework. This framework recognizes that the desistance process occurs at the individual, community, and situational levels and emphasizes "a focus on continuity and change in criminal behavior over time, especially its embeddedness in historical and other contextual features of social life" (Laub and Sampson, 2001: 43). Sampson and Laub's age-graded theory of informal social control exemplifies this life-course framework of desistance as it focuses on not whether salient life events in the life course change behavior but rather

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[5] It is an open question as to whether incarceration leads to desistance from offending or is criminogenic. In their analysis of the life-history narratives of the Glueck delinquents at age 70, Laub and Sampson (2003) uncover that incarceration can lead to stability in offending in some men as well as change in offending in other men. For some men reform school was a transformative experience and served as a positive turning point while for others reform school was a negative experience that facilitated later crime.

"how these salient life events --- work, marriage, and military --- affect social bonds and informal social control" (2001: 44).

Sampson and Laub's Age-Graded Theory of Informal Social Control

The initial explorations discussed above found a consistent relationship between life events and desistance. At the time, researchers cited the social bond to conventional life as the plausible explanation for these relationships. Meisenhelder, for example, in reference to the 20 inmates he interviewed wrote, "The factors that were most influential in successful exiting are all contingencies that are indicative of the actor's acquisition of a meaningful bond to the conventional social order" (1977: 325). The interviewed inmates reported that these bonds were formed from a good job and ties to family and conventional others. The perceived mechanism was that "society produces conformity by burdening its members with attachments that are defined as potential costs of engaging in criminal activities" (1977: 331).

While these researchers surmised that social bonding was the process through which desistance occurred, Sampson and Laub's age-graded theory of informal social control explicitly theorizes the connection between adult life events and desistance through social control theory and the idea of the social bond to conventional life (Sampson and Laub, 1993; Laub and Sampson, 2003). Sampson and Laub state that crime is more likely to occur when social bonds to society are weakened or broken. More specifically, informal social controls, which stem from the social relations between individuals and institutions at each stage of the life course, are characterized as a form of social investment or social capital (see Coleman, 1988). Social capital "includes the knowledge and sense of obligations, expectations, trustworthiness, information channels,

norms, and sanctions that these relations engender" (Hagan, 1998: 503). In essence, bonds to society create social capital and interdependent systems of obligation that make it too costly to commit crime (Sampson and Laub, 1993).

In their empirical analysis, Sampson and Laub (1993) found continuity in offending over the life course. First, they find strong evidence of homotypic continuity from childhood to adulthood among the delinquents. For instance, arrests in early and middle adulthood were greater for the delinquent subsample than for the nondelinquents with 76 percent of the delinquents arrested between ages 17 and 25 and only 20 percent of the nondelinquents arrested over these ages. These percentages remain similar when arrests for ages 32 to 45 are compared (55 percent and 16 percent for delinquents and nondelinquents, respectively) (Sampson and Laub, 1993: 127-129). Heterotypic continuity was also evident among the Glueck delinquents. Here, Sampson and Laub find that among those who served in the military, 60 percent of the delinquents were charged with an offense during their term of service compared with 20 percent of non-delinquents. Also, the delinquents were more likely to have a dishonorable discharge, less likely to finish high school, and more likely to have low job stability, among others. They explain this continuity not only through childhood propensity but also through a process they call cumulative disadvantage. Specifically, they explain continuity through a "cumulative, developmental model whereby delinquent behavior has a systematic attenuating effect on the social and institutional bonds linking adults to society (for example, labor force attachment, marital cohesion)" (Sampson and Laub, 1993: 138).

In spite of this continuity, however, they also find support that change in criminal behavior occurs due to variation in the strength of adult social bonds stemming from life

events such as a cohesive marriage, stable employment, and serving in the military, independent of criminal propensity using a number of different statistical techniques. They emphasize that it is the quality of the relationship or "the social investment or social capital in the institutional relationship, whether it involves a family, work, or community setting, that dictates the salience of informal social control at the individual level" (1993: 140). With respect to incarceration, Sampson and Laub investigate the indirect role of incarceration on future crime and find that long-term incarceration facilitates crime through subsequent job instability (Sampson and Laub, 1993, 1997; Laub and Sampson, 1995).

Supporting Empirical Evidence

In essence, Sampson and Laub's theory explains persistence in offending through prior delinquency and weak adult social bonds which in turn explain concurrent and future adult crime. In addition, salient life events and socialization experiences in adulthood can counteract the influence of early life experiences. To date, these premises have received a considerable amount of supporting evidence.

Horney, Osgood, and Marshall (1995) analyzed local life circumstances to investigate short-term change among over 600 incarcerated offenders. This study found general support for Sampson and Laub's theory. For example, these researchers found that living with a wife reduced the probability of committing an assault by 57 percent. Laub, Nagin, and Sampson (1998) analyzed the Glueck data using a semiparametric mixed Poisson modeling approach to model changes in offending and found that an early and high quality marriage facilitated the desistance process and that this desistance process was both gradual and cumulative. Also, the childhood background

characteristics of the men had only a limited ability to predict desistance in adulthood, again pointing to the importance of adult social bonds.

Farrington and West (1995) studied the Cambridge Study of Delinquent Development men and found that separation from a wife was predictive of future offending while a strong marriage was negatively associated with offending. In addition, the men who were never married did not have the same high level of antisocial outcomes seen among the separated men (i.e., heavy drinking, drug use, fighting). Therefore, the life event of marital separation seems to have a negative effect on offending beyond having free time and a lack of guardianship while marital attachment decreases offending. A separate analysis of the Cambridge sample showed that offending rates significantly increased during periods of unemployment after leaving school, controlling for different base offending rates (Farrington, Gallagher, Morley, St. Ledger, and West, 1986). Specifically, the rate of offending during periods of unemployment approached three times the rate during times of employment.[6]

Opponents to Sampson and Laub's work (e.g., Gottfredson and Hirschi, 1990) argue that desistance among those who are socially bonded is merely a selection artifact and that socially bonded individuals would be those predicted to desist as well as to form adult bonds. However, in support of Sampson and Laub, Chris Uggen (2000) used an experimental design with random assignment to study the link between desistance and employment. Given the experimental research design, Uggen was able to control for the selectivity problem of desistance research. He found that employment among those involved in the National Supported Work Program who were 27 years old or older

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[6] While these studies do not all specifically measure the quality of life events, they do link the key life events that are associated with social bonding to desistance from crime.

predicted desistance from offending. However, offending among those who were 26 and younger was not affected by employment, indicating a possible timing effect between employment and future offending.

With respect to the military, Sampson and Laub (1996) present evidence that military service can serve as a turning point (see also Elder, 1986). Specifically, they find that overseas duty, in-service schooling, and G.I.-Bill training increased job stability and economic security. In a recent analysis of four longitudinal data sets, Bouffard and Laub (2004) find military service to be positively and significantly related to desistance from crime in three of the four data sets.[7] After controlling for several demographic and juvenile factors, the significant relationship disappears although the findings are in the predicted direction for all four cohorts. The authors contend that, "despite the lack of significant findings in these analyses, there is a consistent pattern in the relationship between military service and having an adult police contact, suggesting that desistance may occur more frequently for those with military experience" (Bouffard and Laub, 2004: 140). Thus, there has been corroborating evidence of Sampson and Laub's conclusions from extensions of their work as well as from independent researchers over the past 10 years with respect to these three binding life events detailed in this study.

As mentioned previously, Sampson and Laub (1997) found that delinquency has a systematic attenuating effect on the social bonds to employment through incarceration. They define this process as one of cumulative disadvantage by which "adolescent delinquency and its negative consequences (e.g., arrest, official labeling, incarceration) increasingly 'mortgages' ones future, especially later life chances molded by schooling

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[7] These four data sets include Shannon's 1942 and 1949 Racine data, the Philadelphia 1945 Birth Cohort study, and the National Longitudinal Survey of Youth.

and employment" (1997: 147). In accordance with Sampson and Laub's finding, Western and Beckett find that "youth incarceration reduces employment by about five-percentage points, or about three weeks per year [and that] adult employment lost through youth incarceration exceeds the large negative effects of dropping out of high school or living in a high unemployment area" (1999:1048). Thus, Sampson and Laub and others have found evidence that lengthy incarceration has a non-binding effect on individuals which in turn hinders desistance.

Over these same ten years, Sampson and Laub have conducted additional data collection on the Glueck men into late adulthood and expanded their age-graded theory of informal social control by further unpacking the desistance process. They present additional quantitative and qualitative evidence in support of their theory in their 2003 book, *Shared Beginnings, Divergent Lives: Delinquent Boys to Age 70.* This book focuses more closely on the persistence in and desistance from offending in adulthood, specifically, and the life events of work, family, and the military as well as formal social control institutions such as prison.

Using evidence from their updated criminal history data to age 70 and interviews with 52 of the original Glueck delinquents, Laub and Sampson (2003) outline the desistance process with respect to marriage, military, and employment. The strongest and most consistent finding in both the quantitative and qualitative data is that marriage is a key mechanism in the desistance process. First, using hierarchical linear modeling, they find that offending is lower when men are married, showing within-individual change. Second, using extensive information from the in-depth interviews, they conclude that not only does marriage create informal social control by fostering social bonds and

creating a situation where a person's risk of losing his "investment" outweighs the benefits of crime, marriage also introduces direct control and supervision by wives, and a change in routine activities (e.g., staying at home rather than drinking with "the guys"). Finally, Laub and Sampson state that marriage can change one's sense of self --- e.g., a change from a delinquent to a husband or family man. The processes identified for desistance due to stable employment and military service are similar to those for marriage. In addition, Laub and Sampson (2003) note that reform school for some men was criminogenic in itself leading to cynicism and defiance as well as a deterrent for others who did not want to risk returning to prison.

Overall, Laub and Sampson conclude that "men who desisted from crime were embedded in structured routines, socially bonded to wives, children, and significant others, drew on resources and social support from their relationships, and were virtually and directly supervised and monitored" (Laub and Sampson, 2003: 279-280). In contrast, the persistent offenders experienced a lack of structure, marital and job instability, failure in the military and continued incarceration.

CONDITIONAL EFFECTS OF LIFE EVENTS ON DESISTANCE

While there has been a great deal of evidence that social bonds influence a person's offending trajectory (see e.g., Farrington and West, 1995; Horney, Osgood, and Marshall, 1995, Warr, 1998, Sampson and Laub, 1997, Laub and Sampson, 2003), the possible conditional effects of these life events have not been adequately addressed. Thus, there is a need for additional research to extend the current knowledge about life events, social bonds, and desistance by addressing possible conditional effects. This

research investigates two conditions – 1) the accumulation of binding life events within an individual (i.e., the degree of social integration) and 2) the person-situation interaction between binding and non-binding life events and the individual characteristics of self-control and adolescent competence.

Cumulative Advantage/Social Integration

Research evidence shows that desistance occurs for all offenders yet this desistance occurs at different rates and at different ages (Laub and Sampson, 2003: Chapter 5). One explanation for these differences in ages and rates may be that desistance is contingent on the accumulation of binding events experienced over time. Intuitively, the reinforcement of changing lives and the creation of social ties in adulthood may be stronger when a person's life is "getting on track" in many realms rather than in merely one. The ideas of cumulative advantage and social integration help to explain this logic.

The theory of cumulative advantage was developed by Robert Merton (1968) to explain the differential productivity of scientific researchers and increasing prestige among certain scientists as they age. As the idea of cumulative advantage is applied to life-course events, the implication is that when a person experiences one binding life event they are more likely to experience additional binding life events, perhaps due to an accumulation of knowledge, skills, and resources available to them (see also Dannefer, 1987, 2003; Ross and Wu, 1996). For instance, a person who is strongly attached to their spouse may have access to a greater support system which encourages them to continue their employment. Or job stability may be seen as an indicator that someone is "marriage material" and therefore that person is more likely to marry and more likely to have a

wider range of choice in whom they marry.   Finally, a man who has been honorably

discharged from the military may have increased interpersonal skills after successfully

interacting with a variety of types of people, or a job skill which in turn may make job

and/or marital success more likely. While these are mere speculations as to the

mechanisms through which the differences in adult success may occur, the underlying

premise is that those with one social tie are likely to have multiple social ties.[8]

The idea of cumulative advantage is consistent with psychological research which

suggests that risk factors tend to cluster in the same individual. Using the outcome of

psychiatric disorder, Rutter (1979) found that those with a "multiplicity" of risk factors

were the most negatively affected when compared to those with fewer risk factors

(Rutter, 1979: 52).   Recent literature on positive youth development also suggests a

clustering of positive factors in individuals whether they be physical, intellectual,

psychological, and/or social (Eccles and Gootman, 2002). The idea of clustering of risk

factors or positive factors is extended here to the clustering of social ties among

individuals. In turn, the accumulation of social ties translates into greater social

integration into conventional society.

Drawing on the cumulative advantage literature, the key question posed in this

study is, Does social integration into conventional society influence future patterns of

offending? Social integration is a concept originally developed in Durkheim's (1951)

Suicide and has been applied to contemporary research and theory, predominantly in the

area of mortality and health behaviors. In these arenas, social integration has been

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[8] This statement is not meant to imply that if a person experiences one social bond he is guaranteed to experience multiple social bonds or that there is no variation in the number of social bonds a person experiences. The idea of cumulative advantage is merely used here as a means to structure the argument with respect to social integration and desistance.

defined as "the existence or quantity of social ties or relationships" (House, Umberson, and Landis, 1988: 302). The premise is that those who have multiple social ties will exhibit healthy behaviors and in turn will be more likely to live longer than those with fewer or no social ties. For instance, Umberson (1987) finds that while marital status and parental status individually decrease negative health behaviors, men who were both married and lived with their children were the least likely to exhibit negative health behaviors. She concluded that this finding "supports the notion that the highest levels of social integration are characterized by the lowest levels of health-compromising behavior" (1987: 314).

The finding that marriage and parenthood each decreased health-compromising behavior coincides with Sampson and Laub's conclusion of independent effects of social bonds on desistance. The current study extends the existing criminological literature on these independent effects by addressing differing levels of social integration as seen in the health literature. The prediction then is that those with multiple ties to conventional society will be more socially integrated and in turn will be least likely to commit criminal offenses (i.e., most likely to desist). In other words, it is predicted that a greater accumulation of binding life events will reduce the level of criminal offending over time and increase the rate of decline in offending.

Person-Situation Interactions

Another extension to the current literature is an investigation into if and how life events and their subsequent social bonds may interact with individual characteristics. As Rutter states, "it is certainly striking how very differently people respond to what is apparently the same situation" (1985: 607). However, there is very little theoretical basis

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or empirical evidence that predicts the presence or direction of interactions in life-course criminology. Abbott (1997) identifies several types of turning points, one being the contingent turning point. One contingent turning point he describes is "a turning point whose outcome is dependent on its internal event sequence" (1997: 102). Another type of contingent turning point could be one whose outcome is dependent on certain personal characteristics that interact with life events and act as factors that exacerbate or buffer the effect of a life event.

Either a personal characteristic or a life event can act as a protective factor that buffers the effect of a risk factor. As Rutter (1987) explains, there are several mechanisms through which protective factors interact with risk factors. First, a protective factor can reduce the impact of a risk factor on an individual by altering their appraisal of the situation and the coping strategies used. Second, a protective factor may reduce the negative chain reactions that occur in the aftermath of a stressful situation or exposure to risk. Third, the protective factor may allow a person to retain their self-esteem throughout a risk event; and finally, the protective factor may work in a way that allows opportunities for success that otherwise may not have been available (Rutter, 1987: 325-328). In addition, as opposed to buffering a life event, risk or protective factors can interact with life events to exacerbate or enhance its effect on future crime by strengthening those same risk or protective factors (see Caspi and Moffitt, 1993). Thus, when faced with a novel situation, a person will utilize their existing personal resources to negotiate through life's obstacles and opportunities.

To begin to explore the possibility of person-situation interactions, this study focuses on self-control and adolescent competence as two factors with which binding and

non-binding life events may interact to produce differential outcomes in subsequent criminal behavior. These factors and the rationale for their selection in producing interaction effects with life events are discussed in detail below.

<u>Self-Control</u>

One prominent risk factor in criminological research is low self-control. In 1990, Gottfredson and Hirschi developed an entire theory centered on the notion of low self-control. They contend that in order to control a person's natural motivation to offend, effective socialization by parents is required to establish a high level of self-control. Effective socialization is characterized by 1) the monitoring of a child's behavior, 2) the recognition of deviant behavior, and 3) the punishment of that deviance within the family (Gottfredson and Hirschi, 1990). Once this level of self-control is established (by age 8 or so), it is considered to be the child's propensity to offend which remains stable throughout the life course. If this socialization is ineffective, a child will have low self-control which is characterized by six elements. "People who lack self-control will tend to be impulsive, insensitive, physical (as opposed to mental), risk-taking, short-sighted, and nonverbal, and they will tend therefore to engage in criminal and analogous acts" (Gottfredson and Hirschi, 1990: 90). A criminal event is predicted to occur when a person of low self-control encounters an opportunity for crime.

Overall, Gottfredson and Hirschi's notion of self-control as a key risk factor for criminal behavior has received empirical support. For instance, Pratt and Cullen (2000) conducted a meta-analysis of 21 studies and found strong support for Gottfredson and Hirschi's theory. In this meta-analysis, self-control was found to be a strong predictor of crime regardless of whether the study used an attitudinal or behavioral scale and

regardless of whether opportunity to offend or competing variables were included in the model. However, this theory is not without its critics and contradictory empirical evidence. For instance, in this same meta-analysis, Pratt and Cullen find that social learning variables are also strong predictors of crime, in addition to self-control. In fact, models with self-control and social learning variables explain 15 percent more of the variance than those with only self-control.

With respect to the possible relationships between self-control and life events, one recent development in life-course criminology has been the finding of interdependence between self-control and social ties. Wright, et al (2001) go beyond the traditional three hypotheses of social selection, social causation, or a combination of the two to explain stability and change. They find evidence for a fourth hypothesis they call life-course interdependence. They investigate a "social-protection" effect and hypothesize that "prosocial ties, such as education, employment, the family, and partnerships, that deter criminal behavior should do so most strongly for the criminally prone for a simple reason: These individuals have more potential antisocial behavior in need of deterrence" (Wright, et al., 2001: 326). Using the Dunedin longitudinal sample, these researchers find evidence that, indeed, the effect of social ties are contingent on levels of criminal propensity such that prosocial ties have their greatest effect on self-reported and official adult crime among those with low self-control.

In the current study, self-control is explored as a potential moderator between the binding life events of a cohesive marriage, a stable job, and honorable military service and criminal offending. As mentioned previously, these binding life events may introduce responsibility and obligation, direct control and monitoring, informal social

control, and a change in identity. Therefore, those with low self-control may have a greater reduction in crime from being socially integrated than those with high self-control --- i.e., an interaction exists.

The predicted relationship between the non-binding life event of long-term juvenile incarceration and self-control on future offending patterns is different than that predicted when binding life events were considered. Here, instead of predicting a greater reduction in offending in the presence of a binding life event among those with low self-control, the prediction is an increase or stabilization in offending in the presence of a non-binding life event among those with low self-control. Wright, et al (2001) investigate this "social-amplification" effect and hypothesize that "antisocial ties that promote crime, such as delinquent peers, should also do so most strongly for the criminally prone because criminal propensity alters their experience of the social environment in a way that is more conducive, supportive, and even demanding of criminal behavior" (2001: 327). Thus, on the other side of the coin, the non-binding event of long-term juvenile incarceration may increase criminal offending among low self-control individuals more strongly than high self-control individuals.

Incarceration is an environment with many rules while those with low self-control are characterized by impulsivity and risk-taking behaviors. When faced with a novel situation with strict rules of conduct, lack of autonomy, and delinquent peers, a person with low self-control may experience long-term juvenile incarceration with increased impulsivity and risk-taking, strengthening these pre-existing characteristics. Drawing on Sampson and Laub's (1993) finding that incarceration led to a continuation of crime through job instability, this exacerbation of the low self-control characteristic may lead to

an increased likelihood of job instability and a subsequent continuation of crime. The result, then, would be an increase or stabilization in criminal offending while those with high self-control may be better equipped to respond and adapt to long-term incarceration.

<u>Adolescent Competence</u>

To mirror the analyses using self-control, this study also investigates the potential interactions between binding and non-binding life events and adolescent competence. It is widely acknowledged that impulsivity is a major component of self-control. As Rutter, Giller, and Hagell (1998: 147) state, "the opposite of impulsivity may be conceptualized as a tendency to plan ahead, although planning or planful competence has been measured in quite a different way." Competence can be defined in several ways but in general it "refers to a pattern of effective adaptation in the environment" (Masten and Coatsworth, 1998: 206). Clausen (1991, 1993) developed the concept of age-graded planful competence and included measures of self-confidence, intellectual investment, and dependability. More specifically, adolescent competence entails being self-aware and self-assured, knowing your capabilities and weaknesses, being able to look futuristically and see all possibilities when making decisions, and showing reliability by fulfilling one's commitments.

Using samples from three longitudinal studies conducted at the University of California at Berkeley, Clausen found that men who were higher in planful competence led more orderly lives with respect to marriage, career, and education than those lower in adolescent competence and that these differences extended well into the later years. Laub and Sampson (1998) came to similar conclusions about the relationship of adolescent competence and later life outcomes. In their study of the Glueck data, they found that

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after controlling for a number of related factors, their measure of adolescent competence significantly predicted the socioeconomic outcomes at ages 32 and 47 in their sample of disadvantaged men.

Similar to the hypothesis put forth with regard to low self-control, the binding life events of marital stability, job stability, and honorable military service may interact with low adolescent competence. For instance, each of these binding life events entails acts of selflessness, responsibility, and obligation. In turn, adolescent competence is characterized by responsibility, knowledge, and self-assurance. Thus, these binding life events may be redundant to the qualities of a person high in adolescent competence, resulting in no effect in criminal offending while inducing a reduction in offending among those with low adolescent competence --- i.e., an interaction exists.

A related topic to competence is the idea of resilience. Resilience refers to "manifested competence in the context of significant challenges to adaptation or development" (Masten and Coatsworth, 1998: 206). To be more specific, resilience "is concerned with individual variations in response to risk factors…it is not just a dose effect by which children who have the better outcome have been exposed to a lesser degree of risk" (Rutter, 1990: 183). Researchers have found that some who experience negative life events manage to acquire successful adult lives --- they are resilient (Werner and Smith, 1992).[9]

Adolescent competence has been theorized to interact with life challenges such that those high in adolescent competence will have more favorable outcomes through their reluctance to make decisions that will negatively impact their life in the long-term

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[9] Resilience is seen as a process rather than as a trait and, like desistance, is complicated to define and positively identify.

(Clausen, 1993, Laub and Sampson, 1998). The reasoning is that those with high adolescent competence will have more "knowledge, abilities, and controls" (Clausen, 1991: 808) which are instrumental in resilience among disadvantaged youth.

Again, the predicted relationship between the non-binding life event of long-term juvenile incarceration and adolescent competence on future offending patterns is different than the predicted interaction between binding life events and adolescent competence. Here, instead of predicting a greater reduction in offending in the presence of a binding life event among those with low adolescent competence, the prediction is a greater reduction in offending in the presence of a non-binding life event among those with *high* adolescent competence. Incarceration is a life event that removes a youth from his or her family and community and is associated with deprivation of autonomy. Drawing on the resilience literature, a juvenile with a high level of adolescent competence may be better equipped to retain his or her self-esteem throughout a long incarceration term in adolescence more than someone with low adolescent competence, allowing him or her to avoid a severance of social bonds.

CONCLUSION

Life-course criminology is a relatively recent but major area of study in criminology. Extensive research in the 1960s, 1970s, and 1980s on criminal careers, desistance from crime, and its link to numerous life events led to the emergence of life-course criminology, developed by John Laub and Robert Sampson (for a review of this literature, see, e.g., Blumstein, et al 1986, Laub and Sampson, 2001). In their theory of age-graded informal social control Sampson and Laub outline and provide evidence for

what they believe are the mechanisms at work that explain the link between life events and desistance. Put most simply, they contend that a person's bond to conventional society and others will make the commission of crime too "costly" and thus will lead to eventual desistance (Sampson and Laub, 1993). While there has been a good deal of empirical research directly testing this notion, there has been little research which goes beyond the core theoretical hypotheses.

In response to this fact, two conditional effects are addressed in this study that may influence the impact of a life event on future offending. Drawing on the idea of cumulative advantage and prior research on social integration and health, one condition may be that the turning point potential of a binding life event depends on the clustering of binding life events or overall level of social integration that exists in a person's life. Secondly, drawing on prior criminological and psychological research, another condition may be that certain interactions exist between individual characteristics and binding and non-binding life events. The next chapter details the study population and analytic plan proposed to address these areas of research.

CHAPTER 3: DATA AND METHODS

This study uses data from the Gluecks' *Unraveling Juvenile Delinquency* study and follow-up (1950, 1968) and the follow-up data collected by John Laub and Robert Sampson to examine the conditional effects of life events on desistance from crime. The Glueck data are particularly well-suited to investigate the issue of persistence in and desistance from crime since they contain information on criminal histories up to age 70. In addition, attitudinal, behavioral, and life event data from childhood through middle adulthood are available from several sources such as the boys in the sample, their parents and teachers, and others such as social workers and/or psychiatrists. This rich data set and the measures used in the following analyses are outlined in detail below.

THE GLUECK DATA AND FOLLOW-UPS

The Gluecks' conducted a thorough investigation of the juvenile and young adult criminal careers for 1,000 Boston males who were born between 1925 and 1932. In total, the sample is comprised of 500 males selected from two reform schools in Massachusetts, labeled juvenile delinquent, and 500 non-delinquent males selected from the Boston public school system. Each delinquent and non-delinquent subject was matched on age, ethnicity, IQ, and neighborhood socioeconomic status. The subjects were first interviewed at age 14, on average, and then again at ages 25 and 32.

While the boys are all white in race, their ethnicities range extensively with the majority being English, Italian, or Irish (69.2 percent) (Glueck and Glueck, 1950: 38). The delinquent group averages an IQ score of 92.28 and the majority of the delinquents (59.2 percent) come from neighborhoods with a delinquency rate of 10 per thousand to

24.9 per thousand (Glueck and Glueck, 1950: 36-38). According to the information taken during the first wave of interviews, the mean age of onset of persistent misbehaviors was 8.35 years (Glueck and Glueck, 1950: 28). On average, the first court appearance occurred at age 12.39, the first conviction at age 12.52, and the first confinement to reform school at age 13.88. These delinquent boys averaged 3.66 court appearances, 3.46 convictions, and spent an average of 7.12 months in reform school (Glueck and Glueck, 1950: 293-296). Finally, the majority of the delinquent boys first appeared in juvenile court as a result of either burglary (30.8 percent) or larceny (27.8 percent) (Glueck and Glueck, 1950: 295). Overall, it is evident that these boys were serious and persistent offenders as juveniles.

Beginning in 1987 and extending over a period of six years, Laub and Sampson reconstructed, augmented, and analyzed the Gluecks' *Unraveling Juvenile Delinquency* data. In 1994, they began a follow-up data collection effort for the Glueck men who then ranged from ages 62 to 70. In part, this follow-up included collecting annual criminal histories and death information for the delinquent sample to age 70 (for more information on the full follow-up effort, see Laub and Sampson, 2003: Chapter 4). The resulting long-term criminal history data revealed a great deal of criminal activity among the delinquent sample well into middle adulthood (30s and 40s) as well as a general picture of decline as these delinquent men aged. For instance, 65 percent of the men were arrested between ages 25 and 31 and 60 percent were arrested between the ages of 32 and 39. This percentage fell to 44 percent between ages 40 and 49 and then to 23 percent for ages 50 to 59 (Laub and Sampson, 2003: 90).

MEASURES

Dependent Variable

Laub and Sampson coded the archival criminal history data from ages 7 to 32 as well as the criminal history data from ages 32 to 70 based on their in-depth search of Massachusetts and national criminal databases. The outcome of interest, adult criminal offending over the life course, is operationalized as annual arrest counts for various time frames ranging from ages 17 to 70. Specifically, desistance, or the reduction in criminal offending, is the outcome of interest using this criminal history information. In accordance with Bushway, et al. (2001) and Laub and Sampson (2001), desistance among the Glueck men is defined as a process. Specifically, it is defined as the process of reducing persistent and serious delinquency among this group of formerly incarcerated juveniles (see Laub and Sampson, 2001: 10-11).

The criminal history records contain arrests for each age categorized as one of four offense types – violent (e.g., homicide, assault, rape, and robbery), property (e.g., burglary, larceny, auto theft, fraud, and vandalism), alcohol/drug offenses (e.g., drunkenness, operating under the influence, and narcotics (both selling and possession)), and an other category (e.g., conspiracy to commit theft, disorderly conduct, vagrancy, gambling, and traffic offenses such as speeding) (Laub and Sampson, 2003: Chapter 4, note 2). Total offending is the sum of these four offense types.

Mortality information was integrated into the longitudinal criminal histories to safeguard against presuming someone had stopped offending who had instead died --- referred to as "false desisters" (Reiss, 1989). Laub and Sampson recorded deaths occurring in Massachusetts and nationally. When possible, incarceration information is

also taken into account since the negligence of incarceration time in the rate of offending could result in an underestimation of the actual offending trajectory.[10] The Gluecks collected and Laub and Sampson coded the exact annual number of days incarcerated from ages 7 to 32. These data cover incarceration time in prisons and jails in Massachusetts, other state prisons and jails, and all federal prisons (see Glueck and Glueck, 1950, 1968, Sampson and Laub, 1993).[11]

Figure 3.1 presents a general overview of the annualized mean offending rate for the Glueck delinquent sample for ages 17 through 70. Previous studies of the Glueck data have shown that the mean number of total offenses rises from zero offenses at age 7 to a peak of approximately 1.4 offenses per year by age 16 (Laub and Sampson, 2003: 86). As shown in Figure 3.1, on average, the adult criminal careers for these serious and persistent offenders show a steady decline as they age into middle and later adulthood.

Figure 3.1 here

Independent Variables

Binding Life Events

One of the key variables of interest in this research study is the accumulation of bonds to conventional society (i.e., the level of social integration). As opposed to the

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[10] Recent research has found that the underestimation of offending trajectories is especially problematic among high-rate persistent offenders since these are the offenders who are most likely to have been incarcerated (Piquero, et al., 2001; Eggleston, Laub, and Sampson, 2004).

[11] Although it would be ideal to have incarceration information for ages 32 through 70 as well, this lack of data does not appear to be an overwhelming concern. According to the National Corrections Reporting Program (U.S. Department of Justice, 1993), prison admissions and prison releases nationwide between 1993 and 1998 peaked around age 30 and steadily declined until reaching near zero by the mid- to late-fifties. In addition, the majority of male inmates in correctional facilities (prisons and jails) on June 30, 2003 were under 35 years of age (55.6 percent) with 27.9 percent over 40 (Harrison and Karberg, 2004). Finally, the U.S. prison population has recently become more middle-aged as opposed to younger (Harrison and Beck, 2004) indicating that in the 1940s and 1950s the prison populations were even younger than today. Therefore, overall, it is assumed that while some subjects were undoubtedly incarcerated after age

occurrence of life events, the focus is on the quality of the social bond that stems from various life events. As a group, the three high quality life events of a stable marriage, stable employment, and an honorable discharge from military service are labeled "binding" events. To be clear, while marriage, military service, and employment are all life events, stable marriage, honorable military service, and stable employment are binding life events since they bind a person to conventional society.

The quality of each life event measure is a dichotomous variable, sometimes created from a continuous variable. This dichotomization strategy was adopted for a number of reasons. First, in order to calculate the accumulation of life events that are experienced as binding, it is advantageous to dichotomize the continuum of scores into "binding" or "not binding" and then add these together to get the number of binding life events experienced. Also, as outlined by Farrington and Loeber (2000), interaction effects are more easily studied and interpreted with dichotomous data. Also, these researchers found, as opposed to losing information by dichotomizing, there is a decrease in classification error when there are fewer categories into which a person can be assigned. Finally, Farrington and Loeber conclude that "dichotomization greatly simplifies the presentation of results, yields findings that are easily understandable by a wide audience, and shows no sign in our analyses of producing misleading conclusions" (2000: 121). However, it cannot be assumed that there will be no substantive differences between the dichotomous and continuous variables in this data specifically. Therefore, the interaction analyses will be conducted multiple times with dichotomous and with

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32, the impact of this lack of data is not a fatal flaw given the fact that prison populations decrease with age and were even younger 50 years ago than today.

continuous measures to safeguard against the possibility that the dichotomization substantively affects the results.

Table 3.1 presents the summary statistics of the dichotomized life event measures. First, in order to measure the quality of military service, those with an honorable discharge from military service is used. The Gluecks collected data from Army and Navy officials on whether the subject was discharged from these branches of the service with an honorable or a dishonorable discharge. This binary variable is used to measure the strength of military service with the assumption that those who experienced a dishonorable discharge were not likely to have adapted well to their military experience.

Table 3.1 here

Next, marital attachment is measured for the time periods between ages 17 and 25 and again between ages 25 and 32. Marital attachment for ages 17 to 25 was originally constructed by Sampson and Laub and is a composite measure of information taken at the time of the age 25 interview regarding the conjugal relationship between the subject and his spouse as well as his sense of marital responsibility (Sampson and Laub, 1993: 144). The dichotomous measure for marital attachment indicates whether the subject was or was not strongly attached to his wife during that wave. Subjects who were labeled as attached were those who assumed their marital financial and emotional responsibilities and those who were living together amicably with no thought of separation (see also Glueck and Glueck, 1968: 84). Fifty-one percent of the married men experienced a cohesive marriage between ages 17 and 25.

Marital attachment between 25 and 32, also constructed by Sampson and Laub, is a standardized composite measure that describes the strength of the subject's attachment

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to his wife during this time period. This measure again includes the indicator of conjugal relations plus a measure of family cohesion (i.e., the extent to which the family unit had integrated interests and affection) (see Sampson and Laub, 1993: 144). This measure is dichotomized to reflect a strong marital attachment or not. Those with a marital attachment score at age 32 that was greater than zero were coded a 1 and those with a marital attachment score less than zero were coded a 0, splitting the sample virtually in half. The 49 percent of the married subjects who were labeled as attached for ages 25 to 32 were those who showed integrated family cohesion and were happily living together with no thought of separation (see also Glueck and Glueck, 1968: 84).

With respect to employment, the measure of job stability was originally constructed by Laub and Sampson from the Gluecks' interviews. Job stability for ages 17 to 25 and 25 to 32 are measured by a composite of three standardized variables – 1) employment status at the time of interview, 2) length of time employed at present or most recent job, and 3) work habits (Sampson and Laub, 1993: 143-144). These composite job stability measures were then dichotomized to reflect the presence of strong job stability for each time period. Those with a job stability score greater than zero at age 25 were coded a 1 and those with a job stability score less than zero at age 25 were coded a 0. This dichotomization was repeated for the age 32 measures (see Table 3.1 for descriptives on these measures). Overall, those who are labeled as having job stability tended to be those who were employed at the time of interview, had reliable and industrious work habits, were seen as an asset to their employer, and had been in their most recent job for a longer period of time (48 percent for ages 17 to 25 and 37 percent for ages 25 to 32).

Non-Binding Life Events

The fourth life event measured in this study is the "non-binding" life event of length of juvenile incarceration. Although all of the delinquent boys were incarcerated as juveniles by design, there is considerable variability in incarceration time during these years (see Sampson and Laub, 1993; Sampson, Laub, and Eggleston, 2004). Overall, length of juvenile incarceration ranges from just a few months to over seven years incarcerated during the 10-year juvenile period (ages 7 to 17) with an average of about 1.5 years spent in reform school.

This continuous variable was dichotomized into 730 days or more (2 years or more) and less than 730 days and labeled long-term juvenile incarceration and short-term juvenile incarceration, respectively. The rationale for this cut-point is that two years or more, whether the days are served consecutively or sporadically throughout ages 7 to 17, represents a substantial amount of time spent in confinement and away from family and the community, especially during this crucial developmental period. Thus, long-term juvenile incarceration is viewed as a non-binding life event that may interact with self-control and/or adolescent competence. Using this dichotomization technique, 26 percent of the sample experienced "long-term" juvenile incarceration (see Table 3.1).[12]

Social Integration

The method used to measure social integration (i.e., the accumulation of social bonds) is the binding life event scale, which ranges from 1 to 9 for both the 17 to 25

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[12] Additional analyses will also be conducted with cut points at the 25th and 50th percentiles to test the robustness of the results. Specifically, using the 25th percentile as a cut point, long-term juvenile incarceration is defined as 9 months or longer incarcerated between ages 7 and 17 and using the 50th percentile as a cut point, long-term juvenile incarceration is defined as 14 months or longer incarcerated between ages 7 and 17.

measures of social bonds and the 25 to 32 measures of social bonds. This scale is based on the proportion of the number of life events experienced as binding divided by the number of life events experienced, for the three possible binding life events. This proportion quantifies the accumulation of bonds under the assumption that a higher percentage of events experienced as binding corresponds to a higher level of social integration. For instance, a person with two binding events out of two life events experienced has a stronger bond to conventional society than someone who experienced only one of three life events as binding. Using a proportion as opposed to the raw number of binding life events experienced allows more cases to be retained in the sample by allowing those who experienced 1, 2, or 3 life events to be included.

In the straight proportion, someone who experiences one life event and experiences that event as binding has the same proportion (1.0) as someone who experiences three life events and experiences all three of them as binding. Therefore, according the straight proportion measure, these individuals would be treated as equally bonded to conventional society. To account for the potential differences between these two scenarios, the binding life event scale differentiates between those who may have the same numerical proportion but who experience a different number of life events.[13] Descriptive data for the proportion of binding life events and the binding life event scale are displayed in Table 3.2. Those with zero life events experienced are treated as missing and are controlled for in the analysis. The issue of missing cases is discussed next.

Table 3.2 here

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[13] It is an open question as to whether someone who experiences three out of three events as binding is "more bonded" to society than someone who experiences one out of one life event as binding. Therefore, the analyses are conducted using both the straight proportion and the binding life event scale.

The sample sizes are 396 men for the age 17 to 25 measures and 406 men for the

age 25 to 32 measures. There are several reasons for missing data as outlined in Table

3.3. First, there are 20 cases which were lost in the archival process, reducing the sample

size to 480 for both age periods.[14] Second, there are those who are missing because they

died before the interview age or were not followed-up by the Glueck research team. For

the 17 to 25 measures, 18 men died before age 25 and 15 were not followed up at the age

25 interview. These numbers rise to 24 dead and 22 not followed up for the 25 to 32

measures. Third, there are those cases that are missing information on key variables at

ages 25 and/or 32. Specifically, 51 cases are missing for the age 17 to 25 measure and 28

cases are missing for the 25 to 32 measure. It appears that the majority of these cases

spent a vast amount of the sampling period incarcerated, and hence, the requisite

information needed for the binding life event scale was not assessed.

<center>***Table 3.3 here***</center>

<u>Criminal Propensity and Prior Adult Crime</u>

The present investigation proposes to analyze the Gluecks' and Sampson and

Laub's longitudinal data using various statistical methods. The most severe threat to

internal validity for this study is the selection bias inherent in the research design.

Following the analyses conducted in *Crime in the Making*, three strategies are undertaken

in this study to control for potential selection bias (see Sampson and Laub,1993: 149-

153). First, all of these analyses focus solely on the delinquent sample such that the

selection bias inherent in the design of the study is controlled. Second, the strategy to

control for potentially important early individual differences (i.e., propensity) based on

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[14] Previous analyses on these cases have found "nothing unusual" about them (Sampson and Laub, 1993: 270, note 6).

<center>44</center>

available information that is observed and recorded in the data set is employed.

Specifically, criminal propensity will be measured using two observed variables,

unofficial delinquency and juvenile arrests while free (ages 7 to 17).

Unofficial delinquency represents a composite measure of total self-, parent-, and

teacher-reported delinquency and misbehavior. This variable ranges from 1 to 26 with a

mean of 14.24 (s.d. = 4.16) and taps into early antisocial behavior that may not have been

identified in official records (Sampson and Laub, 1993: 50-53). The offending rate for

the juvenile years measures the arrests for total crime from ages 7 to 17, accounting for

incarceration time, and has a mean of .425, a standard deviation of .246, and ranges from

.06 to 1.85. While it is impossible to control for every potential individual difference and

childhood factor that may be correlated with criminal propensity, this combined strategy

taps into the between-individual differences with respect to criminal propensity that are

manifested in official and unofficial delinquent behavior. Therefore, any significant

relationships between the key variables of interest and adult offending patterns will be

less likely to be attributable solely to individual propensities towards crime and

misbehavior.

Third, past offending is the best predictor of future offending. Therefore, in order

to control for prior *adult* offending, the prior adult arrest rate is used. For the analyses

investigating the conditional effect of life events during ages 17 to 25, this control

variable is the young adult arrest rate for ages 17 to 25. This rate is the number of total

arrests while free during those eight years. The mean arrest rate for this time period is

1.61 offenses while free (s.d. = 2.78) although the arrest rates range from zero to 30

offenses while free. Similarly, the prior arrest rate between ages 25 and 32 is used in the

models that investigate the conditional effects of binding life events on short-term and long-term offending past age 32. The arrest rate for this later time frame has a slightly lower mean than the earlier adult period with a mean of 1.02 offenses while free (s.d. = 2.44), although there is again a vast range in values from zero to 29 arrests while free over the late 20s and early 30s.

One potential concern with including juvenile criminal propensity measures and prior adult crime is multicollinearity between these measures. However, this issue does not appear to be a cause for concern in this study. First, the correlations between unofficial delinquency and both adult arrest rate measures are not significant within the delinquent sample.[15] Second, while the correlations between the juvenile, young adult (17 to 25) and later adult (25 to 32) arrest rate measures are significant, their magnitudes are not large. For instance, the correlation between the juvenile and young adult arrest rates is .158 (p = .001) and similarly, the correlation between the juvenile arrest and later adult arrest is .198 (p = .000).

<u>Self-Control</u>

There has been a substantial amount of research on the measurement of self-control such as whether it is a unidimensional scale or a multidimensional scale, and whether the scale should be measured by attitudes or behaviors. For instance, while there are exceptions (e.g., Longshore, et al., 1996), many studies have used Grasmick, et al's (1993) unidimensional scale and have agreed that it is indeed unidimensional using traditional factor analysis methods. With respect to attitudinal versus behavioral scales,

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[15] Although there is no correlation between unofficial delinquency and these adult arrest rates (i.e., lambda measures), unofficial delinquency is correlated with percent arrested between ages 17 and 25 (r = .148, p < .01) and ages 25 and 32 (r = .158, p < .01). Unofficial delinquency is also correlated with the frequency of arrests for ages 17 to 25 (r = .168, p < .01) and ages 25 to 32 (r = .103, p < .05).

Gottfredson and Hirschi (1990) state that since self-control is not a personality trait, a behavioral scale is best to use. However, critics state that using a behavioral scale raises questions of tautology in that using the elements of criminal behavior to characterize the elements of low self-control translates into crime predicting crime since low self-control is posited to predict crime (Akers, 1991).

One group of researchers states, "behaviorally based scales of self-control produce no advantage over cognitively based ones in the prediction of criminal/deviant behavior" (Tittle, Ward, and Grasmick, 2003: 362-363). Similarly, Pratt and Cullen's (2000) meta-analysis of self-control studies found that low self-control strongly predicts crime and analogous behavior regardless of whether an attitudinal or behavioral scale was used, and whether the scale was Grasmick, et al's scale or an alternative attitudinal scale. In essence, while there is a great deal of debate surrounding the type of scale used to measure self-control, the conclusion appears to be that the findings are robust with several different types of measures (cf., Marcus, 2004).

In general, scales measuring low self-control, either behaviorally or attitudinally, have tapped into traits such as impulsivity, risk-seeking, self-centeredness, irritability, lack of persistence, inattention, hyperactivity, physical responses to conflict, and a low tolerance for frustration (see, e.g., Wright, et al., 2001, Grasmick, et al., 1993, Longshore, et al., 1996, Evans, et al., 1997). The measure of self-control used here draws on several childhood and adolescent behavioral manifestations of low self-control assessed through self-, parent-, and teacher-reports collected during the first wave of the Gluecks' study (Glueck and Glueck, 1950). This variable is a composite measure of four separate

behaviors, each measured as dichotomous variables and reverse coded so that higher scores indicate higher self-control.

The first two components of the self-control variable are drawn from early childhood measures that Sampson and Laub have used in prior research as indicators of childhood predisposition toward disruptive behavior (see Sampson and Laub, 1993: 88). The first is a variable originally created from the parent's interview and labeled difficult child. This variable distinguishes between children who were overly restless and irritable from children who were not. The second early childhood variable measures the extent to which a child engaged in violent temper tantrums and was predisposed to aggressiveness and fighting. This variable reflects the tendency towards a physical response by the child to difficult situations growing up. These measures tap into irritability, physicality, and hyperactivity --- three characteristics that have been theorized to distinguish between levels of self-control.

Two adolescent behavioral manifestations comprise the final components of the self-control measure. These are 1) whether the parents reported that the one of the boy's bad habits at the first wave interview was smoking and 2) whether, according to teacher reports and school records, he was a persistent truant as opposed to never or only occasionally truant. [16] These variables were combined to create a behavioral scale of self-control ranging from 0 to 4. The self-control measure was then reverse coded so that a high score represents high self-control and a low score represents low self-control. While

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[16] Self-reported, teacher-reported, and parent-reported information are available on whether or not the boy smoked at the wave I interview. Since these three measures are strongly correlated at r = .498 or greater, only the parent-reported measure was selected. While the three sources of information were also available for whether the boy was truant or not, only the school records and teacher reports provided information on the frequency of truancy.

this measure of self-control is a scale constructed from behavioral indicators measured during childhood and adolescence, the assumption is that self-control is stable throughout childhood, adolescence, and adulthood. [17]

For the total sample (delinquents and non-delinquents), the mean level of self-control is 2.61 with a standard deviation of 1.22. The frequency distributions for the delinquents and nondelinquents are presented separately in Table 3.4. It is clear that the scale for the nondelinquent sample is skewed to the higher end, indicating a tendency toward higher levels of self-control. Specifically, two percent of the nondelinquents score a zero or one, the lowest levels of self-control, while 54 percent score a four, indicating the highest level of self-control. In contrast, the delinquents, as a group, are more prone to have lower self-control on the scale with 40 percent scoring a zero or one and only 5 percent scoring a four. These differences in distribution are expected given that these subjects were selected into the study based on their delinquent or nondelinquent status.

Table 3.4 here

Before this measure can be confidently used in the following analyses, its reliability and validity must be confirmed. Reliability is a concern when using any type of data and reflects how well a number of items measure a single latent construct. Cronbach's alpha is a coefficient of reliability that indicates the inter-correlation between the selected items and is commonly used to assess reliability. For the measure of low self-control, the Cronbach's alpha shows that this latent construct is reliable with an alpha

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[17] This is a plausible assumption given the amount of research on the longitudinal stability of personality traits. For instance, in an extensive study on this topic, Conley found that across trait, method, and occasion over a 19-year period, several traits, including impulse control, were "valid personality traits that

of .545, which is slightly low but comparable to self-control scales used in other published studies (see, e.g., Wright, et al., 2001; Evans, et al., 1997).

Although it is impossible to conclude that a measure is 100 percent valid, one way to check for construct validity is to see if the variable in question performs as expected. First, self-control among the entire sample should be strongly correlated with whether a case is in the delinquent sample or the nondelinquent sample, which it is (r = -.672, p = .000) and the related overall measure of unofficial delinquency, which it is (r = -.730, p = .000). Second, self-control among the delinquent sample should be correlated with official crime into later adulthood. Indeed, the results from the correlation analyses show that the self-control scale appears to have face validity as it is significantly correlated with total arrests between ages 17 and 70 (r = -.125, p = .006), between ages 25 and 70 (r = -.115, p = .012), and between ages 32 and 70 (r = -.100, p =.031). Third, an early age of onset is commonly linked with low self-control and therefore this measure should be correlated with early onset of serious misbehavior, which it is (r = .177, p = .000). Moreover, while these measures are all significantly correlated, their magnitudes are not extremely strong, indicating that the measure of self-control is tapping into a different domain than crime itself.

Finally, self-control should be correlated with the binding life event scales described previously. According to Gottfredson and Hirschi (1990), those with low self-control are not only more likely to commit crime but also less likely to experience binding life events (see also Wright, et al, 1999). The correlation between self control and the binding life event scale between ages 17 and 25 is .108 (p = .033) and between

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[were] longitudinally stable during the decades of adulthood" (1985: 1280) (see also, Moss and Susman, 1980).

ages 25 and 32 is .162 (p = .001). While these correlations with the binding life event scales are again significant but relatively low in magnitude, it is impressive that this measure, based on childhood and adolescent behaviors, continues to be correlated with distal factors occurring decades later.

Since the delinquent sample is largely comprised of those with low self-control, the cut-points for dichotomization are chosen from the distribution of the total sample (delinquents and non-delinquents) and split at approximately the 50 percent mark. Thus, for the delinquents, the scale is dichotomized into those with low self-control (75 percent) who scored a 0, 1 or 2 on the full scale and those with high self-control (25 percent) who scored a 3 or 4 on the full scale. The bottom of Table 3.4 presents the summary statistics for this dichotomized measure.

One concern with using a measure of self-control among a sample of delinquents is that there is much less within-group variation than when the entire sample is used. However, given that the outcome of interest is desistance from crime, one must analyze the within-group differences in future crime among those already delinquent. This situation is a "catch-22" in that the solution is denied by the circumstances inherent in the problem. Therefore, in an attempt to increase variability, several alternative specifications will be used in the interaction analyses. One alternative specification dichotomizes the scale based on the frequency distribution of the delinquent sample, which results in 187 boys (40 percent) labeled as low self-control (scores of 0 or 1) and 284 boys (60 percent) labeled as high self-control (scores of 2, 3, or 4). Another specification is the continuous scale which will also be used in an effort to detect an interaction effect.

The measure of adolescent competence in this study is derived from the measure used by Laub and Sampson (1998) to predict the effects of adolescent competence on long-term socioeconomic status among the Glueck men. Drawing on Clausen's work (1991, 1993), Laub and Sampson constructed a measure of adolescent competence that is consistent with Clausen's idea of planful competence (see Laub and Sampson, 1998: 93-94). This measure is a composite of 6 factors. The first two factors tap into whether the boy had academic or vocational ambitions, meaning a desire for further schooling or to learn a specialized trade and assesses the boy's planfulness in the use of money. This variable also includes whether the boy was labeled as intellectual or conscientious during the psychiatric interview. Finally, the boy's attitude towards school and whether he performed well on his grades as stated by his teacher are the final two elements. With each component being a binary variable, this measure of adolescent competence ranges from 0 to 6, has a mean of 1.99, and a standard deviation of 1.55 (N=905). The frequency distributions for the delinquent and nondelinquent samples are presented in Table 3.4. [18]

Laub and Sampson (1998: 94) conducted several validity checks of their scale of adolescent competence and found this measure to be valid. In addition, as with self-control, adolescent competence among the entire sample should be strongly correlated with whether a case is a delinquent or nondelinquent, which it is (r = -.477, p = .000) and with the related overall measure of unofficial delinquency, which it is (r = -.513, p =

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[18] It should be noted that there are 42 missing cases among the delinquent sample for this variable, largely due to a lack of school attachment and adolescent ambition data. However, t-tests comparing the missing and non-missing cases did not reveal any significant differences with respect to childhood characteristics, school or family experiences, or juvenile offending.

.000). Specifically, for the sample of delinquents, adolescent competence is significantly and negatively related to total arrests between ages 17 and 70 (r = -.164, p = .001), total arrests between ages 25 and 70 (r = -.144, p = .002), and total arrests between ages 32 and 70 (r = -.105, p = .029). Finally, adolescent competence should be positively and significantly correlated with self-control which it is (r = .106, p = .028). However, although adolescent competence and self-control are related to each other, the magnitude of the correlation is not strong indicating that these two measures have discriminant validity as well and are thus, not one in the same.[19]

As seen with the self-control measure, the delinquents are more prone to have lower adolescent competence due to the study design. Here, none of the delinquents scored a six (the highest level of adolescent competence) and only 5 percent scored a four or five (see Table 3.4). The cut-off points for dichotomization were again determined from the distribution of the total sample, leaving 88 percent of the sample representing those with low adolescent competence (scores of 0, 1 or 2) and 12 percent of the sample representing those with high adolescent competence (scores of 3 or more). Again, this measure of adolescent competence is assumed to be stable into adulthood. Table 3.4 presents the summary statistics for this dichotomized measure.

Again, there is a problem of variation in the adolescent competence measure within the group of delinquents. Therefore, alternative specifications such as a second dichotomous variable based on the frequency distribution of the delinquent sample is used in the interaction analyses. Dichotomizing on the delinquent sample leaves 287

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[19] In addition, a factor analysis also indicates that these two variables are measuring separate constructs. On the total sample, two factors emerge with the self-control components loading on one factor and the adolescent competence component measures loading on the second factor.

boys (65 percent) labeled low in adolescent competence (scores of 0 and 1) and 151 boys

(35 percent) labeled high in adolescent competence (scores of 2 through 5). The

continuous adolescent competence variable is also used as an alternative specification.

ANALYSIS

The analytical models used to investigate the question of whether social

integration and/or person-situation interactions influence adult offending are the

semiparametric mixed Poisson model (SPMM) and the hierarchical linear model (HLM).

The semiparametric mixed Poisson model is a relatively recent statistical technique

developed by Daniel Nagin (1999, 2005) which allows a disaggregation of offending

trajectories to reveal variability in offending over time. This model assumes that the

population is comprised of discrete Poisson distributions with a λ rate of offending. In

essence, different groups of offenders are assumed to commit crimes, and desist, at

different rates. This procedure assigns each individual a posterior probability of

membership into each estimated trajectory group and then assigns each case to the group

that he or she is most likely to belong. The final result is a number of different groups

comprised of individuals who demonstrate similar patterns of offending over time.

Specifically, the group-based model used for offending count data is the

semiparametric mixed Poisson model, which estimates the predicted number of offenses

per year at each age for each trajectory group. Each developmental trajectory assumes a

quadratic (or cubic) relationship that links age and offending as illustrated by the

equation

$$\log \lambda_{it}^{j} = \beta_{0}^{j} + \beta_{1}^{j} age_{it} + \beta_{2}^{j} age_{it}^{2} \tag{1}$$

where λ_{it}^j is the predicted rate of offending for person i in group j for time period t, Age_{it} is the age of person i for time period t, Age_{it}^2 is the squared age of person i for time period t, and the coefficients $\beta_0^j, \beta_1^j, and \beta_2^j$ structure the shape of the trajectory for each group j. Although every individual in each group is constrained to the same slope and intercept of that trajectory, these parameters, which determine the level and shape of the trajectory, are free to vary by group (Nagin, 2005: 33).

The trajectory method estimates these model parameters using maximum likelihood for a fixed number of groups. The optimal number of groups is determined by the Bayesian Information Criterion (BIC) which can inform the selection of the best model for comparison of both nested and unnested models (see D'Unger, et al, 1998; Nagin, 1999). The BIC is estimated using the following equation

$$BIC = -2\log(L) + \log(n) * k \qquad (2)$$

where L is the maximum likelihood, n is the sample size, and k is the number of model parameters (Nagin, 2005: 64). Lastly, this procedure assigns each individual a probability of membership in each group. This posterior probability is determined using the equation

$$\hat{P}(j|Y_i) = \frac{\hat{P}(Y_i|j)\hat{\pi}_j}{\sum_j \hat{P}(Y_i|j)\hat{\pi}_j} \qquad (3)$$

where $\hat{P}(Y_i|j)$ is the estimated probability of observing the actual offending behavior Y_i conditional on membership in group j for person i, and $\hat{\pi}_j$ is the estimated proportion of the population in group j (Nagin, 2005: 79). Based on these probabilities, each individual is assigned to the group displaying the largest group assignment probability. In other

words, individuals are assigned to the group to which they are most likely to belong based on their offending patterns.

The simplest model assumes that exposure time for everyone is equal. When exposure time is not equal, a parameter that accounts for exposure time can be added to Eq. (1) when estimating the predicted rate of offending. Thus, for the analyses that take incarceration into account, the group-based model includes an incarceration parameter in the estimation. This added parameter incorporates the amount of time each person spent in the community each year. With this additional parameter, λ_{it}^{j} from Eq. (1) becomes a weighted λ representing the predicted number of offenses that person i in group j would have committed if he had been free for the entire time period t (i.e., 365 days of the year).

Nagin (2005) describes several diagnostics to better assure the user that the selected model is adequately capturing the heterogeneity in the sample and not identifying nonsensical groups. The first diagnostic is the average posterior probability of assignment for each group. This measure reflects the accuracy or certainty of group assignment. The closer the average posterior probability is to 1, the more certain a researcher can be about the group assignment. Also, a simple comparison between the group probabilities that are estimated for the population and the actual proportion of individuals who are assigned to the group can be informative. The closer these proportions are, the more adequate the model.

A related diagnostic is the odds of correct classification (OCC). Using the average posterior probability and the estimated proportion of the population for each group, the equation for the odds of correct classification, as detailed in Nagin (2005: 88), is

$$OCC_j = \frac{\dfrac{AvePP_j}{1 - AvePP_j}}{\dfrac{\hat{\pi}_j}{1 - \hat{\pi}_j}} \qquad (4)$$

The numerator represents the odds of a correct classification into group j based on the maximum probability classification rule while the denominator is the odds of correct classification into group j based on random chance. Therefore, the OCC, in essence, measures the predictive capacity of the average probability of assignment beyond random chance. The larger the OCC, the better the assignment accuracy.

The offending trajectories for six different time periods are estimated to identify the short-term and long-term offending trajectory groups between ages 17 and 25, 17 and 70, 25 and 32, 25 and 70, 32 and 45, and 32 and 70. To begin the estimation process, an incrementally larger number of groups are estimated and the optimal model is assessed using the BIC statistic along with other model diagnostics such as population estimates for each group and posterior probabilities of assignment.

The semiparametric group-based model assumes that the population is comprised of discrete groups of offenders. Since this is an assumption that may or may not be true, hierarchical linear modeling is also used which assumes that there is a continuous distribution of trajectories rather than a multinomial distribution. This additional analysis will safeguard against making conclusions based on possibly erroneous model assumptions (see Bushway, Brame, and Paternoster, 1999).

Briefly, hierarchical linear modeling allows a simultaneous estimate of variations in crime within individuals over time and between-individual differences in offending patterns. To study individual change within the HLM framework, the crime counts for

each individual by age are viewed as nested within that individual. There are two levels

of analysis. Level 1 estimates each person's development with a unique individual

growth trajectory that depends on a set of parameters. The growth parameters from Level

1 become the outcome variables in Level 2 of the model and are determined by person-

level characteristics. Therefore, Level 1 in the model estimates the within-individual

change and Level 2 in the model represents the between-individual analysis (Raudenbush

and Bryk, 2002).

At the within-individual level, crime is modeled as a quadratic function of age.

Specifically, a hierarchical Poisson model is used that incorporates incarceration when

available (i.e., time on the street) (Raudenbush, Bryk, and Congdon, 2004). Therefore,

the outcome variable in this model is the log of total offending per year (lambda). For the

models that include ages prior to age 32, the outcome variable is the log of the total

offending rate per year free (lambda*days free). The basic elements of this within-person

model are:

$$\text{Log(Crime}_{it}) = \pi_{0i} + \pi_{1i}\,\text{Age}_{it} + \pi_{2i}\,\text{Age}^2_{it} + e_{it}, \qquad (5)$$

where i is the index for individuals and t stands for the longitudinal observations. The

intercept, π_{0i}, is the estimated rate of crime when age is set to zero (i.e., initial status).

The π_{1i} and π_{2i} parameters estimate the average rate of change and rate of acceleration or

deceleration, respectively (Raudenbush and Bryk, 2002: 163). To increase the

meaningfulness of the interpretation of the intercept term, researchers use the technique

of centering their data. Centering at the mean provides a more meaningful anchor to

better understand the variation around the mean. Here I center age at the mean of the

observed age-person distribution (age 20.5 for the 17 to 25 model, age 28 for the 25 to 32

model, 38 for the 32 to 45 model, age 43 for the 17 to 70 model, age 47 for the 25 to 70

model, and age 50.5 for the 32 to 70 model).

At the between-individual level, the parameters from Level 1 are estimated from

the Level 2 equations. According to the model used in this analysis, the slope parameters

for age are allowed to vary across persons, as indicated by the error term but the

acceleration parameter is fixed.[20]   The basic elements of the between-individual model

are:

$$\pi_{0i} = \beta_{00} + \beta_{01} X_i + \beta_{02} W_i + \beta_{03} Z_i + r_{0i} \qquad (6)$$

$$\pi_{1i} = \beta_{10} + r_{1i} \qquad (7)$$

$$\pi_{2i} = \beta_{20} \qquad (8)$$

where X, W, and Z represent the various individual-level and control variables described

previously that are presumed to predict patterns of crime over time (Raudenbush and

Bryk, 2002: 164).[21]   The specific models for the different analyses are described next.

Cumulative Advantage/Social Integration

Sampson and Laub (1993) found that strong social bonds lead to a reduction in

criminal activity. Drawing on the cumulative advantage and social integration literatures,

the current study investigates whether there is a conditional effect of social bonds on

adult offending based on the amount of bonding a person has to society. Specifically, the

hypothesis is that those who are more socially integrated into society will have lower

levels of short-term and long-term offending and steeper rates of decline over the short-

and long-term than those who are less socially integrated. As outlined in the previous

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[20] In all of the analyses, the residual parameter variance for age-squared is set to zero. When this is free to
vary, the model fails to converge.

[21] The model results reported are the population-average model parameters with robust standard errors.

section, social integration is measured according to the binding life event scale where high social integration is indicated by higher scores on the binding life event scale and low social integration is indicated by lower scores on the scale. The longitudinal methods of semiparametric mixed Poisson modeling and hierarchical linear modeling are used to investigate these hypotheses.

In the case of the semiparametric mixed Poisson model, a multinomial logit analysis within the semiparametric model is used which links individual characteristics to the probability of group membership in order to test whether the individual-level characteristics can predict group membership (Nagin, 2005: Chapter 6). In order to do this, independent variables of interest (i.e., the binding life event scale score) and the control variables are included, along with age, in the trajectory equation. The group membership probability then follows a multinomial logit function. The specific question then is: Controlling for criminal propensity and prior adult crime, does the binding life event score predict trajectory group membership? If a higher binding life event scale score significantly distinguishes between the offending trajectory groups whose levels differ and/or rates of decline diverge, the implication would be that one condition of the influence of life events on offending patterns is a person's level of social integration.

With respect to the HLM analyses, social integration and the control variables are included in the Level-2 model, along with age and age-squared at Level-1. For each model, the Level-2 variables will be used to explain the variation in the intercept term, which translates to explaining the rate or level of offending. Social integration will then be entered as a Level-2 variable to explain variation in both the intercept term and in the slope parameter, or rate of decline. If the social integration coefficient significantly

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impacts the slope parameter, the control variables will also be entered into the Level-2 model. This modeling will allow an investigation into whether variation in social integration is associated with variation in the rate of decline over the life course as well as the level of offending.

Interactions

The exploratory hypothesis put forth with regard to the relationship between self-control and adolescent competence and life events is that the effect of life events on desistance from crime may depend on these individual characteristics. For instance, it is hypothesized that those with lower self-control will be affected more from having multiple binding life events of marital stability, job stability, and honorable military service as measured by the binding life event scale than those with higher self-control. In addition, those who experience long-term incarceration may also be affected differently depending on their individual characteristics. Again, the focus in the interaction analyses is on identifying different levels and rates of decline in future offending. Not only could future offending levels be affected by social integration or long-term incarceration for those with low self-control or low adolescent competence but the rates of change in offending may also be affected.

To begin, as a global test, the interaction analyses will be conducted with self-control or adolescent competence and the binding life event scale, using a variety of specifications. First, a dichotomization of the binding life event scale for ages 17 to 25 and 25 to 32 is used to test whether interactive effects exist between social integration and individual characteristics on adult offending. For each time period the binding life event scale is divided into those whose proportion of binding life events to life events

experienced was 50 percent or less (i.e., a binding scale score of 1 through 5) and those whose proportion of binding life events to life events experienced was over 50 percent (i.e., a binding scale score of 6 through 9). This dichotomization results in 219 men labeled low in social integration (55 percent) and 177 high in social integration (45 percent) between ages 17 and 25 and 246 men labeled low in social integration (61 percent) and 160 labeled high in social integration (39 percent) between ages 25 and 32.

Again the semiparametric mixed Poisson model and the hierarchical linear model will be used to estimate these effects on short-term and long-term adult crime. Basically, the same approach as described in the previous section is used for the interaction analysis. The difference here is that, instead of modeling social integration only, an interaction term of the binding life events scale and the individual characteristic and their corresponding main effect variables are modeled as the variables of interest.

Specifically, the dichotomous social integration measure will be interacted with the dichotomous individual characteristic measure described in Table 3.4 to estimate this interaction effect on the short- and long-term levels of adult offending. These analyses will then be replicated with the individual characteristic measure that was dichotomized based on the delinquent sample as opposed to the total sample and replicated again with the continuous individual characteristic measure and the continuous binding life events scale. Depending on the results of these findings, evidence of an interactive effect will then be investigated further to identify if a certain binding life event is the driving force behind the interaction effect. Finally, if these analyses find evidence of interactions, the conclusion would be that one condition of the influence of social bonds stemming from

life events on desistance is the individual characteristic of adolescent competence and/or self-control.

In addition to a predicted interaction between binding life events and individual characteristics, it is also predicted that the non-binding life event of long-term incarceration and these individual characteristics will interact. For example, those with low self-control may show amplification effects from long-term incarceration. In the same vein, it is hypothesized that those with higher adolescent competence will be less affected by long-term incarceration. Here, the time frame of the dependent variable shifts to 17 to 25 for the short-term analysis and 17 to 70 for the long-term analysis since juvenile incarceration ends at age 17 and everyone experienced this life event.

Multinomial logit analyses of the trajectory groupings from the semiparametric mixed Poisson model and HLM analyses for these same time periods will be used to examine the interactive effect for juvenile incarceration and self-control or adolescent competence. Specifically, the dichotomous measure of juvenile incarceration described in Table 3.1 will be interacted with the dichotomous self-control and adolescent competence measures described in Table 3.4 to estimate the interaction effect on the short- and long-term levels and rates of change in offending. Again, these analyses will be replicated with the measures that were dichotomized based on the delinquent sample as opposed to the total sample and the scale measures. The following chapters present the results of the analyses described in this chapter.

CHAPTER 4: SOCIAL INTEGRATION AND DESISTANCE

Drawing on the cumulative advantage and social integration literature discussed in Chapter 2, one potential condition of desistance examined here is the accumulation of life events and their subsequent social bonds (i.e., level of social integration). The current research acknowledges Sampson and Laub's finding that independent effects exist between binding life events and desistance and further tests their theory by asking whether the presence of additional social bonds to conventional society within the *same* individual is related to lower levels and steeper rates of offending, in both the short- and long-term. The expectation is that social integration will affect the level of offending and rate of decline, controlling for criminal propensity and prior adult crime.

The semiparametric mixed Poisson models (SPMM) and hierarchical linear models (HLM) are utilized to address the relationship between social integration and short-term and long-term future offending in adulthood. For each time period, the semiparametric trajectory model will be presented followed by the findings from the multinomial logit comparisons with respect to the influence of social integration on the offending trajectory groupings. The HLM models will then be presented for the corresponding time period. As described in Chapter 3, social integration is operationalized in two ways, the proportion of binding life events and the binding life event scale. Since the substantive conclusions are the same regardless of the operationalization of social integration, only the results using the binding life event scale are presented.

SOCIAL INTEGRATION AND SHORT-TERM OFFENDING

Social Integration Between Ages 17 to 25

To begin, the influence of social integration measured between ages 17 and 25 on short-term offending (ages 25 to 32) is examined. The semiparametric mixed Poisson model estimated five groups to best describe the adult offending patterns for ages 25 to 32 for these delinquent boys.   As displayed in Table 4.1, while the BIC statistic continued to increase up to at least six groups, the five group model was selected on the basis of parsimony and the model diagnostics described in Chapter 3. In essence, the group-based method was no longer identifying substantively interesting groups past the five groups identified. In addition, the group population and sample proportion were similar, the average posterior probabilities were relatively high, and the odds of correct classification were above the recommended number five for the five group model (see Table 4.1).

Table 4.1 here

Figure 4.1 displays the five estimated offending trajectories for this time period. The first group is labeled the "high-level declining offender" group who display high levels of offending throughout this time period but begin decreasing in their rate of offending around age 28.[22] The second group, the "low-level declining offenders," begin at a much lower rate than their high-level counterparts and decline to a near zero rate of offending by age 32. The "inclining offenders" in this model begin at a relatively low rate of offending at age 25 but nearly triple their rate of offending by age 32. The "low-

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[22] It should be noted that the group labels used in each model are not meant to reflect groups that occur in reality. The technique is used as a heuristic device to cluster the data with respect to their developmental trajectories over time. Also, these labels are assigned relative to other groups in the sample. For instance, the label "high-level declining offender" is relative to others in this delinquent sample.

level offenders" and "nonoffenders" display somewhat parallel trajectories with the low-level offenders committing a very low but non-zero rate of offending from ages 25 to 32.

Figure 4.1 here

Simple univariate chi-square and ANOVA tests reveal that there is a significant relationship between the binding life event scale score and these semiparametric offending trajectory groups (data not shown). [23] However, while the chi-square and ANOVA tests begin to identify these relationships through an analysis of group mean differences, these are univariate tests that do not control for other important factors that may be influencing group differences, such as criminal propensity. Therefore, multinomial logit analyses that include a control for criminal propensity and prior adult crime is employed.

The multinomial logit analysis results for the effect of social integration between ages 17 and 25 on short-term adult offending between ages 25 and 32 are presented in Table 4.2. One pattern that emerges in these comparisons is that the binding life event scale significantly distinguishes between each of the trajectory groups that are still offending between ages 25 and 32 and the group that is not offending during this adult period. Based on the negative direction of the significant binding life event scale coefficients in these comparisons (i.e., -.2983, -.3791, -1.099, and -.4367), more socially integrated individuals are associated with a lower likelihood of being classified into an

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[23] As expected, these findings correspond with a decrease in the mean binding life event score by trajectory group. For instance, in the 25 to 32 model, nonoffenders average a score of 5.885, low-level offenders average a score of 4.853, inclining offenders average a score of 3.840, low-level declining offenders average a score of 3.535, and the high-level declining offender group average a score of only 2.625. Similarly, the mean proportion of life events experienced as binding ranged from .69 for nonoffenders to .05 for high-level declining offenders.

offender group as opposed to the nonoffender group, controlling for official and unofficial juvenile offending and prior adult crime.

Table 4.2 here

In order to interpret these results, the coefficients can be converted into predicted probabilities of group membership within the semiparametric mixed Poisson framework for different levels of social integration (Nagin, 2005: Chapter 6). After setting the controls at their mean, the predicted probability of being classified as a high-level declining offender with a binding life event score of 1 (low social integration) is .290. In contrast, the predicted probability of being classified as a nonoffender with low social integration is .005. For those with high social integration (binding life event score of 9), these probabilities of membership drop to .001 for high-level declining offenders and rise to .103 for nonoffenders.[24] This same pattern exists for the remaining offender group comparisons with the nonoffender group as well.

In addition, a similar pattern appears between high-level offenders and low-level offenders. Here, a lower binding life event score significantly corresponds to being assigned to the high-level declining group as opposed to being classified into any of the other three offending groups. For instance, the significant coefficient of -.8006 for the binding life event scale in the comparison between the high-level declining group and the low-level offenders indicates that those with higher levels of social integration are more likely to be low-level offenders between ages 25 and 32. Again this coefficient can be translated into predicted probabilities with the controls set at their mean values. Here,

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[24] Since these probabilities are dependent on the population base rates for each group and on holding the control variables at their mean, the shift in probability with changing levels of social integration rather than the numerical magnitude of the probability is emphasized.

while the predicted probabilities of membership fall from .290 to .001 as high-level declining offenders move from the lowest to highest levels of social integration, the predicted probabilities of membership for low-level offenders rises from .384 to .676 as the level of social integration increases from low to high.

One additional comparison of note in Table 4.2 is between the inclining group and the high-level declining group --- the two groups with drastically different slopes of offending between ages 25 and 32. As the significant coefficient of -.7198 indicates, higher social integration is associated with a higher likelihood of being in the inclining group when compared to the high-level declining group. In other words, a person with high social integration is more likely to be in the lower-level but increasing offending group (inclining offender) when compared to the higher-level yet decreasing group (high-level declining offender). This suggests that social integration is a better predictor of offending level than rate of change in offending.

To show the overall pattern of the differing predicted probabilities, Figure 4.2 displays the hypothetical impact of increasing the binding life event scale score on the probability of belonging to each group, holding the control variables in the model at their means. For ease of comparison, the predicted probabilities of belonging to the inclining offenders and low-level declining offenders have been combined as well as the low-level and nonoffenders. Overall, there is a clear decrease in probability for those in the high-level declining offender group and a sharp increase in probability of being assigned to either the nonoffender or low-level offender groups as the level of social integration increases. For instance, a score of 1 corresponds to a .390 chance of being in the nonoffender or low-level offender groups. This probability doubles to .779 if a person

were to experience a binding life event scale score of 9 (i.e., experiencing marital attachment, honorable military service, and stable employment between ages 17 and 25). This is in stark contrast to the predicted decrease of membership probability in the high-level declining offender group as the level of social integration increases, again with the controls set at their mean.

Figure 4.2 here

The results of social integration between ages 17 and 25 on short-term offending (ages 25 to 32) from the HLM analysis concur with the multinomial logit model results. Again, the binding life event scale significantly affects the levels of offending in the short-term. From the unconditional model in Table 4.3, it is evident that the average total offending rate is .68 crimes while free at age 28 ($e^{-6.291}$ * 365) and the average rate of decline is 6 percent per year as indicated by the age-slope coefficient (($e^{-.0616}$ – 1)*100).[25] The conditional model, introduces the binding life event scale, criminal propensity, and prior adult arrest as explanatory variables for the intercept parameter.[26] The level of social integration significantly affects the level of offending as indicated by the significant coefficient of -.2263 in the Level-2 model. Thus, a unit increase in the binding life event score is associated with having a predicted 20 percent lower level of offending at age 28. Again, this is especially convincing since this model controls for criminal propensity and prior adult crime. With respect to whether social integration affects the rate of decline in short-term offending, a conditional model which included the

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[25] The correlation between the initial status and growth rate coefficients is .186. This positive correlation indicates that those with a higher level of offending at age 28 decline at a faster rate per year.

[26] The reliability of the initial status parameter is .697 signaling that much of the variability in the estimate is due to systematic error as opposed to model error (Raudenbush and Bryk, 2002: 165-166). This indicates that the addition of Level-2 variables for the age parameter is warranted.

social integration measure as an explanatory variable for the slope parameter was analyzed. The binding life event scale score was not significant.[27] The non-significance of this coefficient indicates that a person's level of social integration has no effect on his rate of decline in the short-term (data not shown).

<div align="center">***Table 4.3 here***</div>

Social Integration Between Ages 25 and 32

When the focus is on social integration measured between ages 25 and 32 on short-term offending between ages 32 and 45, a similar story emerges. Here, the semiparametric mixed Poisson model identifies four groups to best describe short-term adult offending patterns. Again, while the BIC statistic continued to increase up to six groups, the four group model was chosen based on the group population and sample proportion comparisons, the average posterior probabilities, the odds of correct classification, and parsimony (see Table 4.4).

<div align="center">***Table 4.4 here***</div>

As Figure 4.3 indicates, these different patterns predominantly show variation in levels of offending as opposed to variation in change patterns over this time period. The "high-level offenders" commit more offenses on average than the "mid-level offenders" who in turn commit more offenses per year than the "low-level offenders." Finally, these three groups all commit more offenses than the "nonoffender" group who commit virtually zero offenses throughout this time frame.

<div align="center">***Figure 4.3 here***</div>

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[27] The reliability of the growth parameter is .281 signaling that much of the variability in the estimate is due to model error as opposed to systematic error making the finding of significance for this level-2 variable unlikely (Raudenbush and Bryk, 2002: 165-166).

The multinomial logit results indicate a very similar story to that described above. Therefore, these results will be described but not presented in tabular form. Here, the binding life event scale score significantly distinguishes between the offender groups and the nonoffender group depicted in Figure 4.3, controlling for criminal propensity and prior adult crime. The main difference between the results of social integration measured between ages 25 and 32 and the results of social integration measured between ages 17 and 25 on short-term offending detailed above, is that there are no significant differences between the different levels of offending. The lack of significance between the high-level offender group and the remaining groups is likely due to the fact that the sample size for the high-level offender group is very low (N = 15). However, this explanation is not likely to be the reason for the nonsignificant finding between the mid-level and low-level offenders.

The HLM analysis of the influence of social integration (age 25 to 32) on short-term offending is virtually identical to that described above for the social integration (age 17 to 25) analyses on short-term offending (data not shown). Here, a higher level of social integration is associated with a 14 percent lower level of offending at age 38, controlling for criminal propensity and prior adult arrest. In addition, as seen in the earlier analyses, social integration does not significantly affect the rate of decline in short-term offending.[28]

Summary of Short-Term Results

Overall, there is consistent evidence in the short-term models that levels of total offending are significantly influenced by the level of social integration a person

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[28] The reliabilities for the initial status and growth parameters in these models are .696 and .286, respectively. The correlation between these two parameters is .271.

experiences in their recent past. This is especially apparent between offenders and

nonoffenders but is also true, although less consistently so, between different groups of

offenders. Finally, there is consistent evidence from these analyses that the rates of

decline are not significantly affected by a person's level of social integration. We move

next to an examination of long-term adult offending to see if a person's level of social

integration in early adulthood continues to affect their offending over the entire life

course.

SOCIAL INTEGRATION AND LONG-TERM OFFENDING

Social Integration Between Ages 17 and 25

When the trajectory groups are estimated over the long-term from ages 25 to 70,

four groups of offenders with different rates of offending are identified. Again, based on

parsimony and the model diagnostics, four groups were estimated even though the BIC

continued to increase up to six groups (see Table 4.5).   The four trajectory patterns in

this model are displayed in Figure 4.4. The "high-level late declining offender" group

displays high levels of offending throughout most of adulthood. Beginning in their late

30s, they show a steady rate of decline before terminating their offending in late

adulthood. The "high-level declining offender" group also displays a high level of

offending in their late 20s but declines at a much faster rate than the high-level late

declining offenders. The "low-level declining offenders" display a desisting pathway in

early adulthood that again somewhat parallels the nonoffenders. Finally, the adult

"nonoffenders" trajectory describes the offending patterns of those delinquent boys who

have the lowest rate of offending in their twenties and who, for all intents and purposes,

have desisted by their early 40s. While these men do not literally exhibit zero offenses in each year, they are considered nonoffenders relative to the other groups and labeled as such for the sake of consistency across models.

Table 4.5 here

Figure 4.4 here

The analyses of the long-term impact of social integration on offending are somewhat inconsistent with each other making any concrete conclusions problematic. First, in the multinomial logit analysis of the offending trajectories from ages 25 to 70, the binding life event scale, measured between ages 17 and 25, inconsistently predicts group membership between offenders and nonoffenders and between different levels of offenders. As Table 4.6 indicates, only two of the six comparisons are statistically significant. Here, the level of social integration significantly distinguishes membership between the high-level declining offender and the nonoffender or low-level declining offender groups, after controlling for criminal propensity and prior adult crime. Again, the lack of significance between the high-level late declining group and the other three groups may be due to the fact that the sample size for the high-level late declining group is very low (see Nagin, 2005: 109). However, this explanation is not likely to be the reason for the nonsignificant finding between the low-level declining offenders and the nonoffender group.

Table 4.6 here

Second, the multinomial logit results indicate that social integration does not seem to affect rates of decline over the life course. This conclusion stems from the lack of significant difference between the high-level late declining offenders and the high-level

declining offenders --- the two groups who both begin at high rates of offending at age 25 but who desist at very different rates of decline over the life course. However, this lack of significance again may be a function of the low population base rate of 3.3 percent and low sample size for the high-level late declining group.

Figure 4.5 displays the overall impact of increasing social integration on trajectory group membership probabilities. This figure clearly depicts the decrease in probability for those in the high-level declining group and the increase in probability of being assigned to the nonoffender and the low-level declining group as the level of social integration increases. For instance, after setting the controls to their means, the predicted probability of being classified as a high-level declining offender between ages 25 and 70 with a binding life event score of 1 is .416. This probability falls to .067 for those with a binding life event score of 9. This trend is drastically different than the one seen with the nonoffender group. For this group, experiencing zero of the three life events as binding between ages 17 and 25 (i.e., a score of 1) is associated with a .218 probability of being classified as a nonoffender between ages 25 and 70. This probability of group membership rises to .469 when a person experiences a stable marriage, honorable military service, and stable employment (i.e., a score of 9). What is also clear is the similarity in trends between the nonoffenders and the low-level declining offenders as well as the stability of the high-level late declining offender group across the different levels of social integration.

Figure 4.5 here

Overall, there appears to be some evidence to suggest that the binding life event scale predicts between offenders and nonoffenders and between different offender groups

in the long-term. However, this evidence is not consistent across all models or all comparisons. To investigate this further, a logistic regression that combines all offender groups into one group and compares them to the nonoffender group shows that, indeed, a higher level of social integration is associated with being a nonoffender as opposed to an offender, after controlling for criminal propensity and prior adult crime (see Table 4.7). A separate logistic comparison between the high-level and low-level groups of offenders (i.e., the two high-level declining offender groups versus the low-level declining offender group) displayed at the bottom of Table 4.7 also shows a significant impact of social integration. Taken together, these findings indicate that while there is inconsistent evidence that social integration affects levels of offending individually, the aggregate logistic analyses show that social integration does predict differences among offenders and nonoffenders and among high- and low-level offenders in the long-term.

<center>***Table 4.7 here***</center>

The HLM results for long-term offending are presented in Table 4.8 and show evidence both consistent and inconsistent with these results. To begin, the average total offending rate in the unconditional model is .13 crimes while free at age 47 ($e^{-7.925}$ * 365) and the average rate of decline is 9 percent per year.[29] Model I, the first conditional model, introduces the binding life events scale score for ages 17 to 25 and the control variables for criminal propensity and prior adult crime.[30] The significant coefficient of -.1599 for the binding life event scale indicates that those with a higher level of social

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[29] The correlation between the initial status and growth parameters is .536, indicating that those who have a higher level of offending at age 47 decline at a faster rate per year.

[30] The reliability of the initial status parameter is .639 signaling that including level-2 variables to explain the variability in the estimate is warranted (Raudenbush and Bryk, 2002: 165-166).

<center>75</center>

integration between ages 17 and 25 have a 15 percent lower level of offending at age 47.

Next, in Model II, the level of social integration and the control variables are added as

Level-2 explanatory variables to the slope parameter.[31] In contrast to the short-term

models, the impact of social integration on the rate of decline in this long-term model

indicates that higher levels of social integration significantly correspond with a faster rate

of decline.[32] In this final model, the significant intercept and growth rate coefficients for

the binding life event scale indicate a 5 percent lower level of offending at age 47 and a

one percent faster rate of decline for those with a unit increase in level of social

integration, after controlling for criminal propensity and prior adult arrest. Thus,

according to this model, social integration affects both the level of offending and the rate

of decline over time in the long-term.

Table 4.8 here

Social Integration Between Ages 25 and 32

Finally, five groups were estimated to best describe the long-term adult offending

patterns from ages 32 to 70. The model diagnostics are presented in Table 4.9. Again,

the five group model was chosen based on the group population and sample proportion

comparisons, the average posterior probabilities, the odds of correct classification, and

parsimony.

Table 4.9 here

The offending trajectories for this five group model are displayed in Figure 4.6.

The first group is labeled the "high-level late declining offender" group who display high

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[31] The reliability of the growth parameter is .451.

[32] This is true in models with and without the controls added (data not shown).

levels of offending throughout the time frame and slowly begin to decrease their rate of

offending around age 40. The second group, the "high-level declining offender" group

offends at a higher rate at age 32 than the high-level late declining group but is already on

a downward trajectory at this age and terminates offending in their early 50s.   The third

and fourth groups are labeled the "low-level declining offenders I and II," and display

parallel trajectories. These two groups both begin at a much lower rate of offending at

age 32 than their high-level counterparts and slowly decline in their offending over the

life course. The low-level declining offender I group continues offending at a non-zero

rate into late adulthood while the low-level declining offender II group decline to a near

zero rate of offending by around age 50. Finally, there is the "nonoffender" group who

for all intents and purposes refrain from offending throughout this time period.

Figure 4.6 here

The overall story of the influence of social integration on long-term offending

becomes even less clear when the focus is on the influence of social integration between

ages 25 and 32 on offending trajectories between 32 and 70. Here, the multinomial logit

model reveals that levels of social integration only significantly distinguish between one

group of offenders and the nonoffenders. Therefore, on the whole, it does not distinguish

between offenders and nonoffenders or between levels of offenders (data not shown).

Similar to the long-term analysis of social integration between ages 17 and 25 described

above, logistic regression analyses were conducted to further investigate this lack of

significant findings. These results are displayed in Table 4.10.

Table 4.10 here

A comparison between the four offender groups combined and the nonoffender group reveals that higher levels of social integration between ages 25 and 32 are associated with being a nonoffender, controlling for criminal propensity and prior adult crime. However, a similar logistic analysis which combines the two high-level groups and the two low-level declining groups (and excludes the nonoffenders) finds a nonsignificant effect of social integration on long-term offending groups. Therefore, while an aggregation of groups indicates that social integration appears to predict between offenders and nonoffenders, it does not show that social integration predicts differences in levels of offending among offenders over the entire life course. However, the sample size of high-level offenders is still quite small (N=21) (see Table 4.10).

Thus, we move next to the HLM analysis which assumes a continuous distribution of offending trajectories as opposed to a multinomial distribution. In this model, higher levels of social integration between ages 25 and 32 is significantly related to lower levels of offending in the long-term (data not shown). Here, a higher level of social integration is associated with a 13 percent lower level of offending at age 50.5, controlling for criminal propensity and prior adult crime.

Finally, social integration measured between ages 25 to 32 does not seem to affect rates of decline over the life course. First, the multinomial logit results for the 32 to 70 models indicate that the binding life event scale does not distinguish between the two groups offending at high levels at the beginning of the time period but declining at different rates across the life course (i.e., the high-level late and high-level declining offender groups in Figure 4.6) (data not shown). However, again, this is likely due to the small sample sizes of these two groups (N = 11 and 10, respectively). Second, in the

HLM model for social integration measured between ages 25 and 32, unlike in the earlier long-term HLM analyses in Table 4.8, the HLM analyses of social integration between ages 25 and 32 finds that the rate of decline is not significantly impacted by the binding life event score (data not shown).

Summary of Long-Term Results

In sum, the results from the long-term analyses are less consistent than those seen in the short-term analyses. First, the evidence from the multinomial logit analyses indicates that while social integration significantly predicts differences in offenders and nonoffenders, these differences are only found in some of the individual comparisons. The aggregated logistic analyses, however, do consistently show that social integration predicts the probability of being classified as an adult offender. Second, although the HLM analyses found evidence that social integration predicts levels of offending, the evidence from the multinomial logit models indicate that social integration does not consistently predict between different offender groups, controlling for criminal propensity and prior adult offending. Moreover, in the aggregate logistic regression models, while social integration between ages 17 and 25 distinguishes between high-level and low-level offenders, this finding was not true when social integration between ages 25 and 32 was analyzed. However, this again may be due to the small number of high-level offenders. Third, the bulk of the evidence indicates that there is no effect of social integration on the rate of decline. Although the long-term HLM analysis for social integration between ages 17 and 25 indicates otherwise, this finding did not emerge in the 25 to 32 HLM analyses or in either multinomial analyses.[33]

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[33] However, less weight is placed on the multinomial results due to the fact that the lack of significant findings is likely an artifact of small sample sizes.

Taken together, the more conservative conclusion is that social integration consistently predicts between offending and nonoffending in the long-term but only sometimes predicts between levels of offending and rarely predicts rates of decline among those still offending throughout the life course. The apparent inconsistency found in these long-term analyses could be a result of the general difficulty of predicting long-term outcomes. Therefore, social integration may simply be better able to predict short-term offending patterns as opposed to predicting offending into old age. One piece of evidence to support this conclusion is that the amount of variation explained in the short-term HLM models were 39 percent and 23 percent for social integration at 17 to 25 and 25 to 32, respectively while these percentages in the long-term HLM models fell to 8 percent and 15 percent, respectively.

CONCLUSION

The general conclusion from these analyses is that social integration is significantly related to a reduction in offending over time, at least in the short-term. This finding is in agreement with Sampson and Laub's theory of age-graded informal social control. In addition, this conclusion extends their previous finding that binding life events have independent effects on the reduction of offending by showing that the concentration of social bonds within the *same* individual is related to lower levels of offending. It is important to note that these effects are evident even after controlling for criminal propensity and prior adult crime, which increases the level of confidence that levels of social integration inhibit crime.

CHAPTER 5: PERSON-SITUATION INTERACTIONS AND DESISTANCE

A second potential "condition" of life events on desistance is the interaction between pre-existing individual characteristics and life events and their subsequent social bonds. While there have been calls to investigate person-situation interactions in criminology, few researchers directly test the types of questions posed in this study. In the current study, both self-control and adolescent competence are explored as potential moderators between the binding life events of a cohesive marriage, a stable job, and honorable military service on future criminal offending. The expectation is that those with low self-control and/or low adolescent competence will benefit more from being socially integrated resulting in a greater reduction in future crime. In addition, this study explores self-control and adolescent competence as potential moderators between the non-binding life event of long-term juvenile incarceration, defined as two years or more spent in reform school between ages 7 and 17, and criminal offending. The hypothesis here is that long-term juvenile offending may encourage future crime among those with low self-control leading to a subsequent increase or stabilization in criminal offending. Or, a juvenile with a high level of adolescent competence may be more resilient in the face of long-term juvenile incarceration.

INTERACTIONS OF SOCIAL INTEGRATION ON ADULT OFFENDING

First, the interaction effects between social integration and each individual characteristic were investigated using semiparametric mixed Poisson modeling (SPMM) and hierarchical linear modeling (HLM). While the intention was to use the short-term

and long-term semiparametric trajectory models depicted in Figures 4.1, 4.3, 4.4, and 4.6 to assess whether interaction effects were present, a number of the comparisons in the multinomial logit analyses reported very large standard errors. This was often true regardless of the specification of interaction used.

Therefore, to increase the stability of the analyses, logistic regressions were conducted to compare the offender groups as a whole against the nonoffender group. For instance, for the 25 to 32 offending trajectory model depicted in Figure 4.1, the high-level declining offenders, low-level declining offenders, inclining offenders, and low-level offenders were combined into one group of adult offenders and compared to the nonoffender group. The standard errors in these analyses were more reasonable and concurred with the substantive conclusions from the multinomial logit analyses. Therefore, the logistic regression results are reported here as opposed to the individual group comparisons. In addition, due to the consistency of the findings from the various models and alternative specifications of the independent variables, only a representation of the results are presented in tabular form.

To begin to understand the relationship between social integration and the individual characteristics studied here, each model was first estimated without the control variables included. While the measure of social integration significantly predicts adult offending, the majority of the analyses showed no significant main effects for the individual characteristic of interest and no significant interactions effects. As a next step, several specifications of the analyses were conducted (as outlined in Chapter 3). First, the dichotomous social integration measure was interacted with the dichotomous individual characteristic measures described in Table 3.4 to estimate the interaction effect

on the short- and long-term levels of adult offending. Specifically, the multinomial logit, the logistic, and the HLM analyses were conducted for the interaction between social integration between ages 17 to 25 on short-term and long-term offending (ages 25 to 32 and 25 to 70, respectively) as well as for the interaction between social integration between ages 25 to 32 on short-term and long-term offending (ages 32 to 45 and 32 to 70, respectively). The results from the logistic and HLM analyses are presented in this chapter.

Second, to safeguard against drawing false conclusions due the dichotomization techniques employed here, these multinomial logit, logistic, and HLM analyses were then replicated using the individual characteristic measure that was dichotomized based on the delinquent sample as opposed to the total sample. These models were replicated a third time using the continuous individual characteristic measure and the continuous binding life events scale. Finally, when evidence of an interactive effect emerged, additional analyses were conducted to examine the interactions between each individual life event and the individual characteristic to test for the robustness of the results.

Interactions Between Social Integration and Self-Control

The question investigated here is, among those who experience high social integration, do those low in self-control display different offending patterns than those high in self-control? Based on extensive analyses, the answer to this question is no. For example, the logistic regression analyses of social integration and self-control for the offender groups and the nonoffender group reveal no interaction effects. The logistic regression coefficient is interpreted as the change in the log of the odds of offending associated with a one-unit increase in the independent variable. Through mathematical

manipulation of the full equation, predicted probabilities can be calculated (Liao, 1994). One purpose of interpreting predicted probabilities based on different hypothetical characteristics is to better understand the magnitude of the effect of social integration on adult offending among those low or high in self-control. In addition, the effect of the interaction coefficient and the direct effects of the component variables of the interaction term should be interpreted as a system which the predicted probabilities allow (Jaccard, Turrisi, and Wan, 1990).

Table 5.1 displays the results of the logistic regression for social integration (age 17 to 25) and self-control on short- and long-term adult offending (age 25 to 32 and 25 to 70, respectively). As mentioned above, the adult offender group for the short-term model consists of those classified as high-level declining offenders, low-level declining offenders, inclining offenders, and low-level offenders (see Figure 4.1). As Table 5.1 indicates, social integration significantly distinguishes between being in an adult offender group and being classified as a nonoffender in both the short- and long-term. In addition, there are no significant interactions between social integration and self-control on adult offending probability. For instance, in the short-term model, with the control variables held at their mean, someone who is high in social integration and high in self-control has a 53 percent predicted probability of being an adult offender. This is compared to a 46 percent probability of adult offending for someone who is high in social integration but low in self-control, which is not a substantial difference. Therefore, the key finding here is that among those with high social integration, there is no significant difference in the probability of being an adult offender based on levels of self-control. Not surprisingly,

those low in social integration and low in self-control have the highest probability of being classified into one of the offending groups (77 percent).

Table 5.1 here

When the offending trajectory is expanded into late adulthood, as shown in the bottom of Table 5.1, the probabilities of being classified as an adult offender are similar to those seen in the short-term models. Here the adult offender group consists of those classified as high-level late declining offenders, high-level declining offenders, and low-level declining offenders (see Figure 4.4). In the long-term model, among those high in social integration, a person high in self-control has virtually the same probability of being classified as an adult offender as a person low in self-control (43 percent and 46 percent, respectively). Those low in social integration and low in self-control again have the highest probability of being classified into one of the offending groups with a 64 percent chance.[34]

Logistic regression, however, cannot test whether there are interactive effects in distinguishing levels of offending since it is a comparison between being classified as an offender or an nonoffender. To examine the data in a different way, the hierarchical linear models are employed. The results concur with those seen in the logistic analyses and reveal no significant interactions between social integration (age 17 to 25) and self-control on short- or long-term adult offending (ages 25 to 32 and 25 to 70, respectively) (see Table 5.2).[35] Using the HLM mixed model it is possible to calculate predicted mean

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[34] To safeguard against false conclusions due to potential multicollinearity between the self-control measure and the unofficial delinquency measure, additional analyses were conducted which omitted unofficial delinquency from the model. The findings from these analyses are similar with respect to significance, direction, and magnitude of the coefficients.

[35] The reliabilities for the initial status and growth parameters in the short-term model are .590 and .278, respectively. The correlation between these two parameters is .233. The reliabilities for the initial status

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rates of offending while free for different hypothetical values to better understand the results and to interpret the main effects and interactions as a system. Here, with the controls set to their mean values, at age 28 those with high social integration and low self-control are predicted to commit .92 offenses per year free while those high in both social integration and self-control are predicted to commit .70 offenses per year free. These two rates are neither statistically significant nor substantively different especially when compared to the rates for those low in social integration (2.88 and 2.13 for those with low and high self-control, respectively).

<div align="center">***Table 5.2 here***</div>

An identical story emerges when the time frame is expanded to age 70 with respect to interactions between self-control and social integration. First, as the significant and negative coefficient for social integration in Table 5.2 indicates, in the long-term those with high social integration are predicted to commit fewer crimes per year at age 47 than those with low social integration. However, the lack of a significant interaction coefficient indicates that this effect is the same regardless of a person's level of self-control. Here, using the coefficients from the long-term model of social integration and self-control displayed in Table 5.2, those with high social integration and low self-control are predicted to commit .91 offenses while free at age 47 compared to a predicted .59 offenses for those with high self-control. These are low compared to the 1.79 offenses while free predicted at age 47 for those low in both social integration and self-control.[36]

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and growth parameters in the long-term model are .625 and .453, respectively. The correlation between these two parameters is .739.

[36] Again, additional analyses that omitted unofficial delinquency from the model were conducted to safeguard against the results being affected by multicollinearity with the self-control measure. The results from these analyses are similar to those reported here based on the significance, direction, and magnitude of the coefficients.

However, the lack of interaction effects on short-term offending and long-term offending could be sensitive to the time period when social integration was measured. Therefore, both the logistic and the HLM analyses were repeated using the dichotomous measure of social integration experienced between ages 25 and 32 on short-term and long-term offending (ages 32 to 45 and 32 to 70, respectively) (data not shown). These results lead to the same conclusion as the one reported above. This fact lends additional support to the finding that no interaction effects exist between social integration and self-control on either short-term or long-term offending.

To push the analysis even further, the interaction effects using the alternative dichotomization and continuous independent variables were examined for both time periods of social integration on short-term and long-term offending (data not shown). All of the analyses using these alternative specifications concur with the findings presented above. Therefore, extensive analyses from a variety of time periods, statistical models with different assumptions, and alternative measures of the variables of interest all indicate that no interaction effects exist between social integration and self-control on short-term or long-term adult offending.

Interactions Between Social Integration and Adolescent Competence

The hypothesis tested with respect to adolescent competence mirrors that tested with respect to self-control discussed above. The question here is, among those who experience high social integration, do those low in adolescent competence display different offending patterns than those high in adolescent competence? Again, the findings based on extensive analysis indicate that the answer is no. The results presented in Table 5.3 indicate that while social integration significantly distinguishes between

adult offender groups and nonoffenders in both the short- and long-term, there are no

significant interactions between social integration and adolescent competence on

offending. In the short-term, with the control variables held at their mean, the predicted

probabilities of being an adult offender move from 46 percent for those with high social

integration and low adolescent competence to 37 percent for those with high social

integration and high adolescent competence. Again, those low in both have the highest

predicted probability of adult offending with a 73 percent chance of being classified into

one of the offending groups as opposed to the nonoffender group. In the long-term, these

predicted probabilities are 40 percent, 44 percent, and 61 percent, respectively.

Therefore, among those with high social integration there is little substantive difference

in the probability of being an adult offender between those with high or low adolescent

competence.

Table 5.3 here

Additional logistic regression analyses using the alternative dichotomization and

continuous independent variables were conducted to further test the robustness of the

results (data not shown). Again, all of the logistic analyses concur that there are no

interaction effects between social integration and adolescent competence on short-term or

long-term offending. In addition, these results were further confirmed in the logistic

analyses that use social integration measured between ages 25 and 32 and each

alternative specification of the independent variables.

The HLM analyses, however, indicate somewhat different conclusions. Here, the

analyses for the interaction between social integration and adolescent competence

indicate that while social integration has a direct effect on the levels of offending, there is

also an interaction effect in the rate of decline between social integration and adolescent competence (see Tables 5.4 and 5.5). First, with respect to the level of offending and the controls set to their mean values, for the short-term model, at age 28 those with high social integration and low self-control are predicted to commit .81 offenses per year free while those high in both social integration and self-control are predicted to commit .50 offenses per year free. These two rates are not statistically significant although they appear somewhat substantively different. However, these are both in stark contrast to the predicted rates of offending per year free for those low in social integration for both levels of adolescent competence (2.83 and 2.27 for those with low and high adolescent competence, respectively).

Table 5.4 here

Table 5.5 here

The interaction terms in the growth rate parameter between adolescent competence and social integration are significant. [37]   Here, the significant interaction effect in the growth rate parameter can be interpreted by comparing the predicted rate of offending at the beginning of the sampling period with the predicted rate of offending at the end of the sampling period. Based on the coefficients in Table 5.4, the rates of offending between ages 25 and 32 fall for those who are high in social integration and low in adolescent competence but rise for those who are high in each. Specifically, those high in social integration but low in adolescent competence fall from .85 offenses per year free at age 25 to .52 offenses per year free by age 32. In contrast, those who are

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[37] The reliabilities for the initial status and growth parameters in the short-term model are .578 and .281, respectively. The correlation between these two parameters is .222. The reliabilities for the initial status and growth parameters in the long-term model are .610 and .405, respectively. The correlation between these two parameters is .660.

high in both social integration and adolescent competence rise from a predicted rate of offenses per year free of .24 at age 25 to .71 by age 32. This increase in offending for those high in adolescent competence and high in social integration contradicts theoretical expectations. Based on additional analyses described below, the conclusion is that the significance of this finding is likely to be due to chance.

In the long-term model shown in Table 5.5, the interaction term for the growth rate parameter again is significant, even after controlling for criminal propensity and prior adult crime. Here, at age 47 and with the controls set to their means, those with high social integration and low adolescent competence are predicted to commit .66 offenses per year free while those high in both are predicted to commit .61 offenses per year free. In contrast to the short-term model results, the statistical significance seen in the rate of decline in the long-term model appears to be one of degree as opposed to direction. In this model those with high social integration and low adolescent competence fall from an expected 1.93 offenses per year free at age 25 to 1.59 by age 32, to .66 at age 47, before ending at .08 by age 70. Those high in both start lower at age 25 with 1.09 offenses while free, fall to only 1.03 by age 32 and end higher at .12 offenses by age 70. Again, these findings are likely to be due to chance.

A number of additional analyses were conducted to better understand these interaction effects in the rate of decline. These additional analyses are especially important given the unexpected direction of the interaction effect in the short-term HLM model. First, analyses on social integration between ages 17 and 25 on short-term and long-term offending which employ the different specifications of the key variables of interest (i.e., alternative dichotomization cut-points and continuous variables) do not find

any evidence of an interactive effect in either the initial status or growth rate parameters. Thus, these interactions do not emerge when adolescent competence is dichotomized based on the delinquent sample or when the continuous binding life event scale (ages 17 to 25) and the adolescent competence scale are interacted (data not shown).

Second, virtually all of the HLM analyses of social integration measured between ages 25 and 32 on short-term and long-term offending and employ each of the specifications of the key variables of interest indicate no interactions in the initial status or growth rate parameters. The one exception is a significant interaction effect on the growth rate parameter for the model that interacts the continuous social integration measure and the continuous adolescent competence scale on long-term offending (ages 32 to 70).

Finally, a series of analyses interacted each individual binding life event measured between ages 17 and 25 with the dichotomous adolescent competence measure used in Tables 5.4 and 5.5 on short-term and long-term offending. The vast majority of these analyses indicate no interaction effects in either the initial status or slope parameter. Again, there is one exception which is a significant interaction effect on the slope parameter between marital attachment at age 25 and adolescent competence on long-term offending. However, again the interpretation is curious in that those with a cohesive marriage and low adolescent competence decrease in their offending from age 25 to age 70 while those with a cohesive marriage and high adolescent competence increase in their offending from age 25 through age 47 and then decline to age 70.

Taken together, while some interaction effects emerge in these additional analyses, only two were significant. The issue of multiple test bias also comes into play

when multiple tests using the same variables are analyzed. Using a more conservative p-value of .01 to test significance reveals no significant interactions in the additional analyses. Therefore, the lack of significant findings in the majority of the analyses, the curious interpretation of the interactions that did emerge, and the consideration of possible multiple test bias all indicate that these significant interaction effects do not appear robust across the different alternative models. Therefore, the conclusion is that these interactions occurred by chance.

Summary of Results

Overall, there are two findings that consistently emerge from the analyses of interactions between social integration and self-control or adolescent competence for short-term and long-term offending. First, these models indicate that there are no significant interaction effects and therefore, there is no conditional effect of social integration on desistance based on these individual characteristics. A statistically significant interaction term did emerge between social integration and adolescent competence for the slope parameter in both the short-term and long-term models. However, after extensive analysis, this finding is assumed to be one due to chance. Second, social integration impacts the probability of being an offender as opposed to a nonoffender and impacts the levels of offending in both the short-term and long-term models. This finding is consistent with the results presented in Chapter 4 and interestingly, emerges again here, even after self-control and adolescent competence are included.

Sampson and Laub discovered an indirect role of incarceration on future crime when they found that long-term juvenile incarceration was positively related to crime through subsequent job instability in adulthood. Here, the question is whether long-term juvenile incarceration interacts with personal characteristics resulting in differential offending outcomes over time.

The time frame for offending shifts to begin at age 17 in the interaction analyses between juvenile incarceration and adult offending. This shift in time frames is due to the fact that juvenile incarceration is complete by age 17. Therefore, for the following analyses, short-term offending refers to ages 17 to 25 and long-term offending refers to ages 17 to 70.

To begin this portion of the analysis, the semiparametric trajectory models for ages 17 to 25 and 17 to 70 are estimated. First, the BIC and other model diagnostics outlined in Chapter 3 were examined. The number of groups for these age ranges were again based on the BIC statistics, parsimony, and the model diagnostics for these two models. Briefly, the group proportions for the sample and population were similar in both models, the average posterior probabilities for the 17 to 25 model ranged from .819 to .922 and from .934 to .972 for the 17 to 70 model. In addition, the odds of correct classification were well over the recommended cutoff point of 5 (see Nagin, 2005: 88).

Figure 5.1 displays the four offending trajectories identified from the semiparametric mixed Poisson model for ages 17 to 25. The first group is labeled "high-level declining offenders" who display a high-level of offending throughout early adulthood but begin to decline in their offending after age 20. The "low-level declining

offenders" begin at a lower level than the high-level declining offenders and fall to near

zero offenses per year free by the end of the sampling period. A group of early adult

"inclining offenders" also emerges. These offenders begin at a low rate of offending just

after adolescence but incline in their offending as they progress through early adulthood.

Finally, the largest group is the early adult "nonoffender" group. Although these men are

predicted to offend at a non-zero rate of offending per year free throughout early

adulthood, they are labeled nonoffenders due to their very low levels of offending relative

to the other groups and for consistency across other models used in the analysis.

Figure 5.1 here

When the trajectory groups are estimated for ages 17 to 70, again four groups are

identified as the optimal number of groups (see Figure 5.2). The first group is labeled the

"high-level late declining offender" group who display high levels of offending

throughout most of adulthood before desisting in late adulthood. The "high-level

declining offender" group also displays a high level of offending throughout adulthood

but desists at a much faster rate than the high-level late declining offenders. The "low-

level declining offenders" display a desisting pathway in early adulthood and parallel the

nonoffenders by their mid-thirties. Finally, the adult "nonoffenders" trajectory describes

the offending patterns of those delinquent boys who, for all intents and purposes, are the

adult desisters. Again, although they are predicted to offend at a non-zero rate, their rates

of offending are extremely low compared to the other groups in the model.

Figure 5.2 here

To begin investigating the potential relationships between juvenile incarceration

and individual characteristics, each model was first estimated without the controls. In

both the short-term and long-term models, long-term incarceration significantly predicted whether someone was classified as an adult offender in the logistic regression analyses and the levels of offending in the HLM analyses. However, once the controls for criminal propensity were included in the models, the effects of juvenile incarceration on short- and long-term offending fell to non-significance. More importantly, no significant interaction effects emerged in either the logistic or the HLM analyses.

Interactions Between Juvenile Incarceration and Self-Control

Drawing on the "social-amplification" effect introduced by Wright, et al (2001) and the "accentuation principle" (see Caspi and Moffitt, 1993), the expectation here is that long-term juvenile incarceration for a person with low self-control will affect his criminal trajectory by strengthening his pre-existing characteristic of low self-control resulting in a stabilization or increase in offending. However, this hypothesis was not supported in the data.

As presented in Table 5.6, the results from the logistic regression for the short-term and long-term models between juvenile incarceration and self-control show no such effect. The adult offender group for the short-term model consists of those classified as high-level declining offenders, low-level declining offenders, and inclining offenders in the 17 to 25 offending trajectory model displayed in Figure 5.1. As Table 5.6 indicates, juvenile incarceration does not significantly predict whether a person will be classified as an adult offender or a nonoffender in either the short- or long-term, regardless of a person's level of self-control. Each of the combinations of juvenile incarceration length and levels of self-control result in similar predicted probabilities of being an adult offender, with the control variables held at their mean. For instance, in the short-term

model, someone with high self-control who spent over two years in reform school (defined here as long-term juvenile incarceration) has a 56 percent chance of being classified as an adult offender compared to a 69 percent chance if that person were low in self-control. While this difference appears to be substantively different, it is not statistically different. In addition, those with short-term incarceration have similar predicted probabilities with 56 percent and 61 percent of being classified as an adult offender for those with high and low self-control.

Table 5.6 here

The results for the long-term offending analyses displayed at the bottom of Table 5.6 are virtually identical to those from the short-term offending models.   The adult offender group for the 17 to 70 model consists of those classified as high-level late declining offenders, high-level declining offenders, and low-level declining offenders (see Figure 5.2). Here, as expected, those with low self-control and long-term incarceration have a higher probability of being classified as an adult offender compared to those high in self-control (70 percent and 57 percent, respectively). Again, this difference appears to be somewhat substantively different but is not statistically different.

These logistic regression results cannot address whether there are interactive effects within the different levels of offending. Therefore, we look to the hierarchical linear models, which also indicate no significant interactions between juvenile incarceration and self-control on short- and long-term adult offending. Calculation of the predicted mean rates of offending per year free at age 20.5 (for the 17 to 25 model) and 43 (for the 17 to 70 model) reveal very similar predicted mean rates of offending

regardless of levels of self-control (data not shown).   Therefore, regardless of the time

period or distributional assumptions, the lack of significant interaction effects is robust.

Interactions Between Juvenile Incarceration and Adolescent Competence

The hypothesis for the relationship between juvenile incarceration and adolescent

competence is that those with high adolescent competence will fare better in the face of

long-term juvenile incarceration than those low in adolescent competence. There is no

evidence in support of this hypothesis. As Table 5.7 indicates, there are no significant

main effects or interaction effects between length of juvenile incarceration and adolescent

competence on short-term or long-term offending. In accordance with these results, the

predicted probabilities of being an adult offender are similar across levels of juvenile

incarceration and adolescent competence with the criminal propensity measures held at

their mean values. For instance, among those who experience long-term juvenile

incarceration, those low in adolescent competence have a 65 percent chance of being

classified as an adult offender compared to a 68 percent chance for those with high

adolescent competence. The results among those with long-term juvenile incarceration

for the long-term offending analyses are virtually identical to those reported above with

the corresponding predicted probabilities of 66 percent for those low in adolescent

competence and 68 percent for those high in adolescent competence.

<div align="center">***Table 5.7 here***</div>

In a final attempt to uncover any interaction effects between juvenile

incarceration and adolescent competence, hierarchical linear models (HLM) for both time

frames were employed. In concurrence with the findings presented above, these analyses

again reveal no significant interactions between juvenile incarceration and adolescent

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competence on short- and long-term adult offending. In addition, the predicted mean rates of offending were similar across all levels of incarceration and adolescent competence (data not shown).

Summary of Results

Two clear conclusions can be drawn from the above analyses on the interaction between juvenile incarceration and self-control and adolescent competence. First, once criminal propensity is controlled, on the whole, juvenile incarceration no longer predicts adult offending patterns in the short-term or the long-term. Second, there are no significant interaction effects and therefore, there is no conditional effect of juvenile incarceration on desistance based on these individual characteristics.[38]

CONCLUSION

It is clear from the results presented in this chapter that no interactions exist between the individual characteristics of self-control and adolescent competence and the binding or non-binding life events of social integration and juvenile incarceration. The expectation was that those with low self-control and/or low adolescent competence would show greater reductions in future offending given high social integration than those better "equipped" for desistance. However, there was no consistent evidence to suggest this conclusion. In addition, there was no evidence to suggest that those faced with long-term juvenile incarceration have different future offending patterns based on different levels of self-control or adolescent competence.

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[38] Additional interaction analyses based on different cut points to define long-term juvenile incarceration reveal no significant interaction effects between juvenile incarceration length and self-control or adolescent competence, regardless of the alternate cut-point specifications.

The lack of statistical significance in the current study could be due to a lack of power. One argument against using a sample of seriously delinquent juveniles to test interaction effects between risk factors and desistance is that the sample may be too homogeneous and hence show too little variation on key variables of interest. This concern was addressed in Chapter 3 in reference to the lack of variation in levels of self-control and adolescent competence. The Glueck sample consists of juvenile delinquents who are likely to be in the highest strata of the population on the risk factors of self-control and adolescent competence, among others. Thus, a lack of variation in these individual characteristics simply may make it more difficult for any statistical findings to emerge. However, the issue at hand is desistance from serious crime. Therefore, a sample which contained individuals who are much less delinquent, while it may provide a wider range of self-control levels, can no longer address the desistance patterns of serious and persistent offenders, who are arguably of most interest in desistance research.

One robust finding that did emerge from these analyses is that social integration influences patterns of adult offending for all individuals, regardless of their individual differences. In fact, social integration consistently predicted a reduction in offending over time even when the measures of criminal propensity, prior adult crime, and self-control or adolescent competence were included. We move next to the final chapter, which discusses the theoretical, research, and policy implications of these results.

CHAPTER 6: CONCLUSION

Since Sampson and Laub first presented their age-graded theory of informal social control in *Crime in the Making: Pathways and Turning Points Through Life* (1993), several researchers, including Sampson and Laub themselves, have examined and extended their main theoretical propositions. This growing body of literature provides convincing evidence that strong social bonds stemming from a variety of life events predict desistance from criminal offending into adulthood (for a complete review of the desistance literature, see Laub and Sampson, 2001).

The current study utilizes a somewhat different assessment of this theory by asking whether the theory and results hold up under different conditions. More precisely, two fundamental questions are addressed here: 1) Does the accumulation of binding life events facilitate desistance from crime? 2) Are there certain person-situation interactions present that condition the influence of social bonds in adulthood? Drawing on data from the longest longitudinal study in the world, three primary conclusions can be drawn from the results of this analysis. First, levels of criminal offending are significantly influenced by recently experienced social integration (defined as the proportion of life events experienced as binding, such as a cohesive marriage, a stable job, and an honorable discharge from military service). Thus, a higher level of bonding to conventional society within the *same* individual is related to lower levels of offending. Impressively, this finding emerges after criminal propensity, prior adult crime, and self-control or adolescent competence are included in the model. At the same time, despite expectations to the contrary, men who had a higher level of social bonding did not desist more quickly.

Second, the effect of social integration on future offending does not continue to *consistently* predict offending patterns through age 70. Specifically, although the logistic and HLM analyses found more consistent findings, the results were slightly less robust with respect to the ability of social integration to predict membership into specific trajectory offending groups into old age. Third, no interaction effects were present between self-control or adolescent competence and binding or non-binding life events (defined here as long-term juvenile incarceration).

THEORETICAL AND RESEARCH IMPLICATIONS

Social Integration

Overall, Sampson and Laub's theory appears to be robust under the conditions tested here. This fact has a number of implications for future research. For instance, the finding that there is an inverse relationship between adult criminal offending and the accumulation of social bonds within the same individual has two key implications. First, Sampson and Laub's theory is premised on a sociogenic model of crime and deviance, which states that both stability and change are present over the life course. The fact that social integration consistently emerged as a significant predictor of future offending patterns, even after controlling for criminal propensity, prior adult crime, and the individual characteristics of self-control and adolescent competence indicates that a sociogenic model is appropriate. Social integration is comprised of social bonds generated from life events that are structurally and culturally shaped, indicating a sociogenic process, as opposed to individually and developmentally determined, which would indicate an ontogenetic process (see Dannefer, 1984).

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Second, the fact that a higher level of social bonding has a positive effect on reducing levels of criminal offending as opposed to a lower level provides suggestive evidence of a possible dose-response relationship. In epidemiology, one criterion for judging whether an association is causal is to test whether the risk of disease increases as the dose or exposure to the disease-causing agent increases. While the absence of a dose-response relationship cannot prove that no causal relationship exists, a finding of a dose-response relationship is strong evidence that a causal relationship does exist (Gordis, 1996). In this study the measure of social integration can be thought of as a "dose" of social bonds. The "response" in this study is the reduction in future offending.

According to Rutter (1994a: 936), "causal inferences are strengthened when it is possible to show consistent dose-response relationships." Thus, loosely put, the dose-response relationship shown here is that offending decreases as the "dose" of a person's stake in conventional society increases, which strengthens the support in favor of Sampson and Laub's theory. Researchers who test criminological theories should begin to use this dose-response logic. A dose-response relationship shown to exist between a theoretically proposed causal factor and the outcome of interest would strengthen support for the tested theory. On the other hand, if no such relationship emerged, that causal factor and subsequent theory would be called into question.

The finding that social integration predicted offending patterns in the short-term more consistently across all models than in the long-term implies that a dynamic theory is necessary, which is also supportive of Sampson and Laub's propositions. One supposition is that trajectories of offending have the potential to continually change over time due to life events and their subsequent social bonds. Therefore, social bonds

measured more closely in time to the offending measure have greater ability to predict these outcomes than bonds measured several decades prior to the offending events. Sampson and Laub have repeatedly emphasized that desistance is a process rather than an event that must be continually renewed (Laub, Nagin, and Sampson, 1998; Laub and Sampson, 2003). Therefore, future research needs to focus on time-varying measures of social bonds that coincide with offending patterns. Simultaneously modeling the covariation of social bonds and offending allows the causal processes between changes in social bonds and changes in offending to be addressed.

To illustrate, Sampson and Laub were able to model this covariation between one life event, marriage, and offending for the Glueck delinquents in their recent book, *Shared Beginnings, Divergent Lives* (Laub and Sampson, 2003: Chapter 9). Using hierarchical linear modeling, they simultaneously estimated variations in crime and marriage within individuals over time while controlling for between-individual differences in criminal propensity. Given that marriage and crime were both within-individual measures, each subject acted as his own control. Therefore, this model was also able to statistically incorporate the likely variation between individuals in their unobserved propensity to offend. Sampson and Laub found that offending is lower when men are married, showing within-individual change and allowing them to speak to the causal effect of marital bonds on criminal offending. As new data collection efforts are begun and current data collection efforts are extended into the adult years, there needs to be a strong emphasis placed on measuring the multitude of life events and subsequent social bonds in a person's life as well as their criminal activity at multiple points in time.

Interactions between Social Integration and Individual Characteristics

Sampson and Laub's theory is a general theory of crime, which predicts that social bonds will decrease offending for all individuals, regardless of their individual differences. The finding that no interaction effects were present between social bonds stemming from a variety of life events and two individual-level characteristics (i.e., self-control or adolescent competence) is supportive of their theory. While Sampson and Laub state that there are multiple pathways to desistance, they also emphasize that there are important general processes with respect to informal social control that are present in an age-graded manner across different contexts. Paternoster and colleagues (1997: 236) state that "we should want to relax the constraint of a single theory only if the additional complexity of a 'multiple pathways' theory significantly increases our understanding of the etiology of crime." The current findings do not suggest that this additional complexity is necessary.

However, one area for future research is the examination of these questions by crime type. Crime type differences were not examined in this study for several reasons. First, overall the analyses showed no support for an interactive effect. Arguably, while an interaction effect could be masked in an analysis of total crime but emerge in one that breaks offending into crime types, there is no theoretical argument to support further investigation. Stated plainly, it is not clear how social integration or its interaction with self-control or adolescent competence would have a differential effect on property crime as opposed to violent crime.

Second, the decision was also based on the practical issue of sample size. This is especially problematic given the problems with the multinomial logit analyses with

respect to sample size. The semiparametric models employed in this study for total crime revealed very small numbers of men in the more interesting high level declining groups. Once the dependent variable is restricted by crime type and the time frame is expanded into older ages, these sample sizes become even smaller. The participation and frequency of offending is low when disaggregated into crime type. For instance, between ages 25 and 31, 65 percent of the sample was arrested for any type of crime with a mean of 2.96 arrests. In contrast, only 16 percent were arrested for a violent crime and 27 percent were arrested for a property crime with means of .23 and .56 arrests, respectively. These percentages and rates decline and the gaps continue with age (Laub and Sampson, 2003: 90). Therefore, the conclusion based on these analyses is that a theory of desistance should be a general one that focuses on desistance from offending, broadly defined.

It could also be argued, however, that the current study only tested two individual characteristics as potential moderators of social bonds and offending while there may be others that are theoretically important to examine as well. This is true and future research could examine these additional characteristics to verify whether a general theory is, in fact, most appropriate. For instance, there may be structural, individual, and/or family characteristics that may prove to interact with social integration such as neighborhood poverty, IQ, or parental deviance, to name a few. On the other hand, perhaps the long list of traditional correlates of crime should be considered as a whole. A better approach may be to address these multiple individual characteristics as a group as opposed to one attribute in isolation. Psychological and criminological research suggests that risk factors tend to cluster in the same individual and that those with multiple risk factors are the

most negatively affected when compared to those with fewer risk factors (Rutter, 1979, Hawkins, et al., 1998).   This study drew on the idea of clustering with respect to social bonds stemming from life events. Another approach would be to consider whether the clustering of risk factors interact, as a group, with social bonds, as a group, on future offending patterns.

On the other hand, another direction may be to abandon these traditional correlates as interaction measures and examine factors such as intertemporal choice or time discounting. In the economic literature, intertemporal choice simply means choices that occur across time or across different periods of time. Time discounting has been defined to "encompass *any* reason for caring less about a future consequence, including factors that diminish the expected utility generated by a future consequence, such as uncertainty or changing tastes" (Frederick, Loewenstein, and O'Donoghue, 2002: 352, emphasis in original). While, in the past, the assumption has been that a variety of psychological motives that underlie intertemporal choice could be condensed into one discounted-utility model, more recent research indicates that the idea of time discounting is more complex than a single discount rate. These recent models allow for time-inconsistent preferences that change over time (for an extensive review, see Frederick, Loewenstein, and O'Donoghue, 2002). Time preferences and intertemporal choices may provide an intriguing new area for criminological research which could map the time-varying measures of social integration and these time-varying preferences to begin to address the possible direct and interaction effects between the two on offending outcomes.

Interactions between Juvenile Incarceration and Individual Characteristics

As mentioned previously, Laub and Sampson (2003) found evidence in their interviews with the Glueck men that reform school served as a positive turning point for some men and a negative experience that facilitated later crime for others. Overall, the analyses in the current study indicate that long-term versus short-term incarceration has no direct effect on future offending once criminal propensity is controlled. In addition, no interaction effects between juvenile incarceration, self-control, and adolescent competence were found to exist. However, length of incarceration may be only one potential predictor of future offending. Future research should investigate the potential effects of the incarceration experience defined more broadly. This could include aspects such as the number of programs a person is involved in, victimization experiences, or the quality of relationships with counselors, among others. In addition, what may matter most is not a person's experiences within the institution but the support received while on parole or in an aftercare program. These types of quantifiable experiences while incarcerated may prove to be a more productive avenue in explaining the differential outcomes in future criminal offending than merely the length of the incarceration.

POLICY IMPLICATIONS

All of these conclusions have general implications for criminal justice and social policy. First and foremost, the finding that a higher concentration of social bonds are associated with lower levels of offending, controlling for criminal propensity and prior adult crime, indicates that an emphasis of policies relating to desistance from crime should direct attention to the creation and cultivation of social ties among offenders.

Crime is the result of weakened relationships. However, crime is also a cause of weakened relationships in that the consequences of crime often break up existing social networks.

Based on Sampson and Laub's age-graded theory of informal social control and in light of the findings in this study, it may be that incarceration is not a productive criminal justice policy if the goal is to reduce future offending. First, in these analyses, length of juvenile incarceration shows no consistent effect on future crime once criminal propensity was controlled while social integration does have a significant and very robust effect on offending. The concern is that arresting and imprisoning offenders may disrupt social ties, foster alienation, and produce family and economic disruption which is the opposite of what these findings would advocate (Rose and Clear, 1998). Not only does the removal of offenders weaken the social integration potential of that individual, it also weakens the larger social integration potential of a community. "The incarceration of an offender is not simply the sanctioning of an individual, but part of a broader corrosion of social bonds - bonds that sustain people, particularly people in difficult circumstances. And as these bonds are strained, the resources available to members of the family, both material and emotional, are also diminished. As a result, not only individual families suffer from the overuse of incarceration, but the extended networks of kinship and friendship that make up a community suffer as well" (Braman, 2002: 135).

Laub and Allen (2000) outline a number of correctional programs that are congruent with the theoretical underpinnings and findings from this study. In general these are ones that emphasize building social bonds and retaining a person in the community such as residential community corrections programs, day reporting centers,

and home confinement. These programs create the structure and surveillance that are important for public safety while also allowing offenders to maintain and create social bonds to family, employment, and community. Laub and Allen (2000) also suggest an increased use in restorative justice programs.   Restorative justice programs involve the victim, offender, and the community in a search for solutions, which promote reconciliation and restoration of relationships. The main objectives of restorative justice are reparation of harm done to victims, recognition by the offender of harm done, and reconciliation among victim, offender, and community. This type of intervention allows social relationships to be preserved (Bazemore, 2000).

Therefore, community-correction and restorative justice programs adhere well to informal social control tenets in general and to the findings of the current study with respect to social integration and crime cessation. In fact, the consistent finding of a relationship between social integration and lower levels of offending indicates that not only should programs be community-based and focus on building social bonds in general, but they should focus on cultivating social bonds across multiple areas of life.   These programs concur with the notion that deterrence is not achieved through increased sanction severity but rather through an individual's increased social embeddedness (see Braithwaite, 1989).

Finally, among serious delinquents, social integration predicts future levels of offending, controlling for criminal propensity, regardless of a person's level of self-control or adolescent competence. Therefore, community programs and other interventions should be applied to all offenders. There is no evidence that those with low self-control or low adolescent competence will exhibit different offending patterns in the

presence of multiple social bonds. Finally, with respect to the dynamic nature of

offending, it is crucial to remember that individuals continue to develop over time, both

in their social bonds and in their offending patterns. Therefore, programs that continually

create and foster social ties to others and the community will be the most successful in

reducing offending and maintaining nonoffending over the life course.[39]

LOOKING TO THE FUTURE

Research over the past several decades on life events has shifted from

investigating the timing and sequencing of events to emphasizing the developmental

perspective that links childhood situations to experiences in adulthood. In the 1980s,

researchers drew on the life-course principle that timing of life events are key to

explaining individual variation in outcomes. For instance, researchers have highlighted

the dispersion and sequencing of life events as explanations. In these explanations, the

normative sequence of life events such as the timing of marriage relative to military

service, finishing school, obtaining a job, and/or parenthood impacted the success of

these adult outcomes (see, e.g., Hogan, 1978, 1980, Rindfuss, Swicegood, and Rosenfeld,

1987).

However, as the generations advance, the ideas of a "normative sequence" or "on

time" versus "off time" events are in danger of becoming obsolete. There has been an

increase in the variability of life course patterns that coincides with prolonged

educational attainment and an overlap between parenting, education, and employment

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[39] The findings from this study can also inform early prevention policies that promote social integration. For instance, additional ways to promote social integration and prevent offending may include mentoring programs, parent training to promote good parenting, and school and employment programs to increase years in school and to provide the necessary job skills before reaching adulthood.

(Shanahan, 2000). Therefore, the "norm" is now a wide variety of ordering among life events. This diversification in life course patterns has led researchers to redirect their focus as to what factors might affect the individual variation in stability and change in offending over time.

"The transition to adulthood is now viewed less as a discrete set of experiences that are temporally bounded in the life course and more as an integral part of a biography that reflects the early experiences of youth and also that shapes later life" (Shanahan, 2000: 668). As Shanahan states, recently, researchers have attempted to theoretically advance the field by focusing more on the linkages between childhood, adolescence, and adulthood to explain stability and change in offending. The strategy used in the current study focused on the bonding experiences over several years and tested the effects of those experiences as a whole on stability and change in offending. In addition, this study interacted adult social experiences with stable individual characteristics. In the end, this approach uncovered evidence for the effect of social integration on desistance but no effects of an interaction between background characteristics and social experiences. Future research needs to continue the investigation of the life-course of crime throughout childhood, adolescence, and adulthood. The evidence from this study indicates that Sampson and Laub's age-graded theory of informal social control is a useful foundation from which to further investigate crime over the life course.

TABLE 3.1
Descriptive Statistics on Life Event Measures

Binding Life Event Measures	Mean	Standard Deviation
Honorable Military Service (N=274) (1 = honorable, 0 = dishonorable)	0.7044	0.4572
Marital Attachment between ages 17 and 25 (N=231) (1 = stable, 0 = unstable)	0.5108	0.5010
Marital Attachment between ages 25 and 32 (N=311) (1 = stable, 0 = unstable)	0.4952	0.5208
Job Stability between ages 17 and 25 (N=325) (1 = stable, 0 = unstable)	0.4800	0.5004
Job Stability between ages 25 and 32 (N=358) (1 = stable, 0 = unstable)	0.3659	0.4824

Non-Binding Life Event Measure	Mean	Standard Deviation
Incarceration, Ages 7 to 17 (N=480) (1 = long-term, 0 = short-term)	0.2563	0.4370

TABLE 3.2
Descriptive Statistics on Social Integration Measures

Proportion of Binding Life Events*	AGE 25 (N=396)		AGE 32 (N=406)	
	Frequency	**Percent**	**Frequency**	**Percent**
1.0	145	36.6%	116	28.6%
.66	32	8.1%	44	10.8%
.50	61	15.4%	46	11.3%
.33	30	7.6%	55	13.5%
0.0	128	32.3%	145	35.7%

Proportion of Binding Life Events*	Coded Score	AGE 25 (N=396)		AGE 32 (N=406)	
		Frequency	**Percent**	**Frequency**	**Percent**
Three out of Three (1.0)	9	54	13.6%	63	15.5%
Two out of Two (1.0)	8	59	14.9%	40	9.8%
One out of One (1.0)	7	32	8.1%	13	3.2%
Two out of Three (.66)	6	32	8.1%	44	10.8%
One out of Two (.50)	5	61	15.4%	46	11.3%
One out of Three (.33)	4	30	7.6%	55	13.6%
Zero out of One (.00)	3	64	16.2%	52	12.8%
Zero out of Two (.00)	2	47	11.9%	68	16.7%
Zero out of Three (.00)	1	17	4.3%	25	6.2%

* The proportion of binding life events is the number of events experienced as binding divided by the number of life events experienced.

TABLE 3.3
Missing Data from the Glueck Delinquents

	Age 25	**Age 32**
Starting Sample Size	*500*	*500*
Missing Due to Lost Records	20	20
Dead by Interview Age	18	24
Not Followed-Up By Gluecks	15	22
Missing Data on Key Variables	51	28
Final Sample Size	*396*	*406*

TABLE 3.4

Frequency Distributions of Self-Control and Adolescent Competence

SCALED MEASURES

Self-Control (Mean = 2.61, SD = 1.22)

	Delinquents (N=471)		Non-Delinquents (N=494)	
	Number	Percent	Number	Percent
Low = 0	59	13%	0	0%
1	128	27%	8	2%
2	168	36%	45	9%
3	92	20%	176	36%
High = 4	24	5%	265	54%

Adolescent Competence (Mean = 1.99, SD = 1.55)

	Delinquents (N=438)		Non-Delinquents (N=467)	
	Number	Percent	Number	Percent
Low = 0	138	32%	38	8%
1	149	34%	68	15%
2	97	22%	99	21%
3	33	8%	119	25%
4	14	3%	87	19%
5	7	2%	39	8%
High = 6	0	0%	17	4%

DICHOTOMOUS MEASURES

Self-Control (Mean = .246, SD = .431)

	Delinquents (N=471)	
	Number	Percent
Low Self-Control	355	75%
High Self-Control	116	25%

Adolescent Competence (Mean = .123, SD = .329)

	Delinquents (N=438)	
	Number	Percent
Low Adolescent Competence	384	88%
High Adolescent Competence	54	12%

TABLE 4.1
Semiparametric Group-Based Model Diagnostics, Age 25 to 32 Model

	BIC		*Group Proportion*	
			Population	Sample
2 Groups	-2733.84	Group 1	0.479	0.533
3 Groups	-2644.58	Group 2	0.287	0.250
4 Groups	-2622.38	Group 3	0.066	0.056
5 Groups	**-2601.66**	Group 4	0.059	0.056
6 Groups	-2595.98	Group 5	0.109	0.104

Average Posterior Probability (AvePP)

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
2 Groups	0.9716	0.9462				
3 Groups	0.9328	0.8781	0.9219			
4 Groups	0.8926	0.8099	0.8374	0.9145		
5 Groups	**0.8513**	**0.8204**	**0.8463**	**0.8950**	**0.8094**	
6 Groups	0.8415	0.7778	0.7337	0.8464	0.8194	0.9135

Odds of Correct Classification (OCC)

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
2 Groups	11.162	53.906				
3 Groups	8.763	18.250	101.697			
4 Groups	7.702	10.901	32.442	159.080		
5 Groups	**6.227**	**11.348**	**77.921**	**135.948**	**34.713**	
6 Groups	5.915	26.164	12.058	96.534	35.614	171.520

TABLE 4.2
Multinomial Logit of Social Integration (Ages 17 to 25) on
Offending Trajectory Groups (Ages 25 to 32)

	Low-level Offenders vs. Nonoffenders		Inclining Offenders vs. Nonoffenders		High-level Declining Offenders vs. Nonoffenders		Low-level Declining Offenders vs. Nonoffenders		Inclining Offenders vs. Low-level Offenders	
	Estimate (SE)	t-ratio	Estimate (SE)	t-ratio	Estimate (SE)	t-ratio	Estimate (SE)	t-ratio	Estimate (SE)	t-ratio
Constant	-.1177	-0.109	-2.971[b]	-2.091	-1.937	-1.159	-2.927[b]	-2.224	-2.853[b]	-2.408
	(1.086)		(1.420)		(1.671)		(1.316)		(1.185)	
Social Integration										
Binding Life Event Scale (17 to 25)	-.2983[a]	-3.019	-.3791[a]	-2.698	-1.099[a]	-3.729	-.4367[a]	-3.364	-.0808	-0.689
	(.0988)		(.1405)		(.2947)		(.1298)		(.1174)	
Criminal Propensity										
Arrest Rate (7 to 17)	2.339	1.870	1.424	0.891	2.841	1.791	2.793[b]	2.044	-.9154	-0.776
	(1.250)		(1.597)		(1.586)		(1.366)		(1.180)	
Unofficial Delinquency	.0062	0.124	.0527	0.743	.0657	0.794	.0842	1.316	.0465	0.779
	(.0499)		(.0709)		(.0828)		(.0640)		(.0597)	
Prior Adult Offending										
Arrest Rate (17 to 25)	2.238[a]	2.926	3.048[a]	3.876	3.030[a]	3.852	2.916[a]	3.726	.8097[a]	4.009
	(.7648)		(.7864)		(.7867)		(.7827)		(.2020)	

[a] p < .01

[b] p < .05

Group Ns: Nonoffenders = 256; Low-Level Offenders = 120; Inclining Offenders = 27; Low-Level Declining Offenders = 50; High Level Declining Offenders = 27

TABLE 4.2 (con't)
Multinomial Logit of Social Integration (Ages 17 to 25) on
Offending Trajectory Groups (Ages 25 to 32)

	High-level Declining Offenders vs. Low-level Offenders		Low-level Declining Offenders vs. Low-level Offenders		High-level Declining Offenders vs. Inclining Offenders		Low-level Declining Offenders vs. Inclining Offenders		Low-level Declining Offenders vs. High-level Declining Offenders	
	Estimate (SE)	t-ratio	Estimate (SE)	t-ratio	Estimate (SE)	t-ratio	Estimate (SE)	t-ratio	Estimate (SE)	t-ratio
Constant	-1.819	-1.272	-2.809[a]	-2.650	1.033	0.656	.0437	0.032	-.9898	-0.639
	(1.430)		(1.060)		(1.575)		(1.354)		(1.550)	
Social Integration										
Binding Life Event Scale (17 to 25)	-.8006[a]	-2.854	-.1385	-1.296	-.7198[b]	-2.418	-.0576	-0.405	.6621[b]	2.256
	(.2805)		(.1091)		(.2977)		(.1424)		(.2935)	
Criminal Propensity										
Arrest Rate (7 to 17)	.5016	0.467	.4544	0.560	1.417	0.958	1.370	1.076	-.0471	-0.038
	(1.075)		(.8110)		(1.479)		(1.273)		(1.228)	
Unofficial Delinquency	.0595	0.834	.0780	1.515	.0130	0.162	.0316	0.468	.0185	0.243
	(.0714)		(.0515)		(.0807)		(.0674)		(.0761)	
Prior Adult Offending										
Arrest Rate (17 to 25)	.7922[a]	3.944	.6780[a]	3.387	-.0175	-0.147	-.1317	-0.838	-.1142	-0.768
	(.2009)		(.2002)		(.1187)		(.1572)		(.1488)	

[a] $p < .01$
[b] $p < .05$

Group Ns: Nonoffenders = 256; Low-Level Offenders = 120; Inclining Offenders = 27; Low-Level Declining Offenders = 50; High Level Declining Offenders = 27

TABLE 4.3
Hierarchical Poisson Models of Social Integration (Ages 17 to 25)
on Short-Term Offending While Free (Ages 25 to 32)
(N = 395 individuals; 2,620 observations)

	Unconditional Model Estimate (SE)	Conditional Model Estimate (SE)
Intercept	-6.291[a]	-6.562[a]
	(.0764)	(.2134)
Within-Individual		
Age	-.0616[a]	-.0630[a]
	(.0145)	(.0169)
Age-squared	-.0174[b]	-.0166[b]
	(.0078)	(.0080)
Between-Individual		Initial Status
Social Integration		
Binding Life Event Scale (17 to 25)		-.2263[a]
		(.0207)
Criminal Propensity		
Unofficial Delinquency		.0347[a]
		(.0118)
Arrest Rate (7 to 17)		.6438[a]
		(.1708)
Prior Adult Offending		
Arrest Rate (17 to 25)		.2929[a]
		(.0370)
Variance Components		
Between-Individual	1.768[a]	1.083[a]

[a] p < .01

[b] p < .05

TABLE 4.4

Semiparametric Group-Based Model Diagnostics, Age 32 to 45 Model

	BIC		Group Proportion	
			Population	Sample
2 Groups	-3974.88	Group 1	0.487	0.515
3 Groups	-3799.39	Group 2	0.331	0.317
4 Groups	**-3757.25**	Group 3	0.150	0.138
5 Groups	-3740.80	Group 4	0.032	0.031
6 Groups	-3701.52			

Average Posterior Probability (AvePP)

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
2 Groups	0.9682	0.9514				
3 Groups	0.9262	0.9131	0.9489			
4 Groups	**0.8878**	**0.8446**	**0.8818**	**0.9571**		
5 Groups	0.8772	0.8565	0.9841	0.8633	0.9648	
6 Groups	0.8941	0.8343	0.8804	0.8816	1.000	0.9846

Odds of Correct Classification (OCC)

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
2 Groups	9.667	61.653				
3 Groups	9.014	19.514	254.511			
4 Groups	**8.335**	**10.985**	**42.275**	**674.878**		
5 Groups	7.864	11.795	2072.351	37.238	1930.383	
6 Groups	8.409	10.798	52.003	183.476	---	3932.006

TABLE 4.5
Semiparametric Group-Based Model Diagnostics, Age 25 to 70 Model

	BIC		Group Proportion	
			Population	Sample
2 Groups	-8598.43	Group 1	0.033	0.031
3 Groups	-8314.01	Group 2	0.163	0.158
4 Groups	**-8185.63**	Group 3	0.274	0.250
5 Groups	-8114.39	Group 4	0.530	0.560
6 Groups	-8051.87			

Average Posterior Probability (AvePP)

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
2 Groups	0.9831	0.9745				
3 Groups	0.9773	0.9570	0.9608			
4 Groups	**0.9883**	**0.9379**	**0.9137**	**0.9195**		
5 Groups	0.9792	0.9314	0.9121	0.8746	0.8716	
6 Groups	0.9734	0.8352	0.9030	0.8953	0.8677	0.8915

Odds of Correct Classification (OCC)

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
2 Groups	164.708	13.497				
3 Groups	619.299	50.239	14.519			
4 Groups	**2475.229**	**77.554**	**28.053**	**10.129**		
5 Groups	1471.533	89.281	94.437	14.821	9.451	
6 Groups	1370.867	32.472	89.726	73.671	28.327	9.922

TABLE 4.6
Multinomial Logit of Social Integration (Ages 17 to 25) on
Offending Trajectory Groups (Ages 25 to 70)

	High-level Late Declining vs. Nonoffenders		High-level Declining vs. Nonoffenders		Low-level Declining vs. Nonoffenders		High-level Declining vs. High-level Late Declining		Low-level Declining vs. High-level Late Declining		Low-level Declining vs. High-level Declining	
	Estimate (SE)	t-ratio	Estimate (SE)	t-ratio	Estimate (SE)	t-ratio	Estimate (SE)	t-ratio	Estimate (SE)	t-ratio	Estimate (SE)	t-ratio
Constant	-3.995[a]	-2.643	-2.196[b]	-2.408	-1.250	-1.749	1.799	1.175	2.744	1.819	.9458	1.034
	(1.512)		(.9120)		(.7147)		(1.530)		(1.509)		(.9149)	
Social Integration												
Binding Life Event Scale (17 to 25)	-.1519	-1.004	-.3242[a]	-3.721	-.0577	-0.912	-.1723	-1.067	.0942	0.618	.2664[a]	2.968
	(.1513)		(.0871)		(.0633)		(.1614)		(.1524)		(.0898)	
Criminal Propensity												
Arrest Rate (7 to 17)	.8243	0.751	-.1075	-0.138	.5705	0.807	-.9320	-0.872	-.2537	-0.246	.6781	0.951
	(1.097)		(.7820)		(.7067)		(1.069)		(1.030)		(.7131)	
Unofficial Delinquency	.0203	0.259	.0860	1.827	.0164	0.471	.0658	0.812	-.0039	-0.049	-.0696	-1.473
	(.0784)		(.0471)		(.0348)		(.0810)		(.0783)		(.0473)	
Prior Adult Offending												
Arrest Rate (17 to 25)	1.212[a]	5.099	1.234[a]	5.880	.7555[a]	3.620	.0221	0.159	-.4569[a]	-2.419	-.4790[a]	-3.091
	(.2378)		(.2099)		(.2087)		(.1386)		(.1889)		(.1549)	

[a] $p < .01$

[b] $p < .05$

Group Ns: Nonoffenders = 269; Low-level Declining Offenders = 120; High-level Declining Offenders = 76; High-level Late Declining Offenders = 15

TABLE 4.7
Logistic Regression of Social Integration (Ages 17 to 25) on
Long-Term Offending (Ages 25 to 70)

A Comparison of Adult Offenders and Nonoffenders* (N = 395)

	B	Std Error	Wald	P value
Constant	-.604	.556	1.183	.277
Social Integration (17 to 25)[a]	-.143	.050	8.013	.005
Criminal Propensity				
Arrest Rate (7 to 17)	-.355	.476	.557	.456
Unofficial Delinquency	.036	.028	1.613	.204
Prior Adult Offending				
Arrest Rate (17 to 25)[a]	.714	.135	28.133	.000

A Comparison of High-Level Offenders and Low-Level Offenders* (N = 172)

	B	Std Error	Wald	P value
Constant	-1.103	.897	1.511	.219
Social Integration (17 to 25)[a]	-.227	.085	7.079	.008
Criminal Propensity				
Arrest Rate (7 to 17)	.097	.682	.020	.887
Unofficial Delinquency	.067	.044	2.357	.125
Prior Adult Offending				
Arrest Rate (17 to 25)[a]	.387	.128	9.159	.002

[a] $p < .01$
[b] $p < .05$

*In this long-term offending model, 211 men were classified as adult offenders and 269 were classified as adult nonoffenders, 92 men were classified as high-level offenders and 120 were classified as low-level offenders.

TABLE 4.8
Hierarchical Poisson Models of Social Integration (Ages 17 to 25)
on Long-Term Offending While Free (Ages 25 to 70)
(N = 395 individuals; 14,585 observations)

	Unconditional Model	Model I	Model II	
	Estimate (SE)	Estimate (SE)	Estimate (SE)	Estimate (SE)
Intercept	-7.925[a]	-7.997[a]	-8.152[a]	
	(.0780)	(.2202)	(.2571)	
Within-Individual				
Age	-.0974[a]	-.0832[a]	-.0992[a]	
	(.0039)	(.0033)	(.0110)	
Age-squared	-.0010[a]	-.0006[a]	-.0010[a]	
	(.0002)	(.0002)	(.0002)	
		Initial Status	Initial Status	Growth Rate
Between-Individual				
Social Integration				
Binding Life Event Scale (17 to 25)		-.1599[b]	-.0568[b]	.0067[a]
		(.0214)	(.0235)	(.0010)
Criminal Propensity				
Unofficial Delinquency		.0317[a]	.0135	-.0012
		(.0109)	(.0139)	(.0006)
Arrest Rate (7 to 17)		.1607	-.1152	-.0181
		(.1889)	(.2634)	(.0101)
Prior Adult Offending				
Arrest Rate (17 to 25)		.2664[a]	.2476[a]	-.0012
		(.0354)	(.0390)	(.0010)
Variance Components				
Between-Individual	2.118[a]	2.170[a]	1.939[a]	

[a] p < .01
[b] p < .05

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TABLE 4.9

Semiparametric Group-Based Model Diagnostics, Age 32 to 70 Model

	BIC		*Group Proportion*		
				Population	Sample
2 Groups	-5661.65	Group 1	0.022	0.023
3 Groups	-5452.75	Group 2	0.159	0.144
4 Groups	-5360.06	Group 3	0.024	0.021
5 Groups	**-5306.22**	Group 4	0.317	0.317
6 Groups	-5294.77	Group 5	0.477	0.496

Average Posterior Probability (AvePP)

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
2 Groups	0.9615	0.9750				
3 Groups	0.9413	0.9479	0.9415			
4 Groups	0.9528	0.9657	0.8964	0.8669		
5 Groups	**0.9210**	**0.9483**	**0.9612**	**0.8593**	**0.8978**	
6 Groups	0.9323	0.9434	0.8165	0.9263	0.7832	0.8740

Odds of Correct Classification (OCC)

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
2 Groups	81.753	11.914				
3 Groups	33.920	345.683	9.493			
4 Groups	675.898	133.653	9.640	13.589		
5 Groups	**518.261**	**97.018**	**1007.443**	**13.159**	**9.632**	
6 Groups	612.186	777.039	13.068	74.713	31.805	8.242

TABLE 4.10
Logistic Regression of Social Integration (Ages 25 to 32) on
Long-Term Offending (Ages 32 to 70)

A Comparison of Adult Offenders and Nonoffenders* (N = 404)

	B	Std Error	Wald	P value
Constant	.129	.524	.061	.806
Social Integration (25 to 32)[b]	-.116	.047	5.971	.015
Criminal Propensity				
Arrest Rate (7 to 17)	-.153	.481	.101	.750
Unofficial Delinquency	.007	.026	.073	.787
Prior Adult Offending				
Arrest Rate (25 to 32)[a]	1.007	.210	23.074	.000

A Comparison of High-Level Offenders and Low-Level Offenders* (N = 218)

	B	Std Error	Wald	P value
Constant [a]	-3.219	1.234	6.803	.009
Social Integration (25 to 32)	-.084	.120	.488	.485
Criminal Propensity				
Arrest Rate (7 to 17)	.124	.957	.017	.897
Unofficial Delinquency	.065	.060	1.166	.280
Prior Adult Offending				
Arrest Rate (25 to 32)	.098	.066	2.215	.137

[a] $p < .01$
[b] $p < .05$

*In this long-term offending model, 242 men were classified as adult offenders and 238 were classified as adult nonoffenders, 21 men were classified as high-level offenders and 221 were classified as low-level offenders.

TABLE 5.1

Logistic Regression of Interaction Effects Between Social Integration and
Self-Control on Short- and Long-Term Offending While Free (N = 388)

Short-Term Offending (Ages 25 to 32): Adult Offenders vs. Nonoffenders*

	B	Std Error	Wald	P value
Constant	-.663	.533	1.547	.214
Interaction Effects				
Social Integration (17 to 25)[a]	-1.344	.290	21.529	.000
Self-Control	-.559	.414	1.826	.177
Social Integration*Self-Control	.856	.567	2.280	.131
Criminal Propensity				
Arrest Rate (7 to 17)[a]	1.133	.561	4.082	.000
Unofficial Delinquency	-.008	.031	.067	.796
Prior Adult Offending				
Arrest Rate (17 to 25)[a]	.924	.162	32.304	.000

Long-Term Offending (Ages 25 to 70): Adult Offenders vs. Nonoffenders*

	B	Std Error	Wald	P value
Constant	-.832	.512	2.645	.104
Interaction Effects				
Social Integration (17 to 25)[a]	-.730	.276	7.008	.008
Self-Control	-.365	.391	.873	.350
Social Integration*Self-Control	.224	.551	.166	.684
Criminal Propensity				
Arrest Rate (7 to 17)	-.429	.488	.774	.379
Unofficial Delinquency	.025	.030	.700	.403
Prior Adult Offending				
Arrest Rate (17 to 25)[a]	.765	.136	31.707	.000

[a] p < .01
[b] p < .05

*In the short-term offending model, 224 men were classified as adult offenders and 256 were classified as adult nonoffenders. In the long-term offending model, 211 men were classified as adult offenders and 269 were classified as adult nonoffenders.

TABLE 5.2

Hierarchical Poisson Models of Interaction Effects between Social Integration and Self-Control on Short- and Long-Term Offending While Free

	Short-Term Offending: Ages 25 to 32 (N = 387 individuals; 2,565 observations)		Long-Term Offending: Ages 25 to 70 (N = 387 individuals; 14,321 observations)	
	Unconditional Model	Conditional Model	Unconditional Model	Conditional Model
	Estimate (SE)	Estimate (SE)	Estimate (SE)	Estimate (SE)
Intercept	-6.281[a]	-7.085[a]	-7.944[a]	-8.336[a]
	(.0770)	(.1966)	(.0785)	(.2118)
Within-Individual				
Age	-.0589[a]	-.0661[a]	-.0968[a]	-.0803[a]
	(.0145)	(.0164)	(.0040)	(.0034)
Age-squared	-.0173[b]	-.0162[b]	-.0009[a]	-.0005[a]
	(.0078)	(.0079)	(.0002)	(.0002)
Between-Individual		Initial Status		Initial Status
Interactions				
Social Integration		-1.141[a]		-.6797[a]
		(.1529)		(.1815)
Self-Control		-.3029[b]		-.1742
		(.1472)		(.1311)
Social Integration* Self-Control		.0360		-.2554
		(.2373)		(.2481)
Criminal Propensity				
Unofficial Delinquency		.0261[b]		.0231[b]
		(.0114)		(.0111)
Arrest Rate (7 to 17)		.6452[a] (.1813)		.0969 (.1997)
Prior Adult Offending				
Arrest Rate (17 to 25)		.3092[a]		.2864[a]
		(.0383)		(.0372)
Variance Components				
Between-Individual	1.813[a]	1.100[a]	2.074[a]	2.190[a]

[a] $p < .01$
[b] $p < .05$

TABLE 5.3

Logistic Regression of Interaction Effects Between Social Integration and Adolescent
Competence on Short- and Long-Term Offending While Free (N = 361)

Short-Term Offending (Ages 25 to 32): Adult Offenders vs. Nonoffenders*

	B	Std Error	Wald	P value
Constant	-.894	.555	2.598	.107
Interaction Effects				
Social Integration (17 to 25)	-1.140	.282	16.352	.000
Adolescent Competence	.286	.587	.237	.626
Social Integration*Adolescent Competence	-.666	.826	.649	.420
Criminal Propensity				
Arrest Rate (7 to 17)	1.284	.590	4.744	.029
Unofficial Delinquency	-.003	.033	.009	.923
Prior Adult Offending				
Arrest Rate (17 to 25)	.865	.162	28.576	.000

Long-Term Offending (Ages 25 to 70): Adult Offenders vs. Nonoffenders*

	B	Std Error	Wald	P value
Constant	-.959	.534	3.227	.072
Interaction Effects				
Social Integration (17 to 25)[a]	-.871	.281	9.606	.002
Adolescent Competence	-.395	.565	.488	.485
Social Integration*Adolescent Competence	.561	.761	.544	.461
Criminal Propensity				
Arrest Rate (7 to 17)	-.361	.494	.533	.465
Unofficial Delinquency	.026	.032	.662	.416
Prior Adult Offending				
Arrest Rate (17 to 25)[a]	.750	.138	29.510	.000

[a] p < .01
[b] p < .05

*In the short-term offending model, 224 men were classified as adult offenders and 256 were classified as adult nonoffenders. In the long-term offending model, 211 men were classified as adult offenders and 269 were classified as adult nonoffenders.

TABLE 5.4

Hierarchical Poisson Models of Interaction Effects between Social Integration and Adolescent Competence on Short-Term Offending While Free

(N = 360 individuals; 2,382 observations)

	Unconditional Model	Final Conditional Model	
	Estimate (SE)	Estimate (SE)	Estimate (SE)
Intercept	-6.259[a] (.0810)	-7.107[a] (.2083)	
Within-Individual			
Age	-.0632[a] (.0152)	.1026 (.0655)	
Age-squared	-.0225[a] (.0079)	-.0225[a] (.0080)	
Between-Individual		Initial Status	Growth Rate
Interactions			
Social Integration		-1.245[a] (.1375)	-.0923[b] (.0441)
Adolescent Competence		-.2202 (.1665)	.0601 (.0588)
Social Integration* Adolescent Competence		-.2596 (.2920)	.2036[b] (.0960)
Criminal Propensity			
Unofficial Delinquency		.0239 (.0130)	-.0088[b] (.0044)
Arrest Rate (7 to 17)		.6888[a] (.1742)	-.0630 (.0508)
Prior Adult Offending			
Arrest Rate (17 to 25)		.3223[a] (.0443)	-.0012 (.0056)
Variance Components			
Between-Individual	1.820[a]	1.095[a]	

[a] $p < .01$

[b] $p < .05$

TABLE 5.5

Hierarchical Poisson Models of Interaction Effects between Social Integration and
Adolescent Competence on Long-Term Offending While Free
(N = 360 individuals; 13,311 observations)

	Unconditional Model	Final Conditional Model	
	Estimate (SE)	Estimate (SE)	Estimate (SE)
Intercept	-7.957[a] (.0737)	-8.447[a] (.2185)	
Within-Individual			
Age	-.0993[a] (.0043)	-.0878[a] (.0104)	
Age-squared	-.0010[a] (.0003)	-.0010[a] (.0002)	
Between-Individual		Initial Status	Growth Rate
Interactions			
Social Integration		-.3062 (.1669)	.0331[a] (.0074)
Adolescent Competence		-.3633[b] (.1758)	-.0066 (.0084)
Social Integration* Adolescent Competence		.2896 (.2900)	.0290[b] (.0127)
Criminal Propensity			
Unofficial Delinquency		.0077 (.0137)	-.0011 (.0006)
Arrest Rate (7 to 17)		.0675 (.1988)	-.0112 (.0093)
Prior Adult Offending			
Arrest Rate (17 to 25)		.3080[a] (.0392)	.0009 (.0014)
Variance Components			
Between-Individual	2.037[a]	1.801[a]	

[a] p < .01

[b] p < .05

TABLE 5.6

Logistic Regression of Interaction Effects Between Juvenile Incarceration
and Self-Control on Short- and Long-Term Offending While Free (N = 471)

Short-Term Offending (Ages 17 to 25): Adult Offenders vs. Nonoffenders*

	B	Std Error	Wald	P value
Constant[a]	-1.382	.431	10.276	.001
Interaction Effects				
Juvenile Incarceration	.373	.282	1.740	.187
Self-Control	-.222	.264	.708	.400
Juvenile Incarceration*Self-Control	-.359	.586	.376	.540
Criminal Propensity				
Arrest Rate (7 to 17)[a]	2.906	.556	27.352	.000
Unofficial Delinquency	.042	.025	2.726	.099

Long-Term Offending (Ages 17 to 70): Adult Offenders vs. Nonoffenders*

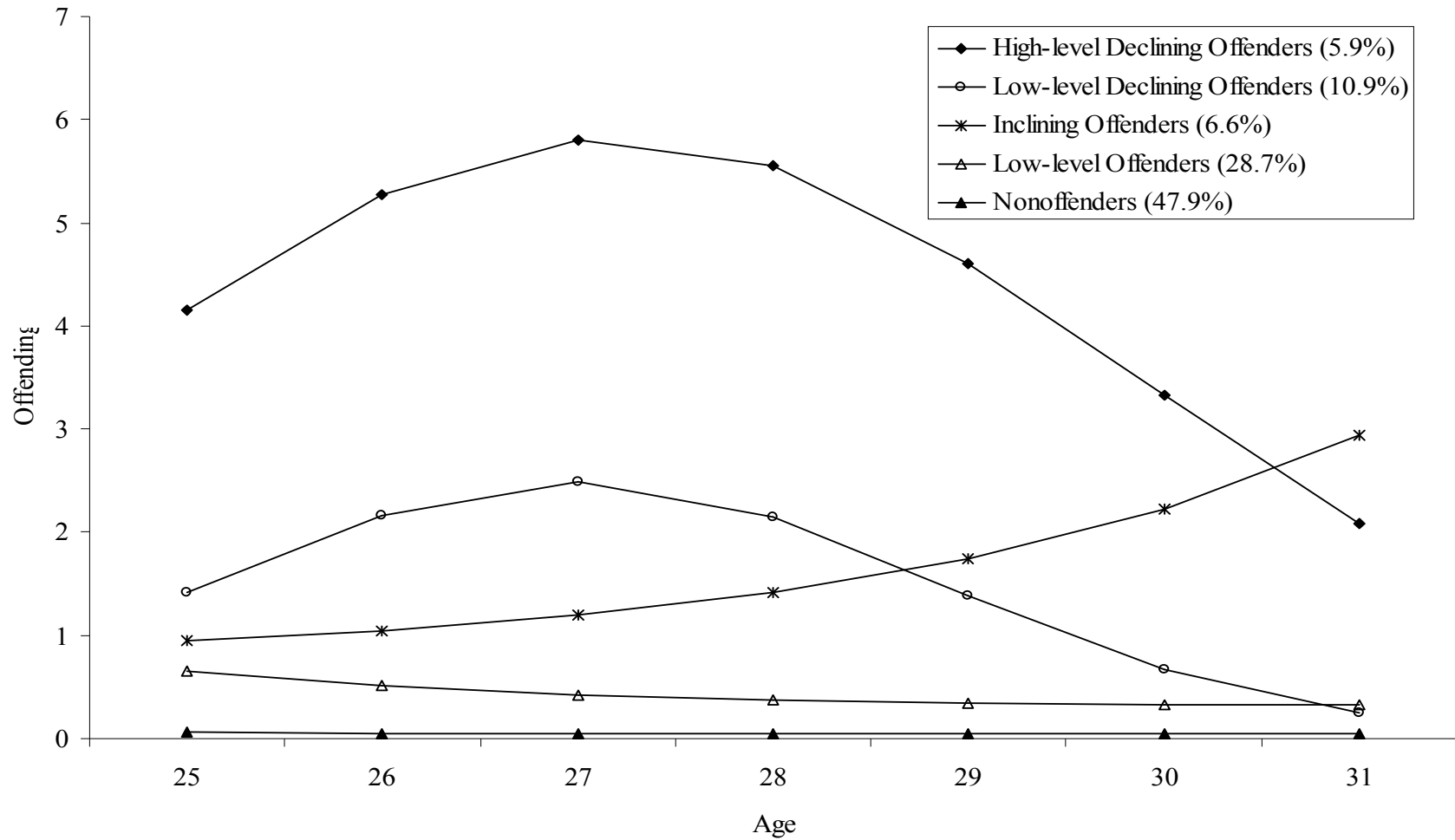|	B	Std Error	Wald	P value
Constant[a]	-1.457	.433	11.324	.001
Interaction Effects				
Juvenile Incarceration	.401	.285	1.986	.159
Self-Control	-.189	.264	.514	.473
Juvenile Incarceration*Self-Control	-.407	.585	.482	.487
Criminal Propensity				
Arrest Rate (7 to 17)[a]	2.731	.553	24.421	.000
Unofficial Delinquency[b]	.054	.025	4.592	.032

[a] $p < .01$
[b] $p < .05$

*In the short-term offending model, 285 men were classified as adult offenders and 195 were classified as adult nonoffenders. In the long-term offending model, 291 men were classified as adult offenders and 189 were classified as adult nonoffenders.

TABLE 5.7

Logistic Regression of Interaction Effects Between Juvenile Incarceration and Adolescent Competence on Short- and Long-Term Offending While Free (N = 438)

Short-Term Offending (Ages 17 to 25): Adult Offenders vs. Nonoffenders*

	B	Std Error	Wald	P value
Constant[a]	-1.241	.431	8.284	.004
Interaction Effects				
Juvenile Incarceration	.171	.267	.409	.522
Adolescent Competence	-.549	.353	2.420	.120
Juvenile Incarceration*Adolescent Competence	.709	.822	.744	.388
Criminal Propensity				
Arrest Rate (7 to 17)[a]	2.371	.547	18.774	.000
Unofficial Delinquency	.047	.026	3.309	.069

Long-Term Offending (Ages 17 to 70): Adult Offenders vs. Nonoffenders*

	B	Std Error	Wald	P value
Constant[a]	-1.366	.436	9.809	.002
Interaction Effects				
Juvenile Incarceration	.163	.270	.364	.546
Adolescent Competence	-.463	.352	1.731	.188
Juvenile Incarceration*Adolescent Competence	.571	.823	.481	.488
Criminal Propensity				
Arrest Rate (7 to 17)[a]	2.482	.559	19.744	.000
Unofficial Delinquency[b]	.057	.026	4.614	.032

[a] $p < .01$
[b] $p < .05$

*In the short-term offending model, 285 men were classified as adult offenders and 195 were classified as adult nonoffenders. In the long-term offending model, 291 men were classified as adult offenders and 189 were classified as adult nonoffenders.

FIGURE 3.1
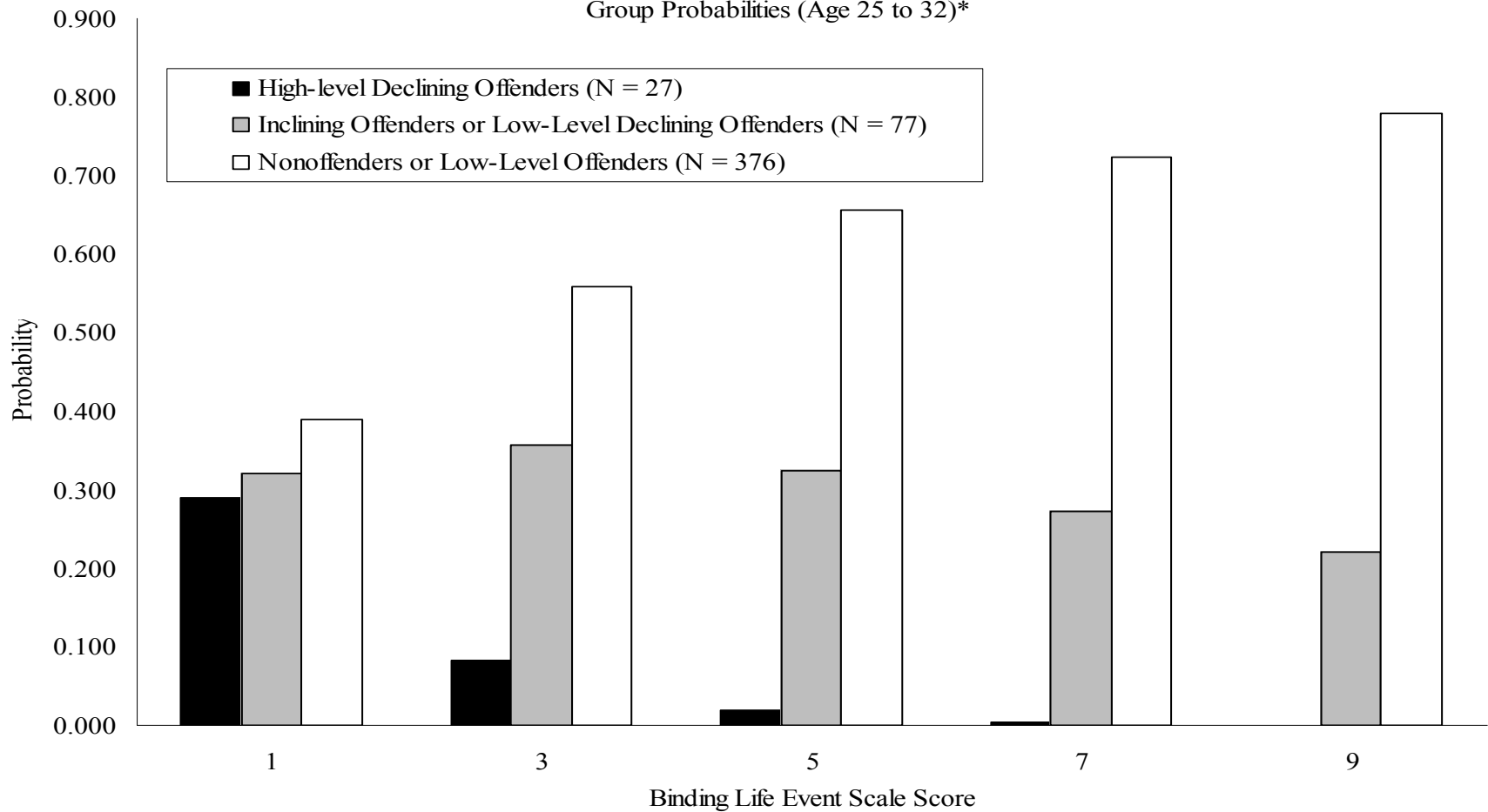Actual Mean Number of Offenses for Total Crime: Ages 17 to 70

FIGURE 4.1
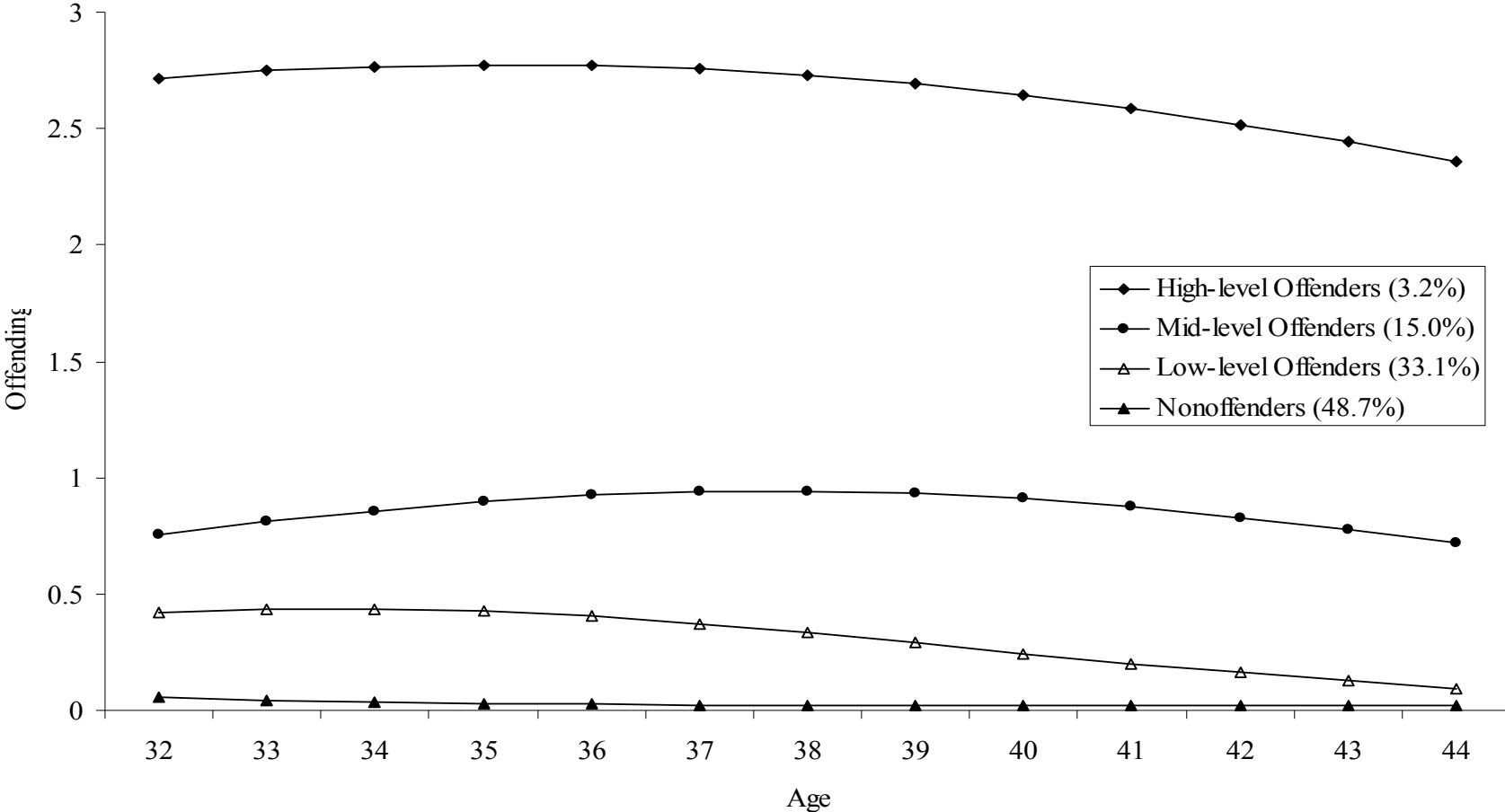Offending Trajectories* of Total Crime, Ages 25 to 32 (N = 480)

* The offending trajectories in this model represent the mean number of arrests per year free for all ages.

FIGURE 4.2
Impact of Binding Life Event Scale Score (Age 17 to 25) on Short-Term Offending Trajectory
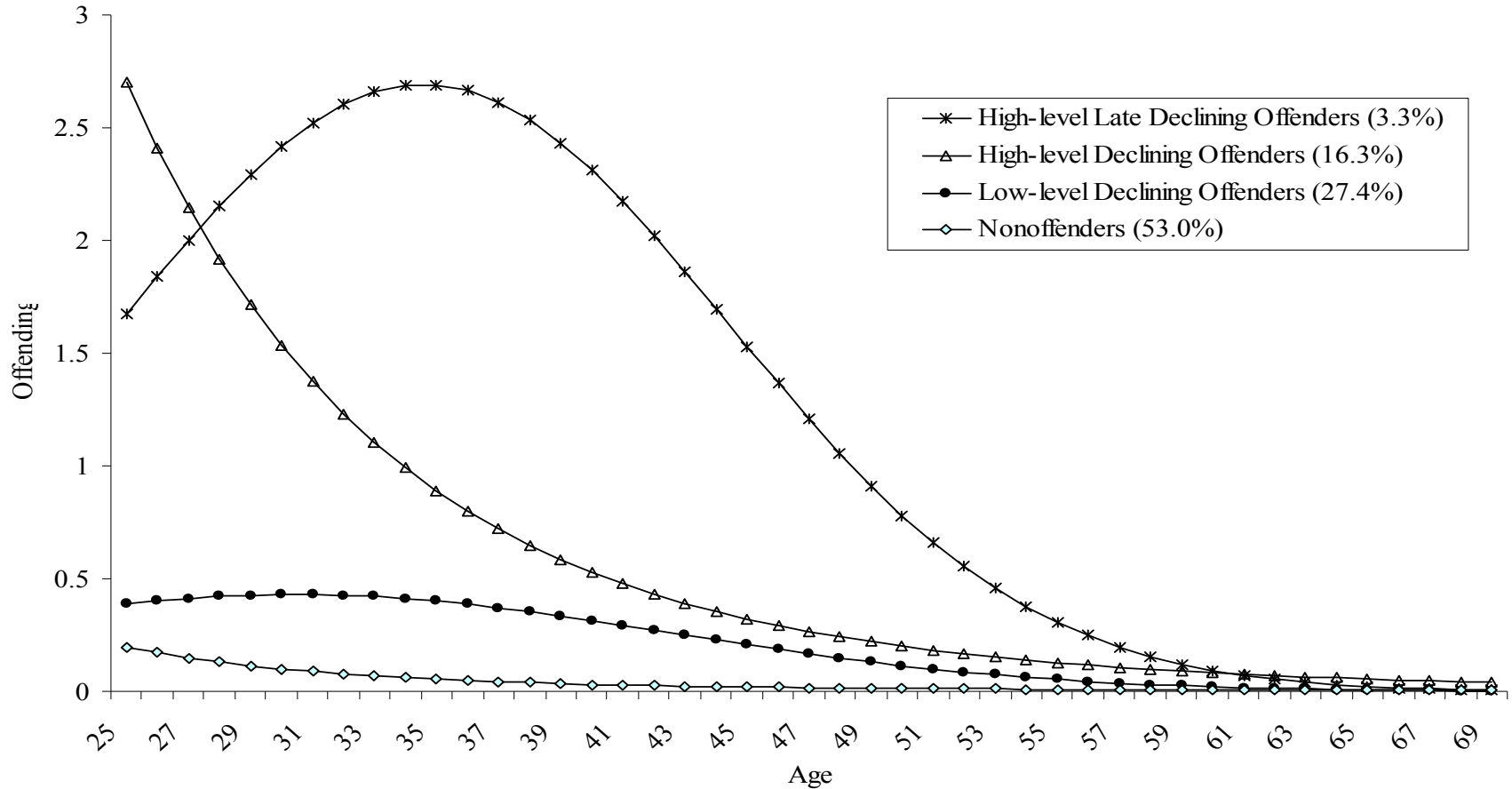Group Probabilities (Age 25 to 32)*

* The predicted probabilities are calculated with the control variables set at their mean values.

FIGURE 4.3
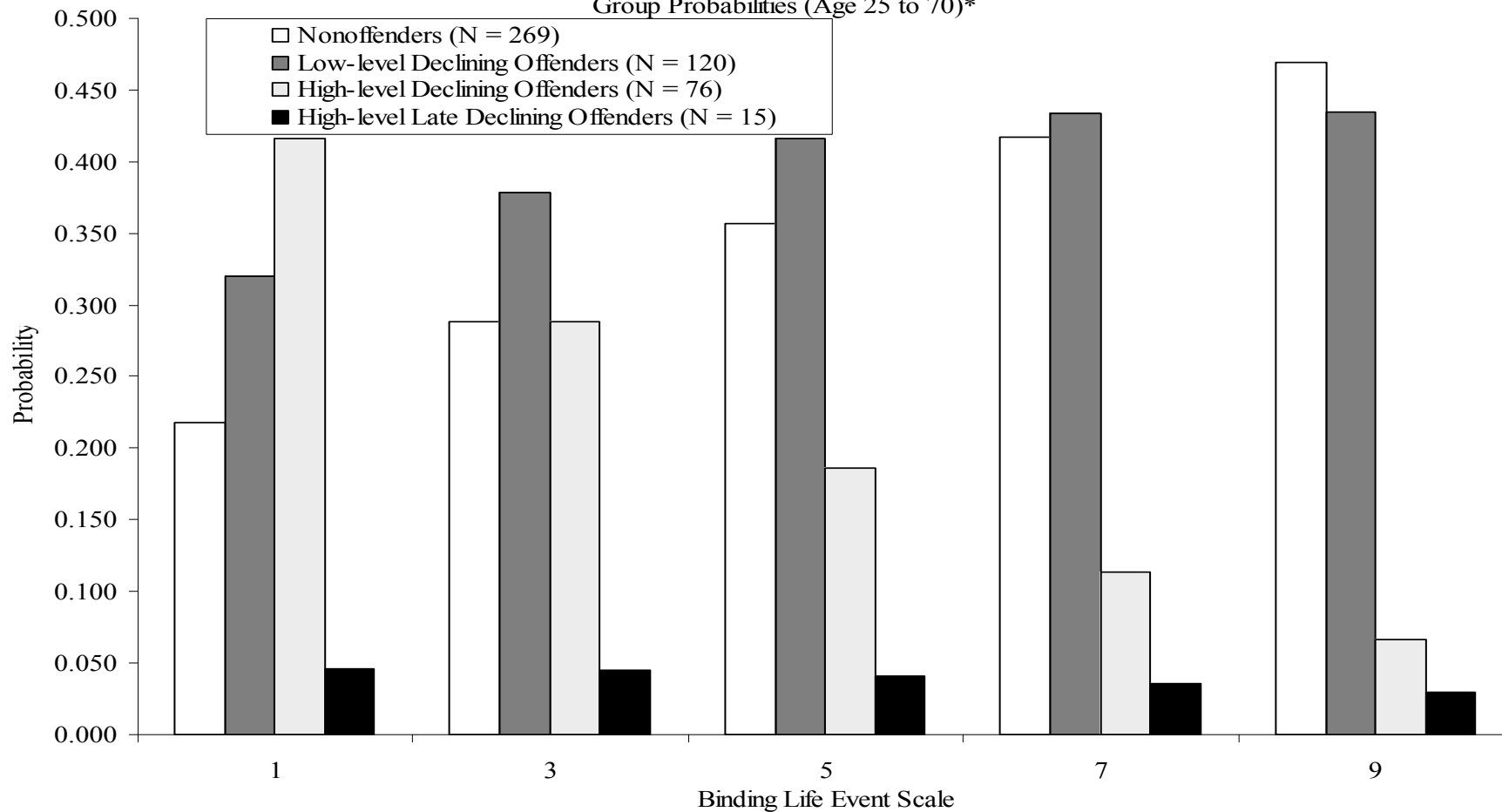Offending Trajectories* of Total Crime, Ages 32 to 45 (N = 480)

* The offending trajectories in this model represent the mean number of arrests per year for all ages. These do not take incarceration into account.

FIGURE 4.4

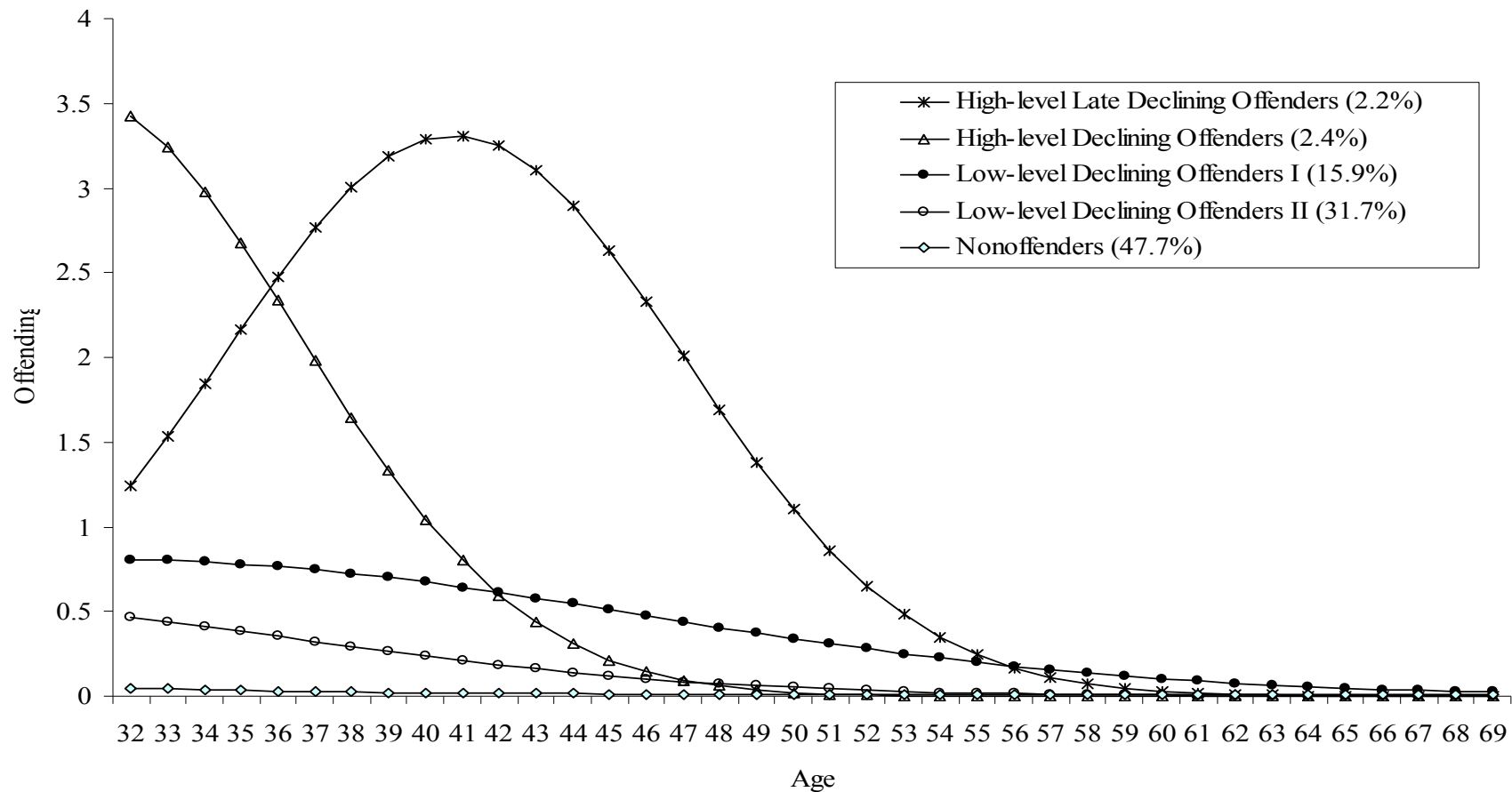Offending Trajectories* for Total Crime, Ages 25 to 70 (N = 480)

* The offending trajectories in this model represent the mean number of arrests per year free for ages 25 to 32 but do not take incarceration into account for ages 32 to 70.

FIGURE 4.5
Impact of Binding Life Event Scale Score (Age 17 to 25) on Long-Term Offending Trajectory
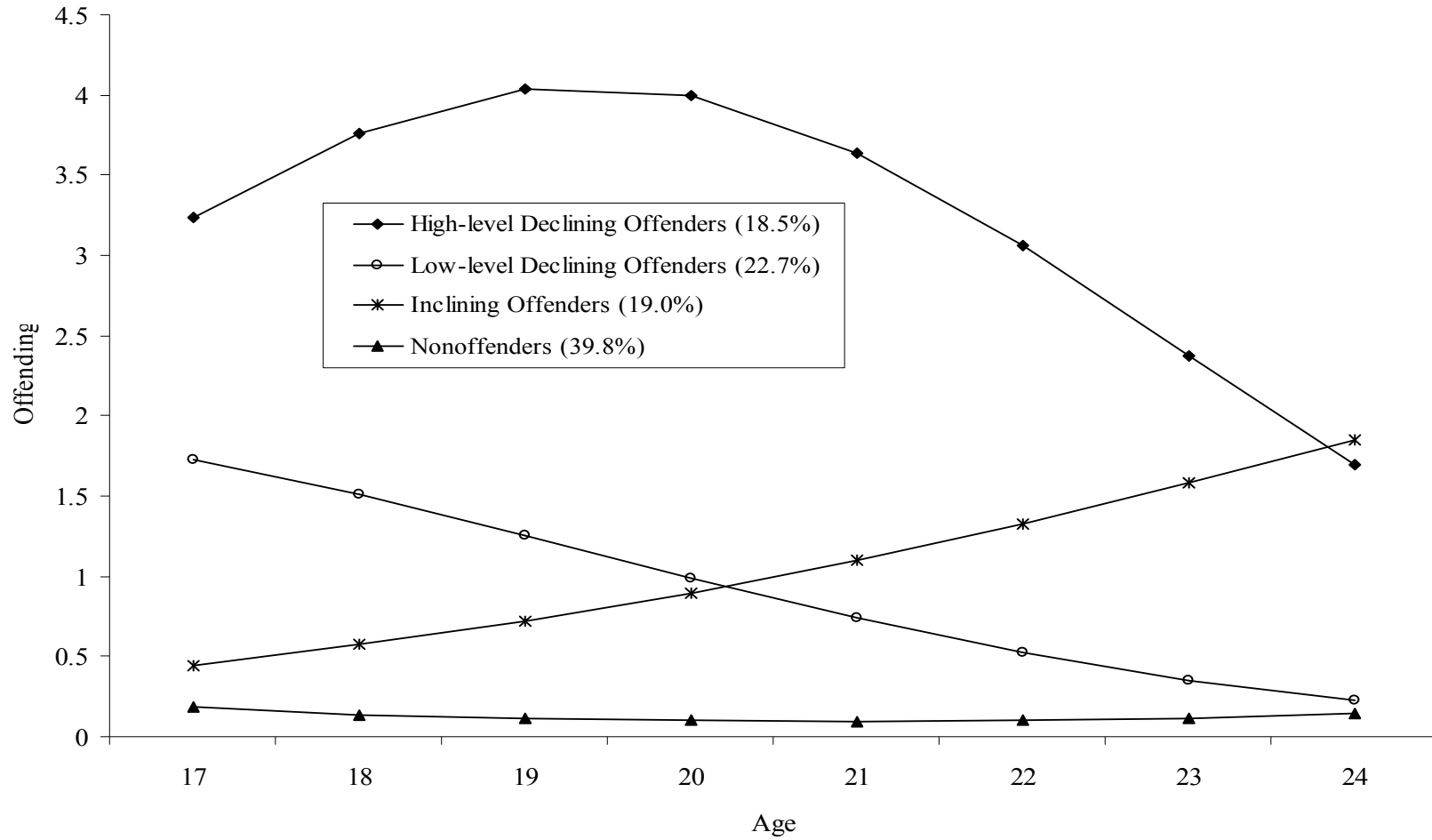Group Probabilities (Age 25 to 70)*

* The predicted probabilities are calculated with the control variables set at their mean values.

FIGURE 4.6
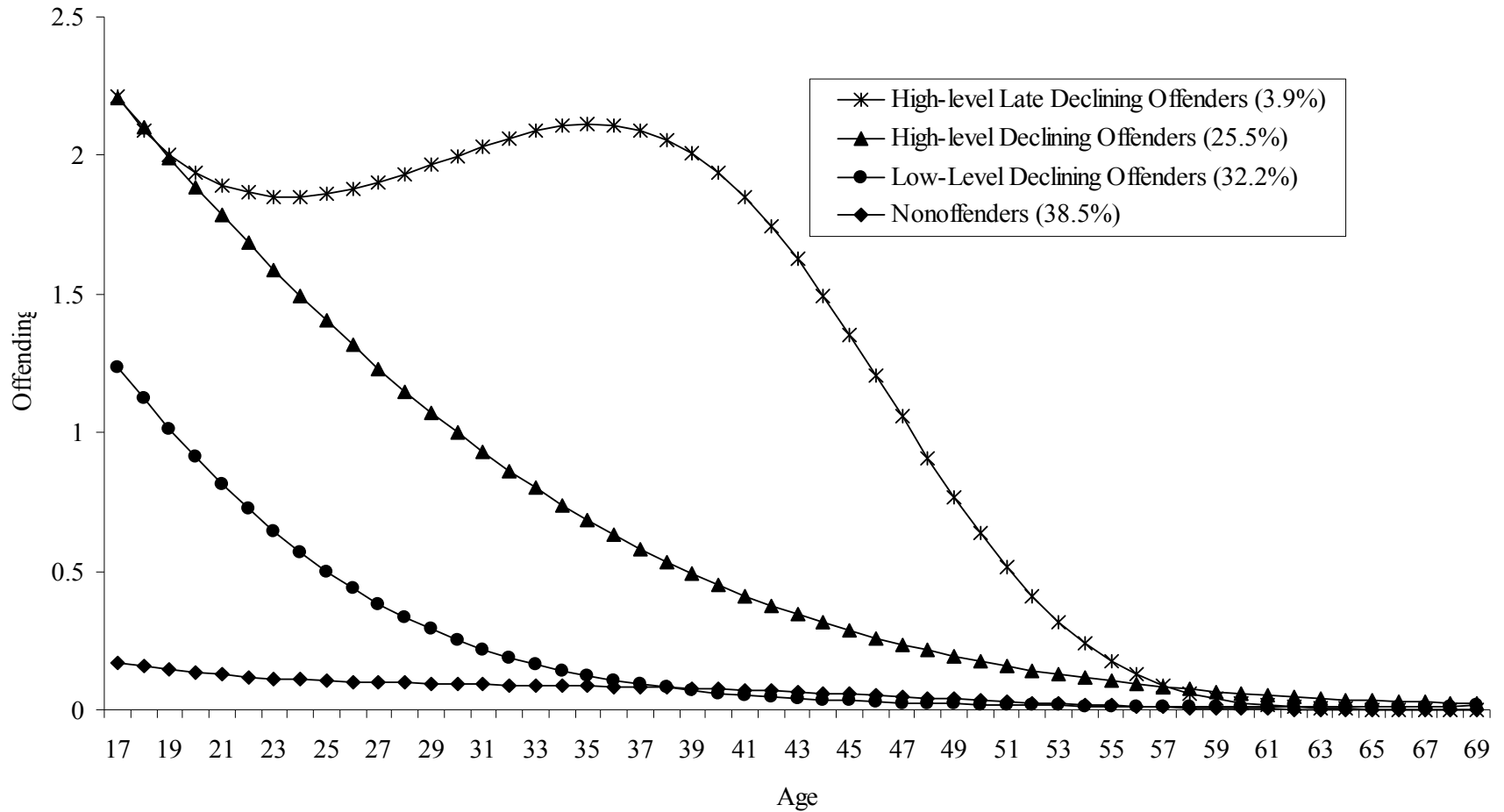Offending Trajectories* for Total Crime, Ages 32 to 70 (N = 480)

* The offending trajectories in this model represent the mean number of arrests per year for all ages. These do not take incarceration into account.

FIGURE 5.1
Offending Trajectories* of Total Crime, Ages 17 to 25 (N = 480)

Legend:
- High-level Declining Offenders (18.5%)
- Low-level Declining Offenders (22.7%)
- Inclining Offenders (19.0%)
- Nonoffenders (39.8%)

* The offending trajectories in this model represent the mean number of arrests per year free for all ages.

FIGURE 5.2
Offending Trajectories* for Total Crime, Ages 17 to 70 (N = 480)

* The offending trajectories in this model represent the mean number of arrests per year free for ages 17 to 32. These do not take incarceration into account for ages 32 to 70.

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