RECIDIVISM AMONG PAROLED HOMICIDE OFFENDERS:
AN EXAMINATION OF THE EFFECTS OF INCARCERATION, SOCIAL BONDS, AND
OFFENDER CHARACTERISTICS

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ABSTRACT

The focus of this study is the sociological explanation of why some adult offenders recidivate while others do not. Specific deterrence (Beccaria, [1764] 1986; Bentham, [1789] 1961) and labeling (Lemert, 1967) theory predict that the severity of punishment has direct, although opposite effects on future criminal behavior. Alternatively, with their life course perspective, Sampson and Laub (1993) argue that it is more important to study the effects of informal mechanisms of social control on criminal behavior. The association between formal and informal mechanisms of social control and criminal behavior is examined with a sample of paroled homicide offenders. Most of these offenders will not recidivate, and follow-up periods vary extensively so survival analysis was chosen as the primary method of analysis.

The most important finding in this study is that there is no evidence that longer periods of incarceration serve to deter offenders as predicted by specific deterrence theory. Instead, offenders who are incarcerated for longer periods of time are more likely to recidivate as predicted by Lemert's (1967) secondary deviance hypothesis. The results are partly explained by the fact that offenders who pose a higher risk of recidivating are incarcerated for longer periods of time. Limited support is found for Sampson and Laub's (1993) life course perspective. Married offenders are less likely to return to prison for any reason, but they are just as likely to be convicted of a property or violent crime while on parole. Level of education is not associated with the recidivism of offenders.

Two policy issues are addressed in this study. First, homicide offenders present a very low risk of recidivism with 4 - 6% of offenders predicted to return to prison each year because they have been convicted of a property or violent offence. Secondly, risk assessment instruments are very effective at identifying homicide offenders who pose a higher risk of recidivism. The results show that the characteristics contributing to the recidivism of homicide offenders are not different from those associated with other types of offenders.
# TABLE OF CONTENTS

ABSTRACT ............................................................................................................................ ii

LIST OF TABLES .................................................................................................................... v

LIST OF FIGURES ................................................................................................................ vi

ACKNOWLEDGEMENTS ...................................................................................................... vii

1 INTRODUCTION .............................................................................................................. 1

1.1 MEASURES OF RECIDIVISM ...................................................................................... 4
1.2 LOOKING AHEAD .......................................................................................................... 5

2 FORMAL MECHANISMS OF SOCIAL CONTROL AND RECIDIVISM .................... 7

2.1 SPECIFIC DETERRENCE THEORY AND THE EFFECTS OF INCARCERATION ...... 7
2.2 LABELING THEORY AND THE EFFECTS OF INCARCERATION .............................. 9
2.3 EMPIRICAL EVIDENCE OF A SPECIFIC DETERRENCE OR LABELING EFFECT . 12
2.4 SUMMARY ..................................................................................................................... 19

3 INFORMAL MECHANISMS OF SOCIAL CONTROL AND RECIDIVISM ............... 21

3.1 EMPIRICAL EVIDENCE OF THE THESIS BY Sampson AND LAUB .................. 26
3.2 SUMMARY ..................................................................................................................... 32

4 DATA AND METHODOLOGY .......................................................................................... 35

4.1 DATA .............................................................................................................................. 35
4.2 DEPENDENT VARIABLES ......................................................................................... 37
4.3 HYPOTHESES AND INDEPENDENT VARIABLES .................................................... 38
4.4 HOMICIDE OFFENDERS IN GENERAL ..................................................................... 44
4.5 SURVIVAL ANALYSIS ................................................................................................ 47
4.51 Life tables .................................................................................................................. 50
4.52 Cox's proportional hazards model .......................................................................... 50
4.6 SUMMARY ..................................................................................................................... 51

5 DESCRIPTIVE ANALYSIS ............................................................................................. 54

5.1 TIMING AND PROBABILITY OF RECIDIVISM ....................................................... 54
5.2 CRIMES COMMITTED ON PAROLE ......................................................................... 58
5.3 RISK ASSESSMENT AND RECIDIVISM .................................................................... 63
5.4 INDEPENDENT VARIABLES ...................................................................................... 69
LIST OF TABLES

Table 1 - Independent variables........................................................................................................42
Table 2 - Demographic comparison between the sample, current CSC offenders serving a life and determinate for homicide, or determinate sentence for other offences* ........................................................................................................45
Table 3 - Descriptive statistics for dependent variables ........................................................................55
Table 4 - Kaplan-Meier survival analysis of time until recidivism ..........................................................56
Table 5 - Predicted recidivism rates for the first five years of release.....................................................57
Table 6 - Violent and property crimes committed by homicide offenders while on parole from 1976 - 1995 .................................................................................................................................................60
Table 7 - Interpreting the SIR scale .......................................................................................................64
Table 8 - Comparison of predicted (SIR scale) and actual recidivism rates (DV 2) among 345 Caucasian male offenders serving a life sentence for homicide and released on parole from 1976 - 1994 ........................................................................................................65
Table 9 - Comparison of predicted (SIR scale) recidivism rates among Caucasian male offenders in the sample and current CSC offenders serving sentences for homicide, robbery, drug trafficking, and sexual assault* ....... 68
Table 10 - Descriptive statistics for the independent variables .................................................................70
Table 11 - Pearson correlations among dependent and independent variables .................................73
Table 12 - Association between recidivism, gender, ethnicity and age at release ...............................75
Table 13 - Association between recidivism and social control ............................................................77
Table 14 - Association between recidivism and criminal history ........................................................80
Table 15 - Association between recidivism, social bonds and life events .............................................82
Table 16 - Cox regression analysis of the effects of offender characteristics, criminal history and social bonds on the probability that offenders will return to prison for any reason (DV 1) ........................................................................................................................................87
Table 17 - Cox regression analysis of the effects of offender characteristics, criminal history and social bonds on the probability that offenders will return to prison because they have been convicted of a property or violent offence (DV 2) ........................................................................................................................................88
LIST OF FIGURES

Figure 1 - First type of parole for homicide offenders ........................................ 43

Figure 2 - Predicted time until offenders return to prison for any reason (DV 1) ................................................................. 59

Figure 3 - Predicted time until offenders return to prison because they have been convicted of a property or violent offence (DV 2) ................. 59
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CHAPTER 1
INTRODUCTION

This study examines the recidivism of federal homicide offenders. The sample includes all Correctional Service of Canada (CSC) offenders serving a life sentence for homicide\(^1\) who were released on parole (for the first time) between 1976 and 1994 (\(n = 1,250\)).\(^2\) Recidivism was monitored from the date offenders were released on parole through to December 31, 1995. Follow-up periods varied extensively from one to twenty years.

Due to the nature of these data, survival analysis was chosen as the primary method of analysis. As Allison (1984) points out, survival analysis is the most appropriate method to use when follow-up periods vary and the event of interest (recidivism) may not happen to all offenders by the end of the study (censored cases).

Survival analysis is a generic name for a number of statistical techniques that are increasingly being used to study recidivism (see, e.g., Sherman and Berk, 1984; Schmidt and Witte, 1988; Gruenewald and West, 1989; MacKenzie, 1991; Visher, Lattimore and Linster, 1991; Smith and Akers, 1993; Weiner, 1994; Karstedt, 1994; Hepburn and Albonetti, 1994; Hanson, Scott and Steffy, 1995; Joo, Ekland-Olson and

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\(^1\) Homicide offenders, in the context of this study, refer to those serving life sentences. This includes all offenders convicted of capital and non-capital and first and second murder in Canada for which life imprisonment is the minimum sentence, and about 10% of federal offenders serving a sentence for manslaughter (based on the CSC’s offender population on January 24, 1996) for which life imprisonment is the maximum sentence (Criminal Code, 1970, 1996). On July 26, 1976, the offences of first and second degree murder replaced capital and non-capital murder, respectively (Criminal Law Amendment Act, 1976). Infanticide is also a homicide offence; however, the maximum penalty for infanticide is five years (S. 237, Criminal Code, 1996), and the CSC had no offenders serving a sentence for infanticide as of January 24, 1996.

\(^2\) This study was made possible by the CSC’s commitment to their computerized record-keeping system, the Offender Management System (OMS). All data for the sample were obtained from the OMS on December 31, 1995. Current CSC population figures were also obtained from the OMS and represent a snapshot of the CSC offender population on January 24, 1996. Excluded from these data are: provincial offenders, offenders unlawfully at large, escapees, deportees and offenders on bail. Included in these data, under the community supervision group are offenders who are being temporarily detained.
Kelly, 1995; Lattimore, Visher and Linster, 1995; MacKenzie, Brame, McDowall and Souryal, 1995). The two types of survival analysis that will be used for descriptive and multivariate analyses in this study are life tables and Cox's (1972) proportional hazards model. An introduction to these techniques and survival analysis is provided in Chapter 4.

This study focuses on the sociological explanation of why some adult offenders recidivate while others do not. Of particular interest is whether mechanisms of formal (e.g., incarceration) and/or informal (e.g., marriage, employment) social control directly affect recidivism. Three theoretical perspectives are particularly relevant to this question.3

Both specific deterrence theory (Beccaria, [1764] 1986; Bentham, [1789] 1961) and Lemert's (1967) labeling perspectives predict that interventions by criminal justice agencies (police, courts, corrections) have a direct, although opposite effect on future criminal behavior. Supporters of specific deterrence theory argue that appropriate criminal justice sanctions directly reduce the likelihood of recidivism (Fattah, 1976:13), while labeling theory proponents maintain that such sanctions are likely to increase, rather than decrease or arrest future criminal behavior (Tannenbaum, 1938:19-20;

3 Specific deterrence theory (Beccaria, [1764] 1986; Bentham, [1789] 1961), labeling perspective (Lemert, 1967, 1972), and life course perspective (Elder, 1975; Sampson and Laub, 1993) are the three major theoretical perspectives that address whether formal or informal mechanisms of social control affect recidivism. Other theoretical perspectives that address the effects of socialization on criminal behavior include Hirschi’s (1969) social control theory and Sutherland’s (1947) differential association theory. Hirschi’s (1969) theory of social control has been incorporated by Sampson and Laub (1993) into their life course perspective which is included in this study. This study cannot test Sutherland’s (1947) differential association theory because attitudinal measures of association are not available (see, e.g., Tittle, Burke and Jackson, 1986:411). Gottfredson and Hirschi (1990), with their general theory of crime argue that mechanisms of formal and informal social control do not directly affect criminal behavior. However, measures of low self-control are not available to test this perspective (see, e.g., Grasmick, Tittle, Bursik and Arneklev, 1993).

The life course perspective (Elder, 1975; Sampson and Laub, 1993) is also pertinent to the study of recidivism. Arguing that changes to adult social bonds can directly affect criminal behavior, Sampson and Laub (1993) have modified and extended Hirschi's (1969) informal social control theory to develop an explanation of crime and deviance throughout the life course (childhood, adolescence and adulthood). This theoretical perspective and related hypotheses are further elaborated in Chapter 3.

Descriptively, this study addresses two correctional policy issues. First, the probability and timing of recidivism among homicide offenders will be measured. The crimes that homicide offenders commit while they are on parole will also be examined. This information can assist criminal justice decision-making and planning. For example, information on the likelihood of paroled homicide offenders committing the same crime again or new crimes can be used by parole boards when they are deciding whether or not to grant early release.

Secondly, this study will assess the effectiveness of two risk assessment instruments used by the CSC: the Statistical Information on Recidivism (SIR) scale and the Community Risk/Needs Management Scale. Risk assessment plays an important role in corrections. For example, the CSC uses the Community Risk/Needs Management Scale to determine parole supervision levels for offenders.

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4 This study does not examine why people commit homicide in the first place. For Canadian reviews of the theoretical explanation of homicide see Silverman and Kennedy (1993) or Grant, Chunn and Boyle (1994). Grant, Chunn and Boyle (1994) also provide an in-depth review of Canadian homicide laws. For a general review of homicide in Canada see Boyd (1992) or Silverman and Kennedy (1993).
1.1 MEASURES OF RECIDIVISM

Choosing an appropriate definition of recidivism is difficult because there are as many definitions as there are reasons why an offender would return to prison. The commission of a new offence, a technical violation of parole, or the offender not being able to handle life outside the prison, are just a few examples of why he or she may return to prison.

To address this issue, this study follows the example of MacKenzie et al. (1995) who use multiple definitions of recidivism. In this study, the two dependent variables (DV 1 and DV 2) used to measure recidivism are:

- DV 1: Return to prison because of parole termination or revocation.
- DV 2: Return to prison because of a conviction for a property or violent offence.

The first dependent variable may be considered as return to prison for any reason including what are typically referred to as technical violations, but also for the commission of any new offences. The second dependent variable is limited to offenders who were returned to prison for the commission of new property or violent offences.

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5 Parole may be terminated "when its continuation would present an undue risk to society or when the release 'was suspended by reason of circumstances beyond the offender's control' " (CSC, 1996:197). For example, parole may be terminated when:
   a) the offender's release plan is no longer viable and an alternative plan cannot be developed;
   b) the offender requests a return to custody;
   c) the offender has failed to satisfy or is unable to meet minimum program or release requirements; or
   d) the offender is no longer eligible for release due to sentence recalculation (CSC, 1996:198).

6 Parole may be revoked "when the risk to society has become undue and termination is an inappropriate measure as the release was suspended for reasons within the offender's control" (CSC, 1996:198). For example, parole may be revoked when:
   a) the offender commits a new offence;
   b) the offender fails to report to his or her parole officer as required;
   c) the offender fails to attend a mandatory treatment program; or
   d) the offender tests positive for a narcotic detected during mandatory urinalysis testing.

7 For example, the offender fails to complete minimum program or release requirements, or fails to report to his or her parole officer.
(including sexual) offences,⁸ and is the best measure of criminal behavior available for this study.

These two measures of recidivism are not mutually exclusive because there is a degree of overlap between them. For example, offenders who return to prison because they are convicted of a property or violent offence are recidivists as measured by both dependent variables (DV 1 and DV 2). However, offenders who return to prison because they fail to attend a mandatory treatment program are only recidivists as measured by the first dependent variable (DV 1). The distinction between these two dependent variables is further elaborated upon in Chapter 4.

With studies such as this one which rely upon official criminal justice records, it must be recognized that the measure of recidivism will not be perfect. For example, escaping the definition of a repeat offender will be those who commit criminal acts for which they are not caught. Nevertheless, official criminal justice records provide the sole measure of criminal behavior for this study.⁹

1.2 LOOKING AHEAD

Chapter 2 examines the effects of formal mechanisms of social control on recidivism. Both specific deterrence and labeling theory are reviewed and hypotheses

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⁸ Property and violent offences were identified according to the Canadian Centre for Justice Statistics (CCJS, 1994) classification system. In addition, firearms offences that CCJS (1994) classifies as "other" Criminal Code offences were also classified as violent offences; these offences include: use of firearm while committing offence, use of firearm during flight and point firearm. Extortion and intimidation with threats of violence were also classified as violent offences (for the definition of these crimes, see the Criminal Code, 1996).

⁹ For a further discussion on the adequacy of using official criminal justice records for recidivism study's see Archer and Gartner (1984:56) or Karstedt (1994:131).
regarding the effect of incarceration on recidivism are outlined. Relevant empirical studies are also examined.

The effects of informal mechanisms of social control on recidivism are reviewed in Chapter 3 with a specific focus on Sampson and Laub's (1993) life course perspective. Hypotheses regarding the association between marital and employment status, level of education and recidivism are developed, and empirical studies relevant to the life course perspective are outlined.

In chapter 4, the process of data collection is described and an introduction to survival analysis provided. This chapter also outlines the dependent and independent variables that will be used to test the hypotheses, and provides the reader with a demographic comparison of offenders in the sample with current CSC homicide and determinate sentence offenders.

Chapters 5 and 6 outline the findings of this study. Chapter 5 focuses on descriptive analysis with an examination of the timing and probability of recidivism, and the crimes committed by paroled homicide offenders. This chapter also explores the association between recidivism and the explanatory variables.

The results of multivariate analysis are presented and discussed in Chapter 6. Correctional policy issues regarding the recidivism of homicide offenders and the effectiveness of risk assessment instruments are also addressed in Chapters 5 and 6. Concluding remarks regarding the theoretical and social policy implications of this study are provided in Chapter 7. Also in Chapter 7, the limitations of this study and directions for future research are outlined.
CHAPTER 2
FORMAL MECHANISMS OF SOCIAL CONTROL AND RECIDIVISM

An important debate within criminology is whether informal (e.g., marriage and employment) or formal (e.g., incarceration) mechanisms of social control\(^\text{10}\) are causally related to adult criminal behavior (see, e.g., Beccaria, [1764] 1986; Bentham, [1789] 1961; Tannenbaum, 1938; Becker, [1963] 1966; Lemert, 1967; Gottfredson and Hirschi, 1990; Sherman and Smith, 1992; Sampson and Laub, 1993; Nagin and Land, 1993; Nagin and Paternoster, 1994; Homey, Osgood and Marshall, 1995). Specific deterrence theory (Beccaria ([1764] 1986; Bentham [1789] 1961), Lemert's (1967) labeling perspective and Sampson and Laub's (1993) life course perspective all present ideas on how these mechanisms affect adult criminal behavior.

This chapter explores specific deterrence and labeling theory and outlines the testable hypotheses raised. Empirical studies relevant to these hypotheses are also reviewed.

2.1 SPECIFIC DETERRENCE THEORY AND THE EFFECTS OF INCARCERATION

Deterrence theory can be traced back to the classical school of criminology and the work of Beccaria ([1764] 1986) and Bentham ([1789] 1961) in the eighteenth century in Europe (Pfohl, 1985:58; Siegel, 1995:109-110). Beccaria ([1764] 1986) and Bentham ([1789] 1961) were writing at a time when theological explanations of criminal behavior were still prevalent (Pfohl, 1985:56; Young, 1986:xiv). However, unlike these pre-classical thinkers, Beccaria ([1764] 1986) and Bentham ([1789] 1961) did not

\(^{10}\) For this study, social control has been defined as "the capacity of a social group to regulate itself according to desired principles and values, and hence to make norms and rules effective" (Sampson and Laub, 1993:18).
believe people committed crimes because they were possessed by the devil or under a witch's spell; rather, Beccaria ([1764] 1986) and Bentham ([1789] 1961) observed that people committed crimes because the potential benefits (pleasure) of committing the act outweighed its costs (pain).

This approach is also referred to as rational choice theory because Beccaria ([1764] 1986) and Bentham ([1789] 1961) argued that people thought about the consequences of their behavior before they acted. These scholars believed that if the punishment for a crime was swift, certain, and severe, most people would be dissuaded from committing it. On the necessity of punishment being swift and certain, Beccaria ([1764] 1986:37) wrote:

I have said that promptness of punishment is more useful, for the less time that passes between the misdeed and its chastisement, the stronger and more permanent is the human mind's association of the two ideas of crime and punishment, so that imperceptibly the one will come to be considered as the cause and the other as the necessary and inevitable result.

Regarding the severity of punishment, Beccaria ([1764] 1986:23) wrote:

The purpose of punishment, then, is nothing other than to dissuade the criminal from doing fresh harm to his compatriots and to keep other people from doing the same. Therefore, punishments and the method of inflicting them should be chosen that, mindful of the proportion between crime and punishment, will make the most effective and lasting impression on men's minds and inflict the least torment on the body of the criminal.

It is the notion of a reasoning criminal that forms the basis of both general and specific deterrence theory. It is assumed that the threat of punishment will deter most people from committing acts which laws define as criminal (general deterrence). Similarly, people who are appropriately punished for their crimes in a swift and certain
manner will not want to experience such punishment again and will therefore refrain from committing any acts that might lead to further punishment (specific deterrence).

This study will measure how the severity of punishment affects criminal behavior. Specifically, this study will determine whether longer periods of incarceration reduce the recidivism of homicide offenders. The following hypothesis predicts a negative, linear association between length of incarceration and recidivism:

- H1 A) The longer an offender is incarcerated, the less likely he or she is to recidivate following release from prison.

Gottfredson and Hirschi (1990:136) argue that crime declines with age because of maturation effects. Therefore, to ensure that the relationship between length of incarceration and recidivism is not spurious, the age of offenders at the time they are released from prison will be controlled. Additional control variables are introduced in Chapter 4.

2.2 LABELING THEORY AND THE EFFECTS OF INCARCERATION

Tannenbaum (1938) is credited with the initial development of the labeling perspective as it relates to the study of crime and deviance; however, it was Lemert (1967, 1972) and Becker ([1963] 1966) who fully developed its theoretical potential (Glassner, 1982:73; Pfohl, 1985:285). Becker ([1963] 1966:17) accepts that people will commit deviant or criminal acts because such acts are defined by social groups with the political and economic power to do so.

... social groups create deviance by making the rules whose infraction constitutes deviance, and by applying those rules to particular people and labeling them as outsiders. From this point of view, deviance is not a quality of the act the person commits, but rather a consequence of the application by others of rules and sanctions to an "offender". The deviance is one to whom that
label has successfully been applied; deviant behavior is behavior that people so label (Becker, [1963] 1966:9).

Lemert (1972:24-25) agrees with Becker ([1963] 1966) that some forms of behavior are not deviant or criminal until they are "labeled" as such by a social group. For this reason, Lemert (1967:17) was not overly interested in why people started to commit deviant or criminal acts in the first place (primary deviation). Instead, he was concerned with how people who were caught committing a crime dealt with the societal response to their deviance. Lemert (1967:40) refers to this process as secondary deviation.

According to Becker ([1963] 1966:34-35) and Lemert (1967:40), the behavior of people who are caught committing a criminal act changes in response to the reaction of others. Lemert adds, people change their behavior in response to the "moral problems which revolve around stigmatization, punishments, segregation, and social control" (1967:40). For example, offenders released from jail may find their access to legitimate employment opportunities limited because of public knowledge and reaction to their crime. Finding their access to legitimate employment opportunities blocked, offenders may turn to illegitimate activities such as auto theft, break and enter, and robbery to earn money (Becker, [1963] 1966:34).

Lemert's (1967) concept of secondary deviation can be equated to a process that Tannenbaum referred to as "the dramatization of evil" (1938:19). According to Tannenbaum (1938:19-20), once a person is publicly identified as being a criminal ("tagged") his or her self-image starts to radically change.

The process of making the criminal, therefore, is a process of tagging, defining, identifying, segregating, describing, emphasizing, making conscious and self-conscious; it becomes a way of stimulating, suggesting, emphasizing, and evoking the very traits that are complained of. ... The person becomes the thing
he is described as being. Nor does it seem to matter whether the valuation is made by those who would punish or by those who would reform. In either case the emphasis is upon the conduct that is disapproved of (Tannenbaum, [1938] 1963:19-20).

Lemert (1967:44) also insists that the effects of being labeled a criminal are so damaging to a person's self-image that even rehabilitation attempts within prison are futile. Any communication with the offender about his or her criminal behavior simply reinforces the feeling of stigmatization. On the experience of imprisonment, Lemert (1967:44) writes:

Among the requirements imposed on the deviant under some form of institutional restraint are that he accept or at least not threaten the dominant values of the responsible agency ... In order to become a candidate for reinstatement in society the deviant must give his allegiance to what is often an anomolous conception of himself and the social world, and try to live by rules, often rigorous in extreme, substituted for or added to those by which normals live. ... It is in such special socio-psychological environments that the functional expression of stigma is concretized and a staging area set up for an ideological struggle between the deviant seeking to normalize his actions and thoughts and agencies seeking the opposite.

Essentially, Lemert's (1967:44) point is that if incarcerated offenders were left on their own, it would be possible for them to minimize or forget about their past criminal behavior. On the other hand, Lemert (1967:44) argues that attempts to have an offender accept that what he or she did was wrong will back-fire because once the label of deviant or criminal is adopted it is difficult to remove. The result is that the offender leaves prison fully socialized as a criminal.

It seems reasonable to infer from Tannenbaum (1938), Becker ([1963] 1966), and Lemert (1967), that the longer people are subjected to the forces which contribute to secondary deviation (e.g., longer periods of incarceration), the more likely they are to become immersed in the new role in which they find themselves (offender status).
One way to test this hypothesis is to determine how differential levels of punishment affect the criminal behavior of offenders. This is being done with the first hypothesis where the degree of punishment can be equated to length of incarceration and criminal behavior to recidivism. From specific deterrence theory, it was hypothesized that offenders who are incarcerated for longer periods of time would have lower recidivism rates (H1 A). For the labeling perspective, an alternative hypothesis is proposed; in this case, a positive linear association between length of incarceration and recidivism is predicted:

- **H1 B** The longer an offender is incarcerated, the more likely he or she is to recidivate following release from prison.

### 2.3 Empirical Evidence of a Specific Deterrence or Labeling Effect

In this section, six studies that have examined the effect of criminal justice sanctions on adult criminal behavior are reviewed. These six studies were chosen because they each examine how the severity of punishment affects recidivism. The first study by Smith and Akers (1983) compares the recidivism rate of offenders sentenced to prison with those placed in an intermediate sanction program. Next, Schmidt and Witte's (1988) findings regarding the effect of length of incarceration on recidivism are examined. The last four studies examine the effect that the severity of sentencing sanctions has on the recidivism of specific offence types. Orsagh and Chen (1988) examine the recidivism of robbery and burglary offenders; Sherman and Berk (1984) and Dunford, Huizinga and Elliott (1990), the recidivism of spousal abusers; and Yu (1994), the recidivism of drunk drivers. Three studies by Sherman and Smith (1992), Pate and Hamilton (1992), and Berk, Campbell, Klap, and Western (1992) that
have replicated Sherman and Berk's (1984) Minneapolis Domestic Violence Experiment are reviewed in the next chapter because of their focus on the effects of informal mechanisms of social control (marital and employment status) on recidivism.

First, Smith and Akers (1993) compared the recidivism rate between offenders sentenced to an intermediate sanction program in Florida and offenders sentenced to prison. Smith and Akers (1993:267) note that their sample was composed of convicted felons. The purpose of the research was to determine if the severity of punishment affected the recidivism rates of offenders.

According to Florida's sentencing guidelines, judges have the option of sentencing offenders to the intensive supervision program for 24 months, or to prison for 12 to 30 months (Smith and Akers, 1993:275). Offenders in the intensive supervision program are required to spend their non-working hours at home and are monitored by community control officers who make contact (i.e., by telephone or in-person) with the offender 28 times a month (Smith and Akers, 1993:271).

The follow-up period was 54 months with three measures of recidivism used: re-arrest, reconviction and imprisonment/reimprisonment (Smith and Akers, 1993:278). Smith and Akers (1993:280-281) report that about the same proportion of offenders were likely to be re-arrested for the intensive supervision and prison groups. However, offenders who completed the intensive supervision program were more likely to be reconvicted and reincarcerated.

Smith and Akers's (1993:273) did not intend to test either specific deterrence or labeling theory; however, inferences can be made from their findings which support

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11 In the United States, a felony is considered to be a serious offence such as murder, rape, or robbery. Misdemeanors are classified as minor offences; for example, common assault or theft (Siegel, 1995:33).
specific deterrence theory. As put forth in the first hypothesis (H1 A), specific deterrence theory suggests that offenders who received the more severe sanction (incarceration) should have a lower recidivism rate than those who were placed in the intensive supervision program (a less severe sanction), and in fact this is what happened.

The findings do not support Lemert’s (1967) labeling perspective. According to Lemert (1967:44), incarcerated offenders should have emerged from prison more stigmatized and socialized into the role of the criminal than the intensive supervision group who were allowed to work in the community and live at home. However, the results show that it was the intensive supervision group who had a higher recidivism rate.

Schmidt and Witte (1988) examined the recidivism of about 9,300 offenders released from North Carolina prisons during 1978 and 1980. The purpose of this research was to test the appropriateness of different survival analyses models in the measurement of recidivism. Recidivism was defined as return to prison for any reason, and follow-up periods ranged from 3.8 to 6.8 years.

Included in Schmidt and Witte’s (1988:24-25) model was a measurement of the length of time that each offender had spent incarcerated prior to release; other independent variables included gender, race, age at release, level of education, marital and employment status, substance abuse and criminal history, and original offence type. Schmidt and Witte’s (1988:25) sample contained offenders convicted of both felonies and misdemeanors.

Schmidt and Witte (1988:86-87) found that length of incarceration was positively associated with recidivism; that is, offenders who had served longer periods of
incarceration were significantly more likely to recidivate. This means that longer periods of incarceration do not show any beneficial effect in terms of reducing recidivism as predicted by Hypothesis 1 A.

A possible explanation for these findings is that offenders who pose a higher risk of recidivism are incarcerated for longer periods of time because: (1) they receive longer sentences, and/or (2) they are not released on parole before their sentence expires (or at least not as soon as lower risk offenders). In Canada, risk assessment plays an important role in the parole decision making process. The level of risk that an offender will present to the community is the most important factor that the National Parole Board (NPB) considers when it reviews an offender's parole application (CSC, 1996:145). This means that offenders who have the same sentence length and parole eligibility period may still spend different lengths of time incarcerated because of their assessed level of risk.

Likewise, courts will increase the sentence of offenders who appear before them a second time for a similar type of offence (Ruby, 1994:160). As Gottfredson and Hirschi (1990:232) note, this is because past criminal behavior is the best predictor of future criminal behavior. What this means for this present study and Schmidt and

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12 The National Parole Board identifies the recidivism risk that an offender presents "based upon offender and offence-specific factors and other information, specifically:
   a) a review of the Statistical Information on Recidivism [scale];
   b) the case-specific factors including, but not limited to:
      \[
      \Rightarrow \text{ the details of the offence;}
      \Rightarrow \text{ the details of the offender's criminal history;}
      \Rightarrow \text{ the role of alcohol/drugs;}
      \Rightarrow \text{ the mental status of the offender with respect to the likelihood of future crime;}
      \Rightarrow \text{ previous breaches of supervision conditions;}
      \Rightarrow \text{ issues surrounding relationships and employment as they relate to the risk of re-offending; and}
      \Rightarrow \text{ other available information and professional opinion.}
      \]
   c) psychiatric and/or psychological assessments completed as required or as necessary according to the offence category requirements; and
   d) other relevant information and opinions" (CSC, 1996:151).
Witte's (1988) findings is that it may not be length of incarceration that is affecting the recidivism rate, but other factors that were not controlled, such as low self-control and criminal opportunity (Gottfredson and Hirschi, 1990:220).

Orsagh and Chen (1988) also examined the recidivism of offenders released from North Carolina prisons. Using independent variables similar to Schmidt and Witte's (1988), these authors examined the recidivism of robbery and burglary (break and enter) offenders released from prison during 1980. The follow-up period was two years and recidivism was defined as re-arrest.

The purpose of Orsagh and Chen's (1988:158) research was to determine the effect of incarceration on recidivism. They predicted that incarceration could have a positive or negative effect on recidivism depending upon how it affected the opportunity for offenders to re-enter the job market and earn a legitimate income.

For robbery offenders, Orsagh and Chen (1988:164) found a significant negative linear relationship between length of incarceration and recidivism. The longer robbery offenders were incarcerated for, the less likely they were to recidivate. Orsagh and Chen (1988:166) did not find a significant relationship between length of incarceration and the recidivism of burglary offenders. Orsagh and Chen's (1988:166) explanation for these findings is that incarceration is a more effective deterrent for robbers than burglars. This may be because the average sentence length is longer for robbers than burglars; however, Orsagh and Chen (1988) do not state the mean time that these two offender groups spent incarcerated.

Recall that Schmidt and Witte (1988) found that longer periods of incarceration increased recidivism, yet Orsagh and Chen (1988) report opposite findings even though the offenders were from the same state and prison system. These findings conflict
because Orsagh and Chen (1988) focused on specific types of offences whereas Schmidt and Witte (1988) examined the recidivism of all offenders, and consequently more than one offence type.

Orsagh and Chen’s (1988) study reflects the fact that rational choice researchers tend to examine the recidivism of offenders within specific offence types (see, e.g., Bennett, 1986; Carroll and Weaver, 1986; Feeney, 1986). As Cornish and Clarke (1986:2) note, this is because there is a difference between the reasons people commit specific offences such as robbery (criminal events), and why they start or desist from criminal behavior (criminal involvement).

Examining the recidivism of spousal assault offenders in Minneapolis, Sherman and Berk (1984) found support for the specific deterrence theory. These authors randomly assigned spousal assault cases to one of three treatment groups. For the first group, police ordered the abuser to leave the household for eight hours (separation). For the second group, police advised or counseled the couple (mediation), and for the third group, police arrested the abuser and he or she was held in jail overnight (arrest).

Recidivism was defined as another incident of spousal assault within a six month period. Overall, Sherman and Berk (1984:269) found that arresting offenders, rather than separating them from their spouse or counseling them, significantly reduced the recidivism rate. This offers support for specific deterrence theory because a more severe sanction reduced the recidivism of spousal assault offenders.

Utilizing a similar research design and definition of recidivism, Dunford, Huizinga and Elliott (1990) replicated Sherman and Berk’s (1984) study in Omaha, Nebraska.
However, in contrast to Sherman and Berk's (1984) findings, Dunford, Huizinga and Elliott (1990) found no evidence to support the specific deterrence hypothesis.

The recidivism rate for offenders who were arrested was not significantly different from those who faced mediation or separation from their spouse. It is possible that Dunford, Huizinga and Elliott's (1990) findings contradict Sherman and Berks (1984) because informal mechanisms of social control (e.g., marital status and employment status) were not controlled. For example, an hypothesis put forth by Sherman and Smith is that arrest is more likely to deter offenders with strong ties to the community (e.g., married and working full-time) than it is offenders with weak ties (e.g., not married and unemployed), or low "stakes in conformity" (1992:681).

Yu (1994:357) examined how the severity (i.e., amount of fine and length of licence suspension) and celerity (swiftness) of sanctions affected the recidivism of offenders convicted of drunk driving in New York State. Recidivism was defined as arrest for a new drunk driving offence within a three year follow-up period.

Yu (1994:361) found that higher fines significantly reduced the recidivism of drunk drivers. Length of licence suspension and the length of time until sentencing (swiftness) did not affect recidivism. Yu's (1994) findings also support specific deterrence theory because more severe punishments (higher fines) deterred drunk drivers.

In summary, these six studies present conflicting results. Four of the studies examined the recidivism of specific offence types. More severe sentencing sanctions reduced the recidivism of robbers (Orsagh and Chen, 1988) and drunk drivers (Yu, 13

13 Only 35 - 42% of the offenders in Sherman and Berks (1984) and Dunford, Huizinga and Elliott's (1990) study's were actually married. A large proportion of the offenders (39 - 45%) were unmarried boyfriends. Ex-boyfriends, divorced or separated husbands, roommates, relatives, and girlfriends made up the remainder of Sherman and Berks (1984) and Dunford, Huizinga and Elliott's (1990) sample.
1994); however, the severity of punishment had no effect on burglars (Orsagh and Chen, 1988), and a questionable effect on spousal assault offenders (Sherman and Berk, 1984; Dunford, Huizinga and Elliott, 1990).

In an examination of the recidivism of over 9,000 offenders, Schmidt and Witte (1988:86-87) found that longer periods of incarceration increased the recidivism of offenders, offering support for the labeling perspective. Alternatively, Smith and Akers (1993) found that the recidivism of offenders sentenced to prison was significantly lower than a comparison group who were sentenced to an intensive supervision program. These findings offer support for specific deterrence theory.

It appears that sentencing sanctions do have an effect on the recidivism of offenders; however, this effect is highly variable and dependent upon specific offence types. Studies directly pertaining to the recidivism of homicide offenders were not available; however, for other serious offenders such as robbers, Orsagh and Chen (1988:164) found that longer periods of incarceration reduced recidivism, providing support for Hypothesis 1A.

2.4 SUMMARY

This chapter has outlined two theoretical perspectives that describe how formal mechanisms of social control can directly affect criminal behavior. All other things being equal, specific deterrence theory hypothesizes that longer periods of incarceration should deter offenders from committing further deviant or criminal acts that may cause them to end up back in prison (Orsagh and Chen, 1988:155). To determine if this is correct, the following hypothesis will be tested.
- **H1 A)** The longer an offender is incarcerated, the less likely he or she is to recidivate following release from prison.

Alternatively, Lemert's (1967) labeling perspective leads to the conclusion that the longer a person is incarcerated the more likely he or she is to accept the deviant label and become entrenched in the criminal role. According to this perspective, intervention or rehabilitative efforts do not reduce recidivism, and in fact only make it worse. In this case, the alternative hypothesis is that longer periods of incarceration will increase the recidivism rate.

- **H1 B)** The longer an offender is incarcerated, the more likely he or she is to recidivate following release from prison.

In a review of the literature, the effects of criminal justice sanctions on recidivism were examined. However, none of these studies specifically examined the effect of sanctions on homicide offenders. The robbery offenders used by Orsagh and Chen (1988) were the closest to the homicide offenders in terms of offence seriousness. In this case, longer periods of incarceration were found to reduce recidivism, as predicted by Hypothesis 1 A. However, Orsagh and Chen's (1988) results should not be generalized to homicide offenders because the reviewed studies show that the effect of criminal justice sanctions on recidivism is offence specific.

In the next chapter, the effects of informal controls on adult criminal behavior will be examined with a specific focus on Sampson and Laub's life course perspective.
CHAPTER 3
INFORMAL MECHANISMS OF SOCIAL CONTROL AND RECIDIVISM

Although for different reasons, Sampson and Laub (1993:165) and Gottfredson and Hirschi (1990:249) do not believe that there is a direct association between the severity of sentencing sanctions and future criminal behavior as put forth by specific deterrence theory in Chapter 2. On the one hand, Gottfredson and Hirschi (1990:255) argue that the causes of crime do not change over time. Gottfredson and Hirschi (1990:249) imply that formal mechanisms of social control, such as imprisonment, and informal mechanisms of social control, such as marriage and employment do not change an individual's propensity to commit crime.

Gottfredson and Hirschi (1990:120) contend that the primary explanatory variable of crime is low self-control which is an underlying behavioral trait developed primarily because of the poor socialization of children by their parents. Lack of parental supervision and unstructured discipline are the main causes of low self-control (Gottfredson and Hirschi, 1990:99-100).

According to Gottfredson and Hirschi (1990:89), people with low self-control are more likely to commit crimes because they:

- require quick gratification of desires through simple methods such as theft;
- are risk takers who thrive on exciting and dangerous activities which may require stealth or physical activity;
- avoid short and long-term commitments to family, friends, spouses and employers that would require a stable lifestyle; and
- are self-centered showing little compassion or empathy towards those they steal from or harm.

Gottfredson and Hirschi (1990) argue that people with low self-control seek quick solutions to problems that arise throughout their life regardless of the consequences.
For example, it is easier for a person with low self-control to break into someone's house and steal money than it is to look for a job or adhere to a job's requirements, such as keeping regular hours.

Although placing slightly more importance on the role of the school and peers in explaining juvenile delinquency, Sampson and Laub (1993) agree with Gottfredson and Hirschi's contention that "the major cause of low self-control [i.e., crime] ... appears to be ineffective child-rearing" (1990:97). However, these two sets of authors disagree fundamentally on the effect of life events or social bonds after adolescence. Gottfredson and Hirschi (1990:236) maintain that the causes of crime do not change over time and adult social bonds or life events have little or no direct effect on criminal behavior.

In contrast, Sampson and Laub's (1993:21) main thesis is that social bonds such as marital attachment, employment stability or educational commitment can reduce or stop criminal behavior regardless of a person's level of self-control or previous criminal history. Sampson and Laub (1993:255) argue that incarceration only contributes indirectly to criminal behavior because it weakens offenders ties to society, thus making it more difficult for them to maintain marriages, other family relations, and employable skills. Sampson and Laub's (1993) theoretical approach is referred to as a life course perspective because of their interest in examining the causes of crime from childhood through adulthood.

Life course research has been defined by Mayer and Tuma as "the study of social processes extending over the individual life span or over significant portions of it, especially the family cycle (marriage and child-rearing), educational and training histories, and employment and occupational careers" (1990:3). Life course researchers
are interested in studying how these social institutions (marriage, parenthood, school and work) affect the behavior of individuals throughout their lives.

Two concepts, trajectories and transitions, underlie the life course perspective. Trajectories have been described by Sampson and Laub as pathways or lines "of development over the life span" (1993:8). Work careers, marriage and parenthood all represent common trajectories studied by life course researchers (Elder, 1985:30). The criminal career has also been recognized as a trajectory and is receiving a substantial amount of attention (see, e.g., Sampson and Laub, 1993; Nagin and Land, 1993; Horney, Osgood and Marshall, 1995; Nagin, Farrington and Moffitt, 1995). Transitions are events that start, modify or end trajectories; for example, a person's first marriage represents a transition into the trajectory of marriage.

Mayer and Tuma note that an important assumption of life course research is that "events within single life domains (such as job shifts in an occupational career or the birth of children within a fertility history) usually cannot be explained without reference to events in other life domains" (1990:7). Events throughout the life course are considered to be interdependent. Sampson and Laub's (1993:246) argument is that marital attachment and commitment, employment stability and educational commitment can directly affect adult criminal behavior. In this case, trajectories such as marriage and employment are predicted to directly affect the criminal career trajectory.


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14 The criminal career is defined by Blumstein, Cohen and Farrington as "the longitudinal sequence of offenses committed by an offender who has a detectable rate of offending during some period" (1988:2).
bond to society: attachment, commitment, involvement and belief. According to Hirschi, "the essence of internalization of norms, conscience, or super-ego ... lies in the attachment of the individual to others" (1969:18). Hirschi (1969) felt that people learned the values and norms of those whom they were most attached to whether it be parents, peers or the influence of school. Thus, if juveniles are strongly attached to people who believe that committing deviant or criminal acts is wrong, they will not commit these behaviors themselves.

Commitment was also an important concept in Hirschi's (1969) social control theory. According to social control theory, people who have invested a considerable degree of time and energy into conventional activities (e.g., education, employment, marriage) are unlikely to risk losing this investment by committing deviant or criminal acts (Hirschi, 1969:21). For example, people who commit criminal acts risk getting caught and ending up in prison. This directly threatens a person's career, prevents him/her from earning money for conventional activities, and can cause interpersonal relationships to fall apart.

Proponents of social control theory also believe that involvement in conventional activities also reduces the likelihood of deviant or criminal behavior because these activities require a considerable investment of time and effort (Hirschi, 1969:22). The argument here is that a person who works all day (conventional activity 1) and then comes home to his or her family (conventional activity 2) will have little time to think about or carry out criminal acts.

Sampson and Laub also stress the importance of a person's attachment to conventional activities, noting that they create "interdependent systems of obligation and restraint that impose significant costs for translating criminal propensities into
action" (1993:141). Sampson and Laub (1993:141) believe that regardless of criminal history, a person with strong social ties to his or her spouse and/or employer will be unwilling to risk that relationship by committing criminal acts.

Indeed, Sampson and Laub argue that even the negative effects of long periods of incarceration can be overcome if "individuals have the opportunity to reconnect to institutions like family, school, and work after a period of incarceration" (1993:255). In summary, Sampson and Laub's (1993) main thesis is that adult social bonds can directly affect a person's criminal career, possibly leading them to desist from further criminal behavior, regardless of the pervasiveness of their past criminal behavior.

Ideally, Sampson and Laub (1993:143) note that it is the level of marital attachment, commitment to conventional educational and occupational goals, and job stability that should be measured for a test of their hypothesis. However, if Sampson and Laub's (1993) hypothesis is correct, it seems reasonable to assume that life events which modify trajectories, such as marriage, employment or educational attainment, should have some affect on criminal behavior (see, e.g., Sherman and Smith, 1992:683). For example, without some degree of commitment to conventional educational and occupational goals, most people would not complete grade 12, or any post-secondary education. With that assumption in mind, the following three hypotheses will be used to provide a preliminary test of Sampson and Laub's (1993) theory.

- **H 2)** Offenders who are married will have a lower recidivism rate than offenders who are not.

- **H 3)** Offenders who are employed full-time will have a lower recidivism rate than offenders who are not.
• H 4) Offenders who have attained a high level of education (grade 12 or post-secondary) will have a lower recidivism rate than offenders who have not.

For Hypothesis 2, the focus is on married offenders, and not those involved in common-law relationships. This is because married offenders have a greater stake in conformity than those involved in a boyfriend/girlfriend relationship, even if that relationship involves cohabitation (Sherman and Smith, 1992:683). In Hypothesis 3, the focus is on offenders who are employed full-time and not part-time for similar reasons. Offenders who are working full-time have a social investment in their place of work, and therefore more to lose if they recidivate (Horney, Osgood and Marshall, 1995:657). These distinctions (married and employed full-time) are consistent with Sampson and Laub's (1993) life course perspective.

3.1 EMPIRICAL EVIDENCE OF THE THESIS BY SAMPSON AND LAUB

In this section, studies that have examined the effects of informal mechanisms of social control on adult criminal behavior are examined. First, empirical evidence put forth by Sampson and Laub (1993) is reviewed. This is followed by a look at recent studies by Horney, Osgood and Marshall (1995), and Nagin, Farrington and Moffitt (1995), both of which examine how marital and employment status affect adult criminal behavior. Finally, because of their focus on the effects of marital and employment status on recidivism, three studies (Sherman and Smith, 1992; Pate and Hamilton, 1992; Berk et al., 1992) that have replicated Sherman and Berk's (1984) Minneapolis Domestic Violence Experiment are reviewed.
Sampson and Laub (1993:143-144) measured the effects of job stability (low, medium, high), job commitment (weak, strong) and marital attachment (weak, strong) on adult criminal behavior. Job stability was determined from a composite measure of employment status, stability, and work habits. A composite measure of work, education, and economic ambitions was used to measure job commitment. Attachment to spouse was a composite measure of the over-all marital relationship, and attitudes towards marital responsibility.

The effect of these three independent variables on criminal behavior was measured on a cohort of men at different points in time (a panel study); first, when they were 17-25 years old (young adults), again when they were 25-32, and finally when they were 32-45 years of age.

Results show that previous juvenile (age < 17 years) criminal history was a significant predictor of arrest after age 25. The risk of arrest increased for cases with a previous juvenile record. In contrast, cases with high job stability were significantly less likely to be arrested (Sampson and Laub, 1993:174).

For the cases that were ever married, strong marital attachment significantly reduced the likelihood of arrest (Sampson and Laub, 1993:175). For these cases, job stability and juvenile criminal history lost their significance when criminal behavior was defined as arrest for any offence; however, high job stability significantly reduced the likelihood of cases being arrested for a property or violent offence.

These results show that marital attachment and job stability are important factors in the prediction of adult criminal behavior. The findings also show that the combined effects of marital attachment and job stability can overcome previous criminal history.
That is, strong marital attachment and high job stability can cause adults to desist from criminal behavior regardless of previous criminal history.

When job stability was controlled, Sampson and Laub (1993:279) found that length of incarceration was not a significant predictor of adult criminal behavior. However, incarceration plays a major, indirect role in the explanation of adult criminal behavior. Sampson and Laub (1993:166) found that length of juvenile incarceration had a larger effect on future job stability than other criminal history or substance abuse variables. Essentially, youth who were incarcerated for longer periods of time, had more trouble as young adults (17-25 years) in their attempts to find stable jobs (Sampson and Laub, 1993:166).

Horney, Osgood and Marshall (1995) examined criminal and life event histories from 617 male offenders released from prison in Nebraska. The purpose of their study was to examine how current life circumstances affected criminal behavior. The average age of respondents was 28 years. The authors collected information about life circumstances (e.g., married, common-law relationship, working, drinking heavily) and criminal activity during the previous 25-36 month period (Horney, Osgood and Marshall, 1995:660). These data were collected for each one month period for which the offender was not incarcerated.

Horney, Osgood and Marshall (1995:660) found that married (live with wife) offenders were just as likely as unmarried offenders to commit a crime. However, married offenders were less likely to commit an assault than unmarried offenders. In comparison, offenders involved in a common-law relationship (live with girlfriend) were more likely than married men to commit any crime (Horney, Osgood and Marshall, 1995:667).
Offenders who were attending school were less likely to commit a crime. Employment did not reduce the likelihood of offenders committing any crime; but interestingly enough, employed offenders were more likely to commit a property crime (Horney, Osgood and Marshall, 1995:667). Horney, Osgood and Marshall (1995:668) attribute this result to the increased opportunity to commit crime while in the workplace.

Horney, Osgood and Marshall's (1995) findings provide support for the second hypothesis that married offenders should be less likely to recidivate. However, their findings regarding employment contradict Hypothesis 3, since employed offenders were more likely to re-offend.

Although Horney, Osgood and Marshall (1995) found that offenders who were attending school were less likely to commit crime, this does not directly address whether offenders with higher levels of education are less likely to recidivate (H 4). Instead, the results may indicate that offenders had less opportunity (e.g., lack of time) to commit crime while they were attending school.

Nagin, Farrington and Moffitt (1995) examined the offending patterns of 403 males born in London, England. Data collection began when the boys were about 8 years old and continued until they were 32. The purpose of the study was to determine if changes throughout the life course could explain differential offending patterns.

The males were split into four groups: those who were never convicted of an offence between the ages of 10 and 32; those whose last conviction was in their early twenties (adolescence limited); and low and high level chronic offenders. Nagin, Farrington and Moffitt (1995:125) found that at age 18, the employment stability of the three groups ever convicted of a criminal offence was significantly poorer than the group who had never been convicted of an offence. However, by age 32 there was no
difference in employment stability between the adolescence limited group and the never convicted group.

This does not mean that the adolescence limited group did not commit any further crimes. Self-reports show that the adolescence limited group continued to offend; in fact, 43% admitted to stealing from their employer at least once over the past five years (Nagin, Farrington and Moffitt, 1995:128). In comparison, the rate for the never convicted group was only 18%.

Nagin, Farrington and Moffitt (1995:134) add that the three groups ever convicted of an offence had considerably less attachment to their family at age 18 than the never-convicted group did. However, by age 32 the adolescence limited group was similar to the never convicted group in terms of marital stability; both these groups had significantly stronger attachments to their spouses than did the low or high chronic offenders (Nagin, Farrington and Moffitt, 1995:128).

Nagin, Farrington and Moffitt's (1995) study shows that criminal behavior, as measured by convictions, was significantly reduced for members of the adolescence limited group who were strongly attached to their spouse. However, these results are somewhat contradicted by the self-reports that show the adolescence limited group were more likely to have stolen from their employer over the past five years.

Nevertheless, the conviction data show that strong social bonds may be responsible for causing the adolescence limited offenders to desist from criminal behavior. The results certainly provide evidence that marital and employment status may be significant predictors of recidivism in this study as measured in Hypotheses 2 and 3.
Sherman and Smith (1992), Pate and Hamilton (1992), and Berk et al. (1992) have since replicated Sherman and Berk's (1984) Minneapolis Domestic Violence Experiment in three new cities (Milwaukee, Colorado Springs and Dade County, Florida). These three replication studies will be discussed together because of their similar research design. What makes these replication studies relevant to this section is that they have controlled for marital and employment status, something that Sherman and Berk (1984), and Dunford, Huizinga and Elliott (1990) did not do.

Similar to Sherman and Berk's (1984) original study, these replication studies also examined how the severity of punishment affected the recidivism of spousal assault offenders. Treatment groups varied among the three replication studies; however, they can split into two main groups. When police were called to a domestic violence incident, the suspect was randomly assigned to either be arrested and held in jail over-night, or else not arrested, but given a verbal warning.

Marital status was defined as married or not married (e.g., common law), and employment status as employed or not employed. Recidivism was defined as another domestic violence incident within a 6 to 18 month follow-up period.

Drawing on Hirschi's (1969) social control theory and Lemert's (1967) labeling perspective, Sherman and Smith hypothesized "that individuals subjected to social control in jobs and marriage are more likely to be deterred by legal sanctions than are those without such stakes in conformity" (1992:681). Findings from the three replication studies support this hypothesis.

In Milwaukee, Sherman and Smith (1992:686) found that when married and employed (high stake in conformity) spousal assault offenders were arrested, they were less likely to recidivate than those who were not arrested. In contrast, when unmarried
and unemployed (low stake in conformity) spousal assault offenders were arrested, they were more likely to recidivate than those who were not arrested.

In Dade county and Colorado Springs, Pate and Hamilton (1992) and Berk et al. (1992) found that employment, but not marital status affected recidivism. For example, Pate and Hamilton (1992:695) found that recidivism was reduced when employed offenders were arrested, rather than given a warning. However, unemployed offenders who were arrested, rather than warned had a higher recidivism rate.

Findings from all three replication studies show that the severity of punishment affects offenders in different ways, depending upon their marital and/or employment status. In relation to this study, these findings indicate that married and/or employed paroled homicide offenders may be less likely to recidivate because they have more to lose in terms of social ties if they have to go back to prison.

3.2 SUMMARY

In this chapter, the life course perspective put forth by Sampson and Laub (1993) was examined. Drawing from Hirschi’s (1969) informal social control theory, these authors contend that adult social bonds mediate can have a direct effect on criminal behavior. Marital attachment and commitment, and job stability are seen as the most influential social bonds on criminal behavior.

However, since life events such as marriage, employment, and educational attainment all mark important transitions in the life course, these variables were seen as acceptable alternatives for a preliminary test of Sampson and Laub’s (1993) thesis. The following three hypotheses will be tested.
• H 2) Offenders who are married will have a lower recidivism rate than offenders who are not.

• H 3) Offenders who are employed full-time will have a lower recidivism rate than offenders who are not.

• H 4) Offenders who have attained a high level of education (grade 12 or post-secondary) will have a lower recidivism rate than offenders who have not.

A review of the literature showed that strong marital attachment can cause offenders to change their criminal behavior (Sampson and Laub, 1993; Nagin, Farrington and Moffitt, 1995). In fact, Sampson and Laub (1993) found that their composite measure of marital attachment was a better predictor of criminal behavior than previous juvenile delinquency history. The second hypothesis in this study predicts that married offenders will be less likely to recidivate, and this is what Horney, Osgood and Marshall (1995) found.

Sampson and Laub (1993) and Nagin, Farrington and Moffitt (1995) found that job stability was an important factor in the prediction of criminal behavior. However, Horney, Osgood and Marshall (1995) found that employed offenders were more likely to re-offend. It appears that many of the offenders in their study took advantage of the opportunities provided at work to commit further crimes such as theft and fraud.

These results show the need for the inclusion of variables such as those developed by Sampson and Laub (1993) and Nagin, Farrington and Moffitt (1995) that measure different levels of the social bond. However, the development of measures such as marital attachment, job stability, and commitment to conventional educational and occupational goals developed by Sampson and Laub (1993) is beyond this present study which relies upon official criminal justice records.
Nevertheless, this present study will use marital (married or not) and employment (full-time or not) status to measure the effect of informal mechanisms of social control on recidivism. Homey, Osgood and Marshall (1995), Sherman and Smith (1992), Pate and Hamilton (1992), and Berk et al. (1992) also used marital and employment status to measure the social bond in their studies. Sherman and Smith (1992:683) note that marital and employment status are adequate measures of the social bond because married and employed offenders have more to lose (higher stake in conformity) if they recidivate. Level of education will also be used to measure the social bond because it is an indicator of commitment to conventional educational and occupational goals.

According to life course theory informal mechanisms of social control can directly reduce the recidivism of some offenders. A test of the three hypotheses developed in this chapter will show whether or not this is true for homicide offenders. The next chapter outlines how data for this study were collected and describes the dependent and independent variables being used to examine the recidivism of homicide offenders and to test the hypotheses. As well, this next chapter provides a demographic comparison of offenders in the sample with other CSC offenders. In Chapter 4, an introduction to survival analysis is also provided.
CHAPTER 4
DATA AND METHODOLOGY

The first section of this chapter discusses how data for this thesis were collected. This is followed by a description of the dependent and independent variables that will be used to examine the probability and timing of recidivism and to test hypotheses generated in Chapters 2 and 3. The next section provides a demographic analysis that shows how CSC homicide offenders compare to other CSC offenders. In the last section, an introduction to survival analysis is provided and the specific survival analysis techniques that will be used in the descriptive and multivariate analyses are described.

4.1 DATA

The data set used in this study contains information on all homicide offenders serving a life sentence in Canada who were released on parole for the first time between 1976 and 1994. During this time, there were 1,204 males and 50 females released giving a sample size of 1,254 offenders. The exclusion of offenders that were deported from Canada the day they were released left a total sample of 1,250 offenders (1,200 males and 50 females).

In order to gain access to these data, the author submitted a proposal to the Correctional Service of Canada's (CSC) National Headquarters (NHQ) in Ottawa, Ontario. In the proposal, access to the CSC's computerized record-keeping system, the Offender Management System (OMS) was requested and it was noted that the information would be used for the author's MA thesis.
A senior manager with the CSC expressed interest in the project and asked the author if he would be willing to come to Ottawa for six months to work for the Accountability and Performance Measurement Sector (APM). The manager was experienced in the application of survival analysis and was interested to see this statistical technique applied to the study of recidivism.

The author accepted the manager's offer, moved to Ottawa, and spent six months working at the CSC's National Headquarters. During this time, the author's principal duty was the analysis of data obtained from the OMS.

The OMS is the CSC's primary database for maintaining offender records. Demographic, criminal history and social event information on the approximately 22,000 currently incarcerated and community supervised offenders is available from the OMS. As well, historical information on previous offenders is also available from the OMS.

The data used for this thesis were obtained in spreadsheet format from the OMS; however, actual construction of the data set was time-consuming because many of the variables (columns) contained multiple records (rows) for each offender. This occurs because each time an offender is released on parole or convicted of an offence, a new record is created for him or her within the proper OMS field (e.g., supervision or offence history). This means that when information from an OMS field is transferred to a statistical package (e.g., SPSS), multiple records may exist.

Before these data could be analyzed, they were re-coded so that each offender was only on one row of the matrix. For example, in order to calculate the time at risk for both dependent variables (DV 1 and DV 2) it was necessary to review the supervision release records associated with each offender and calculate the actual number of days that he or she had spent on parole after being sentenced for homicide.
Likewise, offence records were also reviewed to determine whether offenders were convicted of a property or violent offence while on parole (DV 2). This was accomplished by matching arrest or sentence dates for the offences to dates when the offender was on parole. In most cases, these dates were easy to match because offenders had their parole terminated or revoked around the time of the conviction.

Although duplicate records or incorrect dates were occasionally encountered, over-all data quality for these two critical variables (supervision and criminal history) was excellent. When data quality problems were encountered, the offender’s OMS file was accessed either by the author or his CSC supervisor and the matter resolved.

4.2 DEPENDENT VARIABLES

The two dependent variables being used in this study are:

- **DV 1) Return to prison because of parole termination or revocation.**
- **DV 2) Return to prison because of a conviction for a property or violent offence.**

One component of these dependent variables is simply a measure of whether or not recidivism occurred during the follow-up period. However, since survival analysis will be used to analyze these data, the time that each offender spent in the community (time at risk) until he or she recidivated, or the follow-up period ended (December 31, 1995), was also measured.

It was possible for the follow-up period to continue after the first event (DV 1); however, after the second event (DV 2) occurred, the follow-up period ended for that particular offender. In some instances, the time at risk until parole was terminated or
revoked (DV 1) was also applicable to the second dependent variable. The determining factor was whether parole termination or revocation was in conjunction with a conviction for a property or violent offence. If there was an offence, then follow-up for that particular offender stopped; however, if there was no offence then the follow-up period continued.

Some offenders returned to prison after successfully completing a day parole release and were subsequently released again on day or full parole, sometimes within days, but often months later. These offenders were not considered recidivists, and the length of time they spent incarcerated after their parole release date was controlled. This was accomplished by subtracting the number of days each offender spent incarcerated from the total number of days between the offender’s first release date on parole and the date he or she recidivated, or December 31, 1995, whichever came first.

This technique was also used to ensure that the second dependent variable was a true measure of time at risk within the community; that is, intermittent periods of incarceration due to parole termination or revocation without a property or violent offence (DV 1) were controlled.

4.3 HYPOTHESES AND INDEPENDENT VARIABLES

The four hypotheses that will be tested to measure the effects of formal and informal mechanisms of social control on recidivism are:

- **H1 A)** The longer an offender is incarcerated, the less likely he or she is to recidivate following release from prison.
- **H1 B)** The longer an offender is incarcerated, the more likely he or she is to recidivate following release from prison.
- **H 2)** Offenders who are married will have a lower recidivism rate than
offenders who are not.

- H 3) Offenders who are employed full-time will have a lower recidivism rate than offenders who are not.

- H 4) Offenders who have attained a high level of education (grade 12 or post-secondary) will have a lower recidivism rate than offenders who have not.

Length of incarceration is based upon time served in a federal penitentiary after offenders were convicted of homicide. The exact period of measurement is from the date an offender enters a penitentiary through to the date he or she is released on parole. Other studies that have included length of incarceration in their analyses have used a similar time-frame (see, e.g., Schmidt and Witte, 1988; Orsagh and Chen, 1988).

Marital status is based upon the offender’s current status. Efforts were made to match employment status to the date of recidivism, but for most offenders this was not possible. For this reason, employment status should be considered as a measure of the current, or latest (for incarcerated offenders) status only. Likewise, educational attainment is based upon the highest level that offenders have achieved. This includes any education that the offender attained during incarceration.

Other studies have also relied upon a one-time measurement of marital and employment status, and level of education (see, e.g., Schmidt and Witte, 1988 and Orsagh and Chen, 1988). Ideally, these variables would be measured throughout the

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15 For marital status, the CSC classifies offenders as either: married, common-law, divorced, separated, widow(er), or single. Current marital status is based upon self-reports from offenders, and is valid as of December 31, 1995.

16 For employment status, the CSC classifies offenders as either: full-time, part-time, occasional, temporary, unemployed, student, retired, or unable to work.
follow-up period (see, e.g., Sampson and Laub, 1993; Horney, Osgood and Marshall, 1995); however, such detailed measurement is not possible for this study.

Other variables besides length of incarceration, level of education, marital and employment status that have been empirically linked to the recidivism of adult offenders will be included as control variables in this analysis. These variables, and the studies that have found them to be significantly linked to the recidivism of adult offenders are listed below.

- Gender (Schmidt and Witte, 1988).
- Age at release (Schmidt and Witte, 1988; MacKenzie, 1991; MacKenzie et al., 1995; Hanson, Scott and Steffy, 1995).
- Race (Schmidt and Witte, 1988; Hepburn and Albonetti, 1994; MacKenzie et al., 1995).

In the above studies, race has been defined as either black or white. In Canada, it also makes sense to identify Aboriginal offenders because of the substantial attention paid to their high rates of incarceration (see, e.g., Patenaude, Wood and Griffiths, 1992). In total, offenders will be divided into three groups: (1) Caucasian, (2) Aboriginal (North American Indian, Inuit, and Metis),\(^{17}\) and (3) visible minority (Black, Asiatic, and East Indian) offenders.

Available criminal history information includes original offence, previous federal incarceration and multiple murderer. Original offence has been coded as first degree or capital murder, second degree or non-capital murder, and manslaughter. Previous federal incarceration is limited to offenders who received a sentence of two or more years (federal sentence) prior to their life sentence for homicide. Offenders who have

\(^{17}\) No distinction is made between status and non-status Aboriginal offenders.
been convicted of more than one homicide have also been identified. This information is limited to offenders who received a sentence of two years or more for the homicide if it was prior to their life sentence.

Besides length of incarceration, another social control variable that will be included is level of parole supervision. While on parole, offenders must report to their assigned parole officer at specified periods ranging from eight times a month to once a year. Information on the level of parole supervision at the time of recidivism is available and offenders were classified as having a high supervision level, or not. The distinction between high and low parole supervision is not meant to imply that this study is evaluating parole supervision per se. The distinction between high and low parole supervision is for the purpose of evaluating the risk assessment instruments that the CSC uses to determine parole supervision level (Community Risk/Needs Management Scale and Statistical Information on Recidivism scale). A complete list of the independent variables and their measurement is provided in Table 1.

An additional factor this study must address is the different levels of supervision faced by offenders on day and full parole. As shown in Figure 1, prior to 1984 full parole was almost exclusively used as the first release option. However, after 1984 day parole became the most prominent first release type with successful offenders then progressing to full parole.

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18 Initial parole supervision level is determined by the results of the Community Risk/Needs Management Scale which is administered by parole officers to the offender (CSC, 1996:181). The first component of the Scale is an assessment of the criminal risk (rated low or high) that the offender poses within the community. The second component of the Scale is an assessment of whether improvement is needed with regards to 12 identified need factors. Offender's needs within the following areas are rated as low, medium or high: academic/vocational skills, employment patterns, financial management, marital/family relationships, companions/significant others, accommodations, behavioral/emotional stability, alcohol usage, drug usage, mental ability, health and attitude (CSC, 1989:41). Offenders with high risk, regardless of the need score must report to their parole officer once a week. Offenders with low risk and high needs must also report once a week. Offenders with low risk and medium needs must report twice a month, and offenders with low risk and low needs must report once a month (CSC, 1996:182).
<table>
<thead>
<tr>
<th>Description of variable</th>
<th>Type of variable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Offender characteristics or demographic variables</strong></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>dummy - male (1) or not (0)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>dummy - Aboriginal (1) or not (0); Caucasian (1) or not (0); Visible minority (1) or not (0)</td>
</tr>
<tr>
<td>Age at release</td>
<td>interval - years</td>
</tr>
<tr>
<td><strong>Criminal history and social control variables</strong></td>
<td></td>
</tr>
<tr>
<td>Original offence</td>
<td>dummy - first degree or capital murder (1) or not (0); second degree or non-capital murder (1) or not (0); manslaughter (1) or not (0)</td>
</tr>
<tr>
<td>Length of incarceration for life sentence</td>
<td>interval - years</td>
</tr>
<tr>
<td>(based upon time served in a federal penitentiary)</td>
<td></td>
</tr>
<tr>
<td>Current parole supervision level (or latest for incarcerated cases)</td>
<td>dummy - reporting frequency once a week or more (1) or not (0)</td>
</tr>
<tr>
<td>Multiple murderer</td>
<td>dummy - more than one homicide ever (1) or not (0)</td>
</tr>
<tr>
<td>Previous federal incarceration</td>
<td>dummy - yes (1) or no (0)</td>
</tr>
<tr>
<td><strong>Social bond or life event variables</strong></td>
<td></td>
</tr>
<tr>
<td>Current marital status</td>
<td>dummy - married (1) or not (0)</td>
</tr>
<tr>
<td>Current employment status (latest employment status used for incarcerated offenders)</td>
<td>dummy - employed full-time (1) or not (0)</td>
</tr>
<tr>
<td>Level of education</td>
<td>dummy - grade 12 or 13 (1) or not (0); post-secondary education (1) or not (0)</td>
</tr>
</tbody>
</table>

Release on day parole allows offenders to remain in the community during the day, but they usually have to spend their nights and/or weekends at a federal penitentiary, community-based residential facility, or provincial institution (CSC, 1995:xiv). With their movement restricted at night, offenders on day parole are subject to a greater level of surveillance and have less opportunity to commit crime than those on full parole.
One solution to control for these differential levels of supervision is to only examine the recidivism of offenders released under one type of supervision; for example, offenders released on full parole. However, this choice has serious drawbacks because it leads to the exclusion of cases and valuable information. Strictly focusing on the recidivism of offenders released on full parole leads to the exclusion of information from offenders who have only been released on day parole.

Since the first release type for most offenders in the sample after 1984 is day parole, important information on past parole failures would also be excluded if the studies start date was the first day of full parole release. Ultimately, it was decided to
include offenders released on both day and full parole in the study, and control for intermittent periods of incarceration throughout the follow-up period (see Section 4.2).

4.4 HOMICIDE OFFENDERS IN GENERAL

The Canadian homicide rate was at a 26 year low in 1995 (1.98 per 100,000 population; Fedorowycz, 1996:2); however, the number of homicide offenders that the CSC is responsible for continues to grow because of the nature of the indeterminate (life) sentence. In comparison to offenders serving determinate (fixed length) sentences, those serving life sentences will remain either incarcerated or under the community supervision of the CSC for the remainder of their lives. Currently, homicide offenders serving a life sentence comprise 14.4% (N = 3,165) of the CSC's total offender population (N = 22,028).

Table 2 compares some basic demographic features between the sample, current CSC offenders serving determinate sentences, and those serving a determinate or life sentence for homicide. The table format used by MacKenzie (1991) and Hser, Yamaguchi, Chen and Anglin (1995) was adopted.

Nearly all (86.6%; n = 1,082) of the homicide offenders in the sample are still current CSC offenders. Missing offenders (13.4%; n = 168) have either died, been deported from Canada, escaped from prison, failed to report to a parole officer (unlawfully at large), or received a pardon (S. 749, Criminal Code, 1996) for their homicide. As of January 1996, the sample represented 34.2% (n = 1,082) of the CSC's current population of homicide offenders who are serving life sentences (N = 3,165).
Table 2 - Demographic comparison between the sample, current CSC offenders serving a life and determinate for homicide, or determinate sentence for other offences*

<table>
<thead>
<tr>
<th></th>
<th>Sample (n = 1,250)</th>
<th>Life sentence homicide offenders** (n = 3,165)</th>
<th>Determinate sentence homicide offenders*** (n = 1,087)</th>
<th>Determinate sentence non-homicide offenders* (n = 17,378)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age when sentence started, Mean (SD)</td>
<td>29.5 years (10.1)</td>
<td>29.3 years (9.7)</td>
<td>30.4 years (9.8)</td>
<td>32.0 years (10.2)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male (%)</td>
<td>96.0% (n = 1,200)</td>
<td>96.6% (n = 3,057)</td>
<td>93.0% (n = 1,012)</td>
<td>97.5% (n = 16,945)</td>
</tr>
<tr>
<td>Female (%)</td>
<td>4.0% (n = 50)</td>
<td>3.4% (n = 108)</td>
<td>7.0% (n = 76)</td>
<td>2.5% (n = 433)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian (%)</td>
<td>85.8% (n = 1,073)</td>
<td>82.1% (n = 2,599)</td>
<td>68.3% (n = 742)</td>
<td>76.8% (n = 13,343)</td>
</tr>
<tr>
<td>Aboriginal (%)</td>
<td>8.4% (n = 105)</td>
<td>10.3% (n = 326)</td>
<td>21.4% (n = 233)</td>
<td>11.1% (n = 1,926)</td>
</tr>
<tr>
<td>Visible minority (%)</td>
<td>2.6% (n = 33)</td>
<td>4.0% (n = 128)</td>
<td>7.0% (n = 76)</td>
<td>9.5% (n = 1,652)</td>
</tr>
<tr>
<td>Time spent incarcerated or under community supervision since sentence started, Mean (SD)**</td>
<td>19.7 years (6.4)</td>
<td>13.1 years (9.5)</td>
<td>5.1 years (4.6)</td>
<td>3.5 years (4.1)</td>
</tr>
<tr>
<td>Current status**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incarcerated (%)</td>
<td>18.6% (n = 201)</td>
<td>67.7% (n = 2,142)</td>
<td>65.5% (n = 712)</td>
<td>63.0% (n = 10,941)</td>
</tr>
<tr>
<td>Community (%)</td>
<td>81.4% (n = 881)</td>
<td>32.3% (n = 1,023)</td>
<td>34.5% (n = 375)</td>
<td>37.0% (n = 6,437)</td>
</tr>
</tbody>
</table>

* Current population data were obtained from the Management Information Component of the OMS and represent a snapshot of the CSC offender population on January 24, 1996.

** Includes all current CSC offenders convicted of capital or non-capital murder and first or second degree murder in Canada, and all offenders who received a life sentence for manslaughter.

*** All current CSC offenders serving a determinate sentence for a Canadian homicide offence were convicted of manslaughter.

* Keeping in mind that these categories are not mutually exclusive (offenders can be in more than one offence category), the top ten offence types that offenders are serving determinate sentences for (excluding manslaughter) are: (1) robbery (34.2%; n = 5,949); (2) assault causing bodily harm (19.6%; n = 3,408); (3) drug trafficking (18%; n = 3,133); (4) firearms offences (11.2%; n = 1,939); (5) sexual assault (8.4%; n = 1,462); (6) kidnapping (7.4%; n = 1,283); (7) sexual offences involving children (4.7%; n = 818) (8) importing/exporting narcotics (3.9%; n = 672); (9) attempted murder (2.6%; n = 455); and (10) prison breach (1.2%; n = 204). Note: only offences classified by the Corrections and Conditional Release Act (CCRA, 1992) as Schedule I (violent offences) or II (drug offences) are included in this list.

** Statistics were calculated for 168 offenders from the sample who are not current CSC offenders because they have either died, been deported from Canada, escaped from prison, failed to report to a parole officer (unlawfully at large), or received a pardon (S. 749, Criminal Code, 1996).
This snapshot shows that the four groups are fairly similar in terms of gender and ethnicity composition; however, there are proportionally more women (7.0%; n = 76) and Aboriginal offenders (21.4%; n = 233) serving determinate sentences for manslaughter.

The average age of offenders sentenced to life for homicide is almost identical (29 years) for the sample and current homicide offenders serving a life sentence. The impact of the life sentence is most noticeable when the average time that these four groups have been either incarcerated or under the community supervision of the CSC is examined.

Table 2 also shows that the average homicide offender serving a life sentence has spent almost 10 years longer (13.1 verses 3.5) either in prison or on parole than those serving determinate sentences. Similarly, these offenders have spent an average of eight years longer (13.1 verses 5.1) either in prison or on parole than offenders serving a determinate sentence for homicide. For offenders in the sample, this difference becomes even more substantial. The average offender in the sample has been either incarcerated or under the community supervision of the CSC for almost 20 years.\(^{19}\)

Regarding release on community supervision, the groups differ only slightly. Whereas 37.0% (n = 6,814) of determinate sentence offenders were on some form of community release in January 1996, the rate was 4.7% lower for homicide offenders serving a life sentence (32.3%; n = 1,023). As expected, most (81.4%; n = 881) of the

\(^{19}\) As noted in Table 2, this calculation is based upon the 1,082 offenders from the sample who are still CSC offenders.
homicide offenders in the sample are on parole with the remaining offenders (18.6%; n = 201) currently incarcerated.

Information on the relationship between the offenders in this study and their victims was not available; however, the Canadian Centre for Justice Statistics (Fedorowycz, 1996:9) reports that in 1995, homicide offender's victims were primarily family members (36%; e.g., spouse, parent, child, sibling), or acquaintances (47%; e.g., estranged lover, business associate or neighbour). Also in 1995, about 19% of homicides were committed by one spouse against the other, and about 16% of homicides were committed by strangers.

In summary, the large sample size (N = 1,250) and lengthy follow-up periods (up to 20 years) mean that the results of this study can certainly be generalized to all paroled homicide offenders who are serving life sentences. However, the results should not be generalized to homicide offenders serving determinate sentences where there are a higher proportion of female, Aboriginal, and visible minority offenders.

4.5 SURVIVAL ANALYSIS

Survival analysis consists of a family of statistical techniques that are used to study qualitative change (Luke, 1993:205). The technique is called survival analysis because medical researchers first used it to study the mortality process (Allison, 1984:12; Halli and Rao, 1992:19). The specific focus of survival analysis is the timing of events and the independent variables associated with that timing. Luke defines an

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20 Once again, this calculation is only based upon the 1,082 offenders in the sample who are current CSC offenders.
event as "a shift from one mutually exclusive state to another, occurring at a specific and known point of time" (1993:205).

An advantage of survival analysis is that it uses censored cases in its calculation of the timing and probability of events (Allison, 1984:11; Hutchison, 1988:207; Luke, 1993:206). Censored cases are those where the event of interest does not happen within the study period, while uncensored cases are those where the event of interest does happen. Offenders who do not recidivate by the end of the follow-up period are known as right-censored cases. Left-censoring occurs when the event of interest happens before the study period begins, but this is not a concern for this study.

Multivariate analysis techniques such as least squares regression or logit and probit analysis only use information from uncensored cases; this can lead to biased estimates because information from cases where the event of interest did not happen is excluded from the analysis (Teachman, 1983:270; Hutchison, 1988:207; Schmidt and Witte, 1988:35). In contrast, survival analysis uses information from both censored and uncensored cases to estimate the timing and probability of recidivism.

Another advantage of survival analysis is that an exact follow-up period is not required. Instead, survival analysis treats offenders as having been on parole for the exact period of time between their entry point (parole start date) and either the event (recidivism), or the end of the study period (Schmidt and Witte, 1988:35).

There are three possible outcomes for offenders in this study. First, parole could be terminated or revoked at some point during the study; these are uncensored cases because the event of interest happened.

Secondly, offenders could continue on parole after the study is over without ever recidivating. As noted, these are right-censored observations because the event of
interest did not happen during the follow-up period. For these offenders, survival time is calculated from the date they started parole through to December 31, 1995 (end of study period).

The third possible outcome is that contact is lost with an offender during the follow-up period. There are a number of reasons why this may occur; for example, the offender may die, be deported from Canada, fail to report to his or her parole officer ("escapes" while in the community), or receive a pardon (S. 749, *Criminal Code*, 1996) for his or her crime.

Offenders who fail to report to their parole officer while on community supervision will have their parole revoked, and their follow-up period stops at the date of revocation. These are considered uncensored cases where the event of interest (DV 1) occurred. As far as the second dependent variable is concerned, the follow-up period for these offenders stops, but the offenders are not considered to be recidivists.

Offenders that die, are deported, or complete their sentence (e.g., receive a pardon) are all considered to be censored cases for which the event of interest did not occur. The follow-up period for these offenders stops at the date of the event (e.g., death, deportation).

Two primary survival analysis techniques are used in this study, life tables and Cox's (1972) proportional hazards model. Life tables are used to examine the probability and timing of recidivism over a five year period. Mean time until recidivism is calculated using a modified life table approach, Kaplan-Meier (1958) survival analysis. Cox (1972) regression analysis is used to examine the effect of independent variables on recidivism and test the hypotheses.
4.51 Life tables

The life table is a statistical technique that estimates the probability of events occurring within specified time periods (Luke, 1993:217). This technique is ideal for predicting recidivism rates over time. The actual follow-up period and time intervals chosen for the life table are dependent upon the data, assumptions about the validity of long follow-up periods, and practical requirements. For this study, the life table is used to estimate the recidivism rate over a five year period, at six month intervals.

Life tables also provide an estimate of the median time until recidivism. However, life tables do not provide an estimate of the mean time until recidivism; for this estimation, a modified life table approach known as Kaplan-Meier (1958) survival analysis will be used.

4.52 Cox's proportional hazards model

Cox's (1972) proportional hazards model will be used for multivariate analysis in this study. This regression model is the best method to use with the continuous-time data available for this study (Allison, 1984:35). Time is always measured in discrete units; for example, in this study the discrete-time units are days which are measured from the date offenders start parole through to the date they recidivate, or the study period ends. However, Allison (1984:14) notes when the discrete units are small enough (e.g., seconds, minutes, hours, days), it is acceptable to treat time as being measured on a continuous scale. When time is measured in larger units (e.g., months, years, decades), discrete-time methods should be used for the analysis.
The Cox (1972) regression model is non-parametric because it assumes that recidivism has an equal probability of occurring throughout the follow-up period (Allison, 1984:14). Schmidt and Witte (1988:155) feel that parametric models which assume that time until recidivism has a specific distribution (e.g., exponential, lognormal, Weibull or LaGuerre) are the best models for predicting the association between recidivism and explanatory variables. However, Schmidt and Witte (1988:155) found that these parametric models did not predict the variables associated with recidivism any better than did Cox's (1972) proportional hazards method.

The general form of the Cox (1972) regression model is:

\[ h(t) = [h_0(t)]e^{(B_1X_1 + B_2X_2 + \ldots + B_pX_p)} \]

On the left-side of the equation, the hazard function, \( h(t) \) represents the probability of recidivism at time \( t \). The hazard function is made up of two components from the right-side of the equation. The first component, \( h_0(t) \) is the baseline hazard function which depends upon time. The second component, \( e^{(BX)} \) depends upon the values of the covariates and regression coefficients (Norusis, 1993:278-279; Land, McCall and Parker, 1994:415).

4.6 SUMMARY

This chapter has outlined how the data set was obtained and described the dependent and independent variables that will be used in this study. The information available from the OMS allows for the precise calculation of length of incarceration.
Together with the offender's supervision and criminal history records, these data will be used to measure the association between length of incarceration and recidivism.

Length of incarceration is being used to determine whether the severity of punishment has an effect on recidivism. On the one hand, specific deterrence theory (Beccaria [1764] 1986; Bentham [1789] 1961) proposes that offenders who are appropriately punished for their crimes will not want to commit any further acts that may lead them to face a similar punishment (incarceration) again. In this case, longer periods of incarceration are hypothesized to reduce recidivism (H1 A). Alternatively, from Lemert's (1967) labeling perspective, it was hypothesized that longer periods of incarceration increase recidivism (H1 B). In this case, Lemert (1967:40) argues that punishing and segregating (incarcerating) offenders simply increases the likelihood that they will re-offend once released (secondary deviance).

Measures of marital attachment and job stability that Sampson and Laub (1993:143) found to be associated with a reduction in criminal behavior are not available from the OMS; however, current marital and employment status are available. Recall that Horney, Osgood and Marshall (1995:667) found that marital status significantly reduced the likelihood of criminal behavior. In contrast, Horney, Osgood and Marshall (1995:667) found that employed offenders were significantly more likely to commit a crime during the months they were working.

Horney, Osgood and Marshall's (1995) findings show that marital and employment status are associated with criminal behavior, and the association between these two variables and recidivism will be tested with Hypotheses 2 and 3, respectively. Marital and employment status has also been used by other researchers to measure the social bond; for example, Sherman and Smith (1992), Pate and Hamilton (1992),
and Berk et al. (1992) used these variables to examine how the severity of punishment affected the recidivism of spousal assault offenders. Level of education, an indication of commitment to conventional educational and occupational goals, is also available from the OMS, and its effect on the recidivism of homicide offenders will be tested through Hypothesis 4.

Other variables that have been associated with recidivism will also be included as control variables, these include: gender, ethnicity, age at release and criminal history. Survival analysis techniques, such as life tables and Cox's (1972) proportional hazards model are ideally suited for the study of recidivism. Life tables will be used to examine the probability of recidivism at specified time periods in Chapter 5, while Cox's (1972) proportional hazards model will be used to test the hypotheses in Chapter 6.
CHAPTER 5
DESCRIPTIVE ANALYSIS

In the first section of this chapter, descriptive statistics and life tables are used to examine the time until recidivism. The crimes that homicide offenders committed while on parole are reviewed in the second section of this chapter. The ability of a CSC risk prediction instrument to predict the recidivism of homicide offenders is examined in section three, and descriptive statistics for the independent variables are reviewed in section four.

The next section of this chapter analyzes the intercorrelations among the independent variables. This is an important step prior to multivariate analysis because highly correlated\textsuperscript{21} independent variables should not be entered into the same Cox (1972) regression model (Norusis, 1993:280).

In the last section of this chapter, contingency tables which allow an examination of how the independent variables affect recidivism are presented.

5.1 TIMING AND PROBABILITY OF RECIDIVISM

Forty one percent (n= 517) of the 1,250 offenders returned to prison because their parole was either revoked or terminated during the follow-up period (DV 1). Substantially less, only 14% (n = 174) of offenders had their parole revoked or terminated in conjunction with a conviction for a property or violent offence (DV 2).

\textsuperscript{21} Fitz-Gibbon and Morris (1978:92) note that values from ±.60 to 1.00 represent strong correlations while values from ± .40 to .60 represent moderate correlations.
Descriptive statistics for the two dependent variables are presented in Table 3. The mean time until parole revocation or termination (DV 1) was 2.3 years (n = 517). The mean time until offenders had their parole revoked or terminated in conjunction with a conviction for a property or violent offence (DV 2) was one year longer at 3.3 years (n = 174).

### Table 3 - Descriptive statistics for dependent variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (years)</th>
<th>SD*</th>
<th>Min. time</th>
<th>Max. time</th>
<th>Range</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return to prison for any reason (DV 1)</td>
<td>2.27</td>
<td>2.69</td>
<td>0.00</td>
<td>17.64</td>
<td>17.63</td>
<td>517</td>
</tr>
<tr>
<td>Return to prison because of a conviction for a property or violent offence (DV 2)</td>
<td>3.28</td>
<td>2.95</td>
<td>0.15</td>
<td>17.64</td>
<td>17.63</td>
<td>174</td>
</tr>
</tbody>
</table>

* Standard deviation (a measure of variation based upon the average distance between values from the sample and the mean).

When time until recidivism is calculated in this manner, information about offenders who did not recidivate is excluded. Likewise, stating that 41% of homicide offenders will return to prison because their parole will be terminated or revoked is not very helpful since the follow-up period varies from one to twenty years.

It is much better to provide: (1) an estimation of the average time until recidivism, and (2) the recidivism rate for specific time periods based upon information from the entire sample, not just those who recidivated. Life tables and Kaplan-Meier (1958) survival analysis provide a method of analyzing these data in just such a manner.

Table 4 displays the mean time until recidivism based upon Kaplan-Meier (1958) survival analysis. The estimated time until offenders return to prison for any reason (DV 1) is 11.5 years. Mean time until offenders return to prison because they have been
convicted of a property or violent offence (DV 2) is about five years longer at 16.8 years.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (years)</th>
<th>SE*</th>
<th>95% CI**</th>
<th>Median</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return to prison for any reason (DV 1)</td>
<td>11.49</td>
<td>0.28</td>
<td>10.95 - 12.04</td>
<td>13.85</td>
<td>1,250</td>
</tr>
<tr>
<td>Return to prison because of a conviction for a property or violent offence (DV 2)</td>
<td>16.80</td>
<td>0.22</td>
<td>16.36 - 17.23</td>
<td>***</td>
<td>1,250</td>
</tr>
</tbody>
</table>

* Standard error of the mean (the estimated standard deviation of the mean).
** 95% confidence interval (at the 95% confidence level, the mean value for the sample lies between these two values).
*** The median survival time for these data is greater than the maximum follow-up period.

Table 5, a life table shows the predicted recidivism rates of homicide offenders for the first five years. The table is split into six month interval periods. The column labeled Cumulative Proportion Surviving at End (column 4) shows the estimated probability that offenders will still be on parole by the end of the interval.

For example, for the first dependent variable, it is estimated that 60.4% of homicide offenders will still be on parole at the five year mark (end of 4.5 year interval); or, about 40% (100% - 60.4%) of homicide offenders are predicted to return to prison for any reason (DV 1) within the first five years of their release.

For the second dependent variable, it is estimated that 86.8% of homicide offenders will still be on parole at the five year mark; or, about 13% (100% - 86.8%) of homicide offenders are predicted to return to prison because they have been convicted of a property or violent offence within the first five years of their release.
Table 5 - Predicted recidivism rates for the first five years of release

<table>
<thead>
<tr>
<th>Interval start time (years)</th>
<th>Number of offenders entering the interval</th>
<th>Number of offenders recidivating during the interval</th>
<th>Cumulative proportion surviving at end - probability that offenders will still be on parole at the end of the interval</th>
<th>SE of cumulative proportion</th>
<th>Hazard rate - predicted recidivism rate during the interval</th>
<th>SE of hazard rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return to prison for any reason (DV 1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1,250</td>
<td>108</td>
<td>91.3%</td>
<td>.01</td>
<td>18.2%</td>
<td>.02</td>
</tr>
<tr>
<td>.5</td>
<td>1,121</td>
<td>116</td>
<td>81.8%</td>
<td>.01</td>
<td>22.0%</td>
<td>.02</td>
</tr>
<tr>
<td>1.0</td>
<td>990</td>
<td>73</td>
<td>75.7%</td>
<td>.01</td>
<td>15.6%</td>
<td>.02</td>
</tr>
<tr>
<td>1.5</td>
<td>886</td>
<td>46</td>
<td>71.6%</td>
<td>.01</td>
<td>10.9%</td>
<td>.02</td>
</tr>
<tr>
<td>2.0</td>
<td>804</td>
<td>26</td>
<td>69.3%</td>
<td>.01</td>
<td>6.7%</td>
<td>.01</td>
</tr>
<tr>
<td>2.5</td>
<td>756</td>
<td>25</td>
<td>67.0%</td>
<td>.01</td>
<td>6.9%</td>
<td>.01</td>
</tr>
<tr>
<td>3.0</td>
<td>698</td>
<td>15</td>
<td>65.5%</td>
<td>.01</td>
<td>4.5%</td>
<td>.01</td>
</tr>
<tr>
<td>3.5</td>
<td>638</td>
<td>13</td>
<td>64.1%</td>
<td>.01</td>
<td>4.2%</td>
<td>.01</td>
</tr>
<tr>
<td>4.0</td>
<td>596</td>
<td>22</td>
<td>61.7%</td>
<td>.01</td>
<td>7.7%</td>
<td>.02</td>
</tr>
<tr>
<td>4.5</td>
<td>552</td>
<td>11</td>
<td>60.4%</td>
<td>.01</td>
<td>4.1%</td>
<td>.01</td>
</tr>
<tr>
<td>Return to prison because of a conviction for a property or violent offence (DV 2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1,250</td>
<td>12</td>
<td>99.0%</td>
<td>.00</td>
<td>1.9%</td>
<td>.01</td>
</tr>
<tr>
<td>.5</td>
<td>1,217</td>
<td>25</td>
<td>97.0%</td>
<td>.00</td>
<td>4.2%</td>
<td>.01</td>
</tr>
<tr>
<td>1.0</td>
<td>1,165</td>
<td>16</td>
<td>95.6%</td>
<td>.01</td>
<td>2.8%</td>
<td>.01</td>
</tr>
<tr>
<td>1.5</td>
<td>1,096</td>
<td>22</td>
<td>93.7%</td>
<td>.01</td>
<td>4.2%</td>
<td>.01</td>
</tr>
<tr>
<td>2.0</td>
<td>1,023</td>
<td>21</td>
<td>91.7%</td>
<td>.01</td>
<td>4.2%</td>
<td>.01</td>
</tr>
<tr>
<td>2.5</td>
<td>969</td>
<td>11</td>
<td>90.6%</td>
<td>.01</td>
<td>2.4%</td>
<td>.01</td>
</tr>
<tr>
<td>3.0</td>
<td>902</td>
<td>10</td>
<td>89.6%</td>
<td>.01</td>
<td>2.3%</td>
<td>.01</td>
</tr>
<tr>
<td>3.5</td>
<td>830</td>
<td>9</td>
<td>88.6%</td>
<td>.01</td>
<td>2.3%</td>
<td>.01</td>
</tr>
<tr>
<td>4.0</td>
<td>767</td>
<td>8</td>
<td>87.6%</td>
<td>.01</td>
<td>2.2%</td>
<td>.01</td>
</tr>
<tr>
<td>4.5</td>
<td>718</td>
<td>7</td>
<td>86.8%</td>
<td>.01</td>
<td>2.0%</td>
<td>.01</td>
</tr>
</tbody>
</table>
The column labelled Hazard Rate (column 6) provides the estimated recidivism rate for each interval period. For example, for the first dependent variable, the highest risk period for recidivism occurs between six months and one year after release when 22% of offenders are predicted to recidivate. For the second dependent variable, the recidivism rate is stable at about 3-4% from 6 months to 2.5 years after release.

Based upon a 10 year life table, the predicted proportion of homicide offenders remaining on parole is displayed for dependent variables 1 and 2 in Figures 2 and 3, respectively.

In summary, survival analysis shows that a substantial proportion (about 40%) of homicide offenders are predicted to return to prison for any reason (DV 1) within five years of release. In comparison, only about 13% of homicide offenders are predicted to return to prison because they have been convicted of a property or violent offence (DV 2) within five years of release.

5.2 CRIMES COMMITTED ON PAROLE

Of the 1,250 homicide offenders in the sample, 174 (13.9%) were convicted of committing a property or violent crime (DV 2) while on parole. Table 6 provides a breakdown of these crimes. The total number of crimes is 174 because only the most serious one committed by each offender is listed. About 62% (n = 108) of these offences can be classified as violent crimes, and 38% (n = 66) as property crimes.
Figure 2 - Predicted time until offenders return to prison for any reason (DV 1)

Figure 3 - Predicted time until offenders return to prison because they have been convicted of a property or violent offence (DV 2)
Table 6 - Violent and property crimes committed by homicide offenders while on parole from 1976 - 1995

<table>
<thead>
<tr>
<th>MAJOR OFFENCE (N)</th>
<th>SPECIFIC OFFENCES (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VIOLENT CRIMES</strong></td>
<td></td>
</tr>
<tr>
<td>HOMICIDE (11)</td>
<td>first degree murder (5); second degree murder (3); manslaughter (3)</td>
</tr>
<tr>
<td>ATTEMPTED MURDER (3)</td>
<td>attempted murder (3)</td>
</tr>
<tr>
<td>CONSPIRACY TO COMMIT MURDER (1)</td>
<td>conspiracy to commit murder (1)</td>
</tr>
<tr>
<td>SEXUAL ASSAULT (15)</td>
<td>aggravated sexual assault (1); sexual assault with a weapon (1); sexual assault - party to offence (1)</td>
</tr>
<tr>
<td>OTHER SEXUAL OFFENCES (8)</td>
<td>obtain sexual services of person under 18 (1); invite sexual touching (1); indecent assault female (1); sexual interference (2); sexual exploitation - touch (1); buggery or bestiality (1); indecent exposure (1)</td>
</tr>
<tr>
<td>ASSAULT (32)</td>
<td>assault causing bodily harm (3); aggravated assault (3); assault with a weapon (6); assault (6); assault peace officer (2); assault - threats of violence (1); assault - use of force (11)</td>
</tr>
<tr>
<td>UTTER THREAT TO CAUSE DEATH/HARM (5)</td>
<td>utter threat to cause death/harm (4); intimidate with threats of violence (1)</td>
</tr>
<tr>
<td>FIREARMS OFFENCES (4)</td>
<td>use of firearm while committing offence (2); use of firearm during flight (1); point firearm (1)</td>
</tr>
<tr>
<td>FORCIBLE CONFINEMENT (1)</td>
<td>forcible confinement (1)</td>
</tr>
<tr>
<td>ROBBERY (24)</td>
<td>armed robbery (1); robbery (23)</td>
</tr>
<tr>
<td>EXTORTION (4)</td>
<td>extortion (3); intimidate with threats of violence (1)</td>
</tr>
<tr>
<td><strong>PROPERTY CRIMES</strong></td>
<td></td>
</tr>
<tr>
<td>BREAK AND ENTER (11)</td>
<td>break and enter and commit indictable offence (10); break and enter with intent to commit indictable offence (1)</td>
</tr>
<tr>
<td>THEFT (25)</td>
<td>theft over (10); theft under (15)</td>
</tr>
<tr>
<td>POSSESS PROPERTY OBTAINED BY CRIME (6)</td>
<td>possess property obtained by crime (6)</td>
</tr>
<tr>
<td>POSSESS BREAK-IN INSTRUMENTS (1)</td>
<td>possess break-in instruments (1)</td>
</tr>
<tr>
<td>FRAUD (15)</td>
<td>fraud over (1); fraud under (2); forge/falsify credit card (1); possess or use stolen credit card (2); false pretences (1); utter forged document (2); forgery (1); personation with intent to gain advantage/property (5)</td>
</tr>
<tr>
<td>MISCHIEF (8)</td>
<td>mischief private property (2); mischief in relation to property - over (2); mischief in relation to other property (4)</td>
</tr>
</tbody>
</table>

| Number of offenders convicted of violent crimes | 108 |
| Number of offenders convicted of property crimes | 66 |
| TOTAL | 174 |
The ten most frequent property and violent offence types that homicide offenders in this study were convicted of, were:

- assault (n = 32),
- theft (n = 25),
- robbery (n = 24),
- sexual assault (n = 15),
- fraud (n = 15),
- homicide (n = 11),
- break and enter (n = 11),
- other sexual offences (n = 8),
- mischief (n = 8), and
- possession of property obtained by crime (n = 6).

Eleven (0.9%) of the 1,250 offenders in this study were convicted of committing a new homicide while on parole. There are no distinguishing demographic characteristics that set these offenders apart from others in the sample. All 11 offenders were men, 10 were Caucasian, and one was Black. The 11 offenders had spent 8 - 18 years (mean = 11.7; S.D. = 3.1) incarcerated, and ranged in age from 28 - 59 years (mean = 39.4; S.D. = 10.6) at the time they started parole. Conviction dates for the 11 new homicides range from 1983 - 1990.

A reasonable question these new homicides raise is whether capital punishment would have prevented them. That is, prior to the abolishment of capital punishment, would these 11 offenders have faced the death penalty, and therefore not have had the opportunity to kill again? The answer is no, because none of the 11 homicides were committed by offenders originally convicted of capital murder.\(^{22}\) Instead, the 11

\(^{22}\) Even a capital murder conviction did not mean the offender would be executed. Although capital punishment was not officially abolished until July 26, 1976, the last execution in Canada was in 1962. Between 1963 and July 26, 1976, Canadian governments commuted all death sentences to life imprisonment (Statistics Canada, 1976:188; Jayewardene, 1989:1).
offenders were originally serving a sentence for non-capital (9 new homicides), and second degree (2 new homicides) murder.

In general, none of the 18 first degree murder offenders in this study have been convicted of committing any property or violent offences while on parole (DV 2). In comparison, the recidivism rate (DV 2) for the sample is 14%. In addition, only 16.7% (3 of 18) of these first-degree murder offenders have returned to prison for any reason (DV 1), which is considerably lower than the over-all 41% recidivism rate for the sample.

In contrast, the recidivism rate for the 59 offenders convicted of capital murder in this study is about the same as the over-all sample. Thirty-nine percent (23 of 59) of the capital murder offenders have returned to prison for any reason (DV 1), while 13.6% (8 of 59) have returned to prison because they have been convicted of a property or violent offence (DV 2).

This study cannot explain why the first degree murder offenders have performed better than average on parole. A partial explanation may be because the follow-up period for the first degree murder offenders is shorter than it is for other offenders in the study, but this is not the only explanation. The mean time that the 18 first degree murder offenders have been on parole is three years (S.D. = 2.4 years); in comparison, the 59 capital murder offenders have been on parole for an average of 10 years (S.D. = 6.7 years). However, according to the life table (Table 5) presented earlier in this chapter, the highest predicted risk of recidivism is during the first three years of release. This means that the first degree murder offenders have been on parole during the highest risk period.

It is also possible that the double screening process the first degree murder offenders faced has something to do with their success on parole. Before applying to
the National Parole Board (NPB) for release, these offenders first had to apply for a reduction in their 25 year parole eligibility period through judicial review. Offenders who go through both these processes may be more committed to succeeding on parole.

Given the seriousness of their original offence, and the potential for negative media coverage if they committed further crimes, it is also possible that the CSC took extra precautions to ensure that these 18 offenders had viable plans concerning living arrangements and employment opportunities prior to their release.

5.3 RISK ASSESSMENT AND RECIDIVISM

Risk assessment instruments, such as the Statistical Information about Recidivism (SIR) scale are used by the CSC and National Parole Board (NPB) to estimate the probability that an offender will recidivate if he or she is released on parole (CSC, 1996:29). In this section, the validity of the SIR scale as a risk prediction instrument for homicide offenders will be assessed.

The SIR scale was developed by Nuffield (1982) and has been validated for CSC non-Aboriginal male offenders (Hann and Harman, 1989; Bonta, Harman, Hann and Cormier, 1996). About 50% of the 2,500 offenders in Nuffield's (1982:19) study were serving time for theft and robbery offences, 40% for crimes of violence, and 10% for offences such as escape and drug trafficking.

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23 Through judicial review (S. 745 Criminal Code, 1996), offenders convicted of high treason, or first or second degree murder, who have parole eligibility periods longer than 15 years, can apply for a reduction in this eligibility period after they have served 15 years of their sentence. Hearings take place before a Provincial Superior Court jury of 12 people which must agree by a two-thirds majority on all decisions. The jury can reduce the offender's parole eligibility period to a minimum of 15 years, or they can deny the application.
Information on 15 independent variables is collected from offenders and used in the calculation of a predicted recidivism rate. Recidivism is defined as an arrest for an indictable offence within three years of release (Nuffield, 1982). SIR scores range from -30 to +27, with lower values associated with higher predicted risks of recidivism. For interpretation, these scores are collapsed into the five categories presented in Table 7.

<table>
<thead>
<tr>
<th>SIR score</th>
<th>Predicted recidivism risk</th>
<th>Predicted recidivism rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>+6 to +27</td>
<td>Very good</td>
<td>20%</td>
</tr>
<tr>
<td>+1 to +5</td>
<td>Good</td>
<td>33.3%</td>
</tr>
<tr>
<td>0 to -4</td>
<td>Fair</td>
<td>50%</td>
</tr>
<tr>
<td>-5 to -8</td>
<td>Fair to poor</td>
<td>60%</td>
</tr>
<tr>
<td>-9 to -30</td>
<td>Poor</td>
<td>66.7%</td>
</tr>
</tbody>
</table>

The definition of recidivism in this study (DV 2) differs from Nuffields (1982) in the following ways:

- follow-up periods vary extensively,
- conviction data, rather than arrest data are used, and
- offenders convicted of both summary and indictable property and violent offences are counted as recidivists.

Still, there is a significant association between the SIR scale risk categories and recidivism as defined by the second dependent variable in this study ($\chi^2 = 53.11$, df = 4, 64

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24 The SIR scale utilizes information from the following 15 independent variables: current offence, age at admission, number of previous imprisonments, previous breach of parole or statutory release, number of previous escapes, security classification, age at first adult conviction, number of previous convictions for assault, marital status, time at risk since last offence, number of dependents, aggregate sentence, number of previous convictions for violent sexual offences, number of previous convictions for break and enter, and employment status at time of arrest (Nuffield, 1982:44).
Overall, there is a moderate association between the SIR scale results and recidivism (DV 2; \( r = .38, p \leq .001 \)).

SIR scores are available for 345 Caucasian males in this study, and these results are presented in Table 8. SIR scores for visible minority offenders were not included in this analysis because they are only available for 12 offenders. The SIR scale does an excellent job of predicting the recidivism of these 345 homicide offenders. Actual recidivism rates are lower than the predicted rates for four of the five risk categories; however, in the highest risk category, the predicted recidivism rate is exactly the same as the actual recidivism rate (66.7%).

<table>
<thead>
<tr>
<th>Predicted recidivism risk (predicted recidivism rate)</th>
<th>Very good (20%)</th>
<th>Good (33.3%)</th>
<th>Fair (50%)</th>
<th>Fair to poor (60%)</th>
<th>Poor (66.7%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual recidivism rate (DV 2)</td>
<td>11.3%</td>
<td>16.7%</td>
<td>35.8%</td>
<td>45.0%</td>
<td>66.7%</td>
</tr>
<tr>
<td>Number of offenders who recidivated</td>
<td>17</td>
<td>13</td>
<td>19</td>
<td>18</td>
<td>16</td>
</tr>
<tr>
<td>Total number of offenders in the SIR risk category</td>
<td>150</td>
<td>78</td>
<td>53</td>
<td>40</td>
<td>24</td>
</tr>
</tbody>
</table>

Two cautionary notes about the interpretation of these results should be made. First, the 345 Caucasian male offenders that SIR scores are available for are more likely to be recidivists. This is because the SIR scale is more likely to be administered to offenders who return to prison (recidivate), and the results for some offenders have not been entered into the OMS.

For the first dependent variable, the recidivism rate among the 345 offenders whom SIR scores are available for is 61.9%; this is in comparison to the substantially
lower 42.7% recidivism rate among the 1,033 Caucasian male offenders in the sample. Similarly, while the recidivism rate for the second dependent variable is only 14.9% for the 1,033 Caucasian male offenders in the sample, it is 23.3% for offenders with SIR scores.

The actual recidivism rates in each of the SIR scale risk categories may change if SIR scale results for all 1,033 Caucasian male offenders were available; however, they would probably not change very much because the 345 offenders for whom SIR scale results are available do represent one-third of all the Caucasian male offenders in the sample.

The second cautionary note is that the SIR scale is designed to predict the recidivism of offenders released on full parole or statutory release, not day parole. This is an important point because most (66.9%) of the offenders in this study were first released on day parole. According to routine activities theory (Cohen and Felson, 1979), offenders released on day parole should have a lower recidivism rate because they have to spend the night under some form of correctional supervision (e.g., community-based residential facility) in the presence of capable guardians against crime. Since offenders on day parole have less opportunity to commit crime, this may explain the lower than expected recidivism rates in four of the five SIR scale risk categories.

In general, the SIR scale results also show that homicide offenders present a low risk of recidivating. Sixty six percent (228 of 345) of offenders in the sample with SIR scores available represent a good or very good risk on parole. In Table 9, SIR scores

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25 In general, offenders serving determinate sentences are entitled to statutory release after they have served two-thirds of their sentence (S. 127(3), CCRA, 1992); however, these offenders will be supervised by parole officers until their warrant of committal expires.
for the sample are compared to the available SIR scores for current CSC offenders convicted of homicide, sexual assault, robbery, and drug trafficking.

After homicide, the top five offence types that CSC offenders are serving time for are: robbery, assault causing injury, drug trafficking, firearms offences, and sexual assault. However, it makes sense to exclude offenders convicted of assault causing injury and firearms offences from this analysis because a large proportion of these offenders are also serving time for robbery. For example, 88.1% (n = 1018) of Caucasian male offenders with SIR scores available who are serving time for firearms offences, are also serving time for robbery. Likewise, 42.7% (n = 752) of offenders serving a sentence for assault causing bodily harm are also serving time for robbery.

As noted, the SIR scale has only been validated for non-Aboriginal male offenders. For comparison, only the SIR scores for current CSC Caucasian male offenders are presented; in total, these offenders represent 75.4% (n = 16,601) of the CSC's offender population (N = 22,028).

Along with homicide offenders, those convicted of drug trafficking and sexual assault also present a low risk of recidivating. About 66% of these offenders fit into the good or very good recidivism risk category. In comparison, offenders convicted of robbery present a high risk of recidivating. Only 20% of robbery offenders fit into the good or very good recidivism risk category.
Table 9 - Comparison of predicted (SIR scale) recidivism rates among Caucasian male offenders in the sample and current CSC offenders serving sentences for homicide, robbery, drug trafficking, and sexual assault

<table>
<thead>
<tr>
<th>Predicted recidivism risk (predicted recidivism rate)</th>
<th>Sample</th>
<th>Homicide***</th>
<th>Manslaughter (determinate sentence)</th>
<th>Robbery</th>
<th>Drug trafficking</th>
<th>Sexual assault</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very good (20%)</td>
<td>43.5% (150)</td>
<td>45.6% (683)</td>
<td>43.1% (193)</td>
<td>8.6% (287)</td>
<td>41.6% (562)</td>
<td>52.0% (447)</td>
</tr>
<tr>
<td>Good (33.3%)</td>
<td>22.6% (78)</td>
<td>20.4% (305)</td>
<td>17.5% (80)</td>
<td>11.7% (388)</td>
<td>17.3% (234)</td>
<td>11.3% (97)</td>
</tr>
<tr>
<td>Fair (50%)</td>
<td>15.4% (53)</td>
<td>14.8% (222)</td>
<td>18.3% (82)</td>
<td>20.3% (676)</td>
<td>15.7% (212)</td>
<td>12.2% (105)</td>
</tr>
<tr>
<td>Fair to poor (60%)</td>
<td>11.6% (40)</td>
<td>10.3% (154)</td>
<td>10.3% (46)</td>
<td>22.4% (744)</td>
<td>10.6% (143)</td>
<td>9.9% (85)</td>
</tr>
<tr>
<td>Poor (66.7%)</td>
<td>7.0% (24)</td>
<td>8.9% (134)</td>
<td>10.5% (47)</td>
<td>37.0% (1233)</td>
<td>14.8% (200)</td>
<td>14.7% (126)</td>
</tr>
</tbody>
</table>

| Number of Caucasian male offenders with SIR scores available | 345 | 1498 | 448 | 3328 | 1351 | 860 |
| Total number of Caucasian male offenders                  | 1033 | 2517 | 697 | 5234 | 2336 | 1370 |
| Proportion of Caucasian male offenders with SIR scores available | 33.4% | 59.5% | 64.3% | 63.6% | 57.8% | 62.8% |

* SIR scores for the sample were obtained from the Management Information Component of the OMS on December 31, 1995. SIR scores for current CSC offenders were obtained from the OMS on September 21, 1995.

** Note: the offence categories for current CSC offenders are not mutually exclusive since offenders can be serving time for more than one offence.

*** Offenders convicted of capital or non-capital murder and first or second degree murder in Canada, and all offenders who received a life sentence for manslaughter.
Overall, the life table results from this study, and the estimated recidivism rates from the SIR scale, show that homicide offenders present a low-risk of recidivism; particularly in comparison to robbery offenders. The SIR scale is a valid and reliable risk assessment instrument for homicide offenders. This leads to the conclusion that the characteristics contributing to the recidivism of homicide offenders are not different from those associated with other types of offenders.

From the results presented in Table 8, it would make sense to collapse the SIR scale results into a three category scale: good risk (< 20% recidivism rate), fair risk (20 - 50% recidivism rate), and poor risk (> 50% recidivism rate). However, this should wait until: (1) more SIR scores for Caucasian male homicide offenders are made available for analyses, and (2) the association between recidivism and different release types (i.e., day and full parole) can be thoroughly examined.

5.4 INDEPENDENT VARIABLES

Descriptive statistics for the independent variables are presented in Table 10. Once again, the table format used by MacKenzie (1991) and Hser et al. (1995) was adopted. The majority (82.6%; n = 1,033) of the sample is composed of Caucasian male offenders; indeed, male offenders make up 96% of the sample.

Most (90.7%) offenders have been convicted of non-capital or second degree murder. The remaining offenders were convicted of capital or first degree murder (6.2%), or manslaughter (3.1%).
Table 10 - Descriptive statistics for the independent variables

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>VALUE</th>
<th>N(n)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Offender characteristics or demographic variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male (%)</td>
<td>96.0%</td>
<td>1,250</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aboriginal (%)</td>
<td>8.7%</td>
<td>(105)</td>
</tr>
<tr>
<td>Caucasian (%)</td>
<td>88.6%</td>
<td>(1,073)</td>
</tr>
<tr>
<td>Visible minority (%)</td>
<td>2.7%</td>
<td>(33)</td>
</tr>
<tr>
<td>Age at release,* Mean (SD; Range)</td>
<td>40.4 years (10.4; 21.7-84.3)</td>
<td>1,250</td>
</tr>
<tr>
<td><strong>Criminal history and social control variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Original offence**</td>
<td></td>
<td>1,250</td>
</tr>
<tr>
<td>1st degree or capital murder (%)</td>
<td>6.2%</td>
<td>(77)</td>
</tr>
<tr>
<td>2nd degree or non-capital murder (%)</td>
<td>90.7%</td>
<td>(1,134)</td>
</tr>
<tr>
<td>Manslaughter (%)</td>
<td>3.1%</td>
<td>(39)</td>
</tr>
<tr>
<td>Length of incarceration,*** Mean (SD; Range)</td>
<td>10.9 years (4.1; 1.6-42.1)</td>
<td>1,250</td>
</tr>
<tr>
<td>Supervision level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ (greater than or equal to) once per week (%)</td>
<td>17.0%</td>
<td>(193)</td>
</tr>
<tr>
<td>Multiple murderer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes (%)</td>
<td>3.4%</td>
<td>(43)</td>
</tr>
<tr>
<td>Previous federal incarceration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes (%)</td>
<td>16.2%</td>
<td>(202)</td>
</tr>
<tr>
<td><strong>Social bond or life event variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current marital status*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married (%)</td>
<td>17.5%</td>
<td>(219)</td>
</tr>
<tr>
<td>Current or latest employment status**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time (%)</td>
<td>49.9%</td>
<td>(463)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years of schooling, *** Mean (SD; Range)</td>
<td>8.8 years (2.5; 1-13)</td>
<td>886</td>
</tr>
<tr>
<td>Completed grade 12 or 13 (%)</td>
<td>12.6%</td>
<td>(112)</td>
</tr>
<tr>
<td>Post-secondary education (%)</td>
<td>4.1%</td>
<td>(36)</td>
</tr>
</tbody>
</table>

* Offenders who were released when they were 21-22 years old started their life sentence when they were 15-17 years old.

** Specifically, the sample includes 59 offenders convicted of capital murder, 18 convicted of first degree murder, 530 convicted of non-capital murder, 604 convicted of second degree murder, and 39 convicted of manslaughter.

*** The minimum length of incarceration (1.6 years) is so low because the parole eligibility calculation for homicide offenders who receive a life sentence is also dependent upon time spent in custody prior to sentencing (S. 745, *Criminal Code*, 1996). Some offenders were not sentenced for four to six years after they were arrested for the homicide.

* Specifically, the current status of offenders is: married 17.5% (n = 219), common law 14% (n = 175), divorced 7.5% (n = 93), separated 4.7% (n = 59), single 48.9% (n = 610), and widow(er) 7.3% (n = 91).

** Specifically, the current status of offenders is: full-time 49.9% (n = 463), part-time 4.5% (n = 42), occasional 2.6% (n = 24), temporary 1.6% (n = 15), seasonal 1.7% (n = 16), unemployed 28% (n = 260), student 1.9% (n = 18), retired 4.5% (n = 42), and unable to work 5.2% (n = 48).

*** Grades 1 - 12 are coded as 1 - 12. Grade 13 is coded as grade 12 and post-secondary education is coded as 13.
A review of the literature shows that offenders average from 27 to 33 years of age in recidivism studies focusing on adult offenders (MacKenzie, 1991; Smith and Akers, 1993; Hepburn and Albonetti, 1994; Hanson, Scott and Steffy, 1995). In comparison, the offenders in this study are somewhat older, with a mean age of 40 years. The large range of ages (22 to 84 years) does not set this study apart from others; for example, in Smith and Aker's (1993:276) study, paroled offenders ranged in age from 17 to 70 at the time of their release.

The average level of education for offenders in this study (8.8 years) is also consistent with findings in other Canadian recidivism studies. For example, Hanson, Scott and Steffy (1995), who examined the recidivism of child molesters released from a provincial prison, report that the average level of education for offenders was 8.4 years.

A characteristic that sets the sample of offenders in this study apart from other studies is that only 17.5% of the offenders are married. In comparison, other recidivism studies reported that 35 to 45% of offenders in their samples were married (Sherman and Berk, 1984; Dunford, Huizinga and Elliott, 1990; Hanson, Scott and Steffy, 1995).

5.5 INTERCORRELATIONS AMONG VARIABLES

In this section, associations between the independent variables and time until recidivism are examined. If two independent variables are highly correlated, only one can be entered into the regression model. This will ensure that coefficient values and significance levels reflect the relationship between independent and dependent
variables, and not between independent variables themselves. Intercorrelations among the variables are presented in Table 11.

Time until recidivism for both dependent variables (DV 1 and DV 2) is highly correlated (.89); however, since separate Cox (1972) regression models are calculated for these variables this is not a problem. There is a weak (.26) correlation between age at release and length of incarceration. The Cox (1972) regression model should not be adversely affected if these two variables are entered simultaneously.

Intercorrelations among the ethnicity and original offence type variables are more likely to affect the Cox (1972) regression results. There is a high correlation (-.86) between the variables for Caucasian and Aboriginal offenders; therefore, these two variables will not be entered into the same Cox (1972) regression model.

Likewise, the moderate correlation (-.47) between the variables for Caucasian and visible minority offenders may also affect the Cox (1972) regression model results. To handle this problem, only the ethnicity variables for Aboriginal and visible minority offenders will be entered into the Cox (1972) regression model.

Care must also be taken with the original offence variables. The variable indicating that offenders were convicted of first degree or capital murder is moderately correlated with length of incarceration (.39) and highly correlated with the second degree or non-capital murder variable (-.80). Similarly, the second degree or non-capital murder variable is weakly correlated with length of incarceration (-.31) and moderately correlated with the variable indicating that offenders were convicted of manslaughter (-.56). To ensure that the true effect of length of incarceration on recidivism is being measured, only the variable indicating that offenders were convicted of manslaughter will be entered into the Cox (1972) regression model.
Table 11 - Pearson correlations among dependent and independent variables

<table>
<thead>
<tr>
<th>Survival time</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
</tr>
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<tbody>
<tr>
<td>1. Dependent variable 1</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2. Dependent variable 2</td>
<td>.89</td>
<td>1.00</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

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<tbody>
<tr>
<td>3. Male</td>
<td>.01</td>
<td>-.02</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>4. Aboriginal</td>
<td>-.01</td>
<td>-.01</td>
<td>.03</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>5. Caucasian</td>
<td>-.02</td>
<td>-.03</td>
<td>-.86</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Visible minority</td>
<td>-.03</td>
<td>-.03</td>
<td>.02</td>
<td>-.05</td>
<td>-.47</td>
<td>1.00</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>7. Age at release</td>
<td>.01</td>
<td>-.03</td>
<td>.01</td>
<td>-.07</td>
<td>.07</td>
<td>-.03</td>
<td>1.00</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. 1st degree or capital murder</td>
<td>.10</td>
<td>.10</td>
<td>-.00</td>
<td>-.03</td>
<td>-.02</td>
<td>.00</td>
<td>.19</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. 2nd degree or non-capital murder</td>
<td>-.10</td>
<td>-.09</td>
<td>.01</td>
<td>.02</td>
<td>-.03</td>
<td>.02</td>
<td>-.18</td>
<td>-.80</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Manslaughter</td>
<td>.02</td>
<td>.01</td>
<td>-.01</td>
<td>-.01</td>
<td>.02</td>
<td>-.03</td>
<td>.03</td>
<td>-.05</td>
<td>-.56</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Length of incarceration</td>
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<td>-.00</td>
<td>-.10</td>
<td>.07</td>
<td>-.07</td>
<td>.01</td>
<td>.26</td>
<td>.39</td>
<td>-.31</td>
<td>-.02</td>
<td>1.00</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>12. High supervision level</td>
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<td>-.33</td>
<td>.01</td>
<td>.04</td>
<td>-.02</td>
<td>-.04</td>
<td>.01</td>
<td>-.01</td>
<td>-.00</td>
<td>.10</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Multiple murderer</td>
<td>-.07</td>
<td>-.08</td>
<td>-.04</td>
<td>-.01</td>
<td>.01</td>
<td>-.00</td>
<td>.03</td>
<td>.02</td>
<td>-.06</td>
<td>.07</td>
<td>.05</td>
<td>.02</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Previous federal sentence</td>
<td>-.19</td>
<td>-.21</td>
<td>-.09</td>
<td>.00</td>
<td>.01</td>
<td>-.03</td>
<td>.01</td>
<td>-.03</td>
<td>-.00</td>
<td>.05</td>
<td>.02</td>
<td>.07</td>
<td>.13</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Married</td>
<td>-.09</td>
<td>-.06</td>
<td>-.02</td>
<td>-.03</td>
<td>.04</td>
<td>-.02</td>
<td>.12</td>
<td>.02</td>
<td>-.04</td>
<td>.04</td>
<td>-.06</td>
<td>-.01</td>
<td>-.01</td>
<td>-.03</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>16. Full-time</td>
<td>-.01</td>
<td>-.02</td>
<td>-.05</td>
<td>-.04</td>
<td>.04</td>
<td>-.01</td>
<td>-.22</td>
<td>-.03</td>
<td>.04</td>
<td>-.02</td>
<td>-.10</td>
<td>-.06</td>
<td>.00</td>
<td>-.01</td>
<td>.04</td>
<td>1.00</td>
</tr>
<tr>
<td>17. Grade 12</td>
<td>-.00</td>
<td>.00</td>
<td>.05</td>
<td>.07</td>
<td>.06</td>
<td>.03</td>
<td>-.00</td>
<td>-.00</td>
<td>.02</td>
<td>-.02</td>
<td>-.07</td>
<td>-.05</td>
<td>-.03</td>
<td>-.07</td>
<td>.01</td>
<td>.06</td>
</tr>
<tr>
<td>18. Post-secondary</td>
<td>.04</td>
<td>.04</td>
<td>-.03</td>
<td>.00</td>
<td>.01</td>
<td>-.03</td>
<td>-.01</td>
<td>-.01</td>
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<td>-.01</td>
<td>-.00</td>
<td>.01</td>
<td>-.06</td>
<td>.04</td>
<td>-.05</td>
<td>-.08</td>
</tr>
</tbody>
</table>

NOTE: correlations ≥ .40 are in bold.
5.6 ASSOCIATION BETWEEN RECIDIVISM AND THE INDEPENDENT VARIABLES

This section represents the initial search for associations between the dependent and independent variables. Contingency tables and Pearson chi-square statistics are presented.

5.61 Association between recidivism and demographic variables

The first contingency table (Table 12) examines the relationship between gender, ethnicity, age at release and recidivism. It is apparent that male offenders are much more likely to recidivate than female offenders (DV 1: $\chi^2 = 11.72; p \leq .001$; DV 2: $\chi^2 = 6.18; p \leq .001$). Twice as many males as females return to prison for any reason (DV 1), and seven times as many return to prison because they have been convicted of a property or violent offence. In fact, of the 50 females in the sample, only one was convicted of a property or violent offence during the follow-up period.

Aboriginal offenders were more likely to return to prison for any reason (DV 1: $\chi^2 = 4.97; p \leq .05$), but ethnicity was not related to whether offenders return to prison because they were convicted of a property or violent offence (DV 2).

Age at release for both dependent variables is significant (DV 1: $\chi^2 = 17.00; p \leq .001$; DV 2: $\chi^2 = 19.63; p \leq .001$), but difficult to interpret. Lower recidivism rates are present at both ends of the ordinal scale with cases aged less than 30 and more than 49 having lower recidivism rates and cases ranging in age from 30-49 at release having higher recidivism rates. The actual effect of age at release will be clearer once it is entered into the Cox (1972) regression model as an interval variable in Chapter 6.
<table>
<thead>
<tr>
<th>Return to prison for any reason (DV 1)</th>
<th>Gender</th>
<th>Ethnicity</th>
<th>Age at release (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Aboriginal</td>
</tr>
<tr>
<td>Yes %</td>
<td>(508)</td>
<td>(9)</td>
<td>42.3%</td>
</tr>
<tr>
<td>No %</td>
<td>(692)</td>
<td>(41)</td>
<td>57.7%</td>
</tr>
<tr>
<td>Pearson chi-square</td>
<td>11.72***</td>
<td>4.97*</td>
<td>1.16</td>
</tr>
<tr>
<td>Return to prison because of a conviction for a property or violent offence (DV 2)</td>
<td>Yes %</td>
<td>Aboriginal</td>
<td>Caucasian</td>
</tr>
<tr>
<td></td>
<td>(173)</td>
<td>(1)</td>
<td>14.4%</td>
</tr>
<tr>
<td>No %</td>
<td>(1,027)</td>
<td>(49)</td>
<td>85.6%</td>
</tr>
<tr>
<td>Pearson chi-square</td>
<td>6.18**</td>
<td>.09</td>
<td>.20</td>
</tr>
</tbody>
</table>

*p ≤ .05  **p ≤ .01  ***p ≤ .001
5.62 Association between recidivism and social control variables

The second contingency table (Table 13) examines the relationship between recidivism and social control. Length of incarceration is significantly associated with recidivism as measured by both dependent variables (DV 1: $\chi^2 = 16.93; p \leq .01$; DV 2: $\chi^2 = 20.01; p \leq .001$).

The association between length of incarceration and recidivism is unclear when the first dependent variable is examined. Here, recidivism rates start off fairly high for offenders who spent less than 8 years incarcerated, declines by about 12% for offenders who spent 8-9 years incarceration, and then rises by about 15% for offenders who spent 14 or more years incarcerated. The association between length of incarceration and recidivism is more clear when the second dependent variable is examined; here, recidivism increases from a low of 8.8% for offenders who spent less than 8 years incarcerated to a high of 20.2% for offenders who spent 14 or more years incarcerated.

What the results for the second dependent variable show is that longer periods of incarceration have no beneficial effect in terms of reducing recidivism; that is, there is no evidence of a specific deterrence effect as predicted by Hypothesis 1 A. These findings provide support for the hypothesis that offenders who spend longer periods of time incarcerated will be more likely to recidivate (H1 B). However, it is also possible that the relationship between length of incarceration and recidivism is spurious.
Table 13 - Association between recidivism and social control

<table>
<thead>
<tr>
<th>Return to prison for any reason (DV 1)</th>
<th>Length of incarceration</th>
<th>Supervision level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;8 years</td>
<td>8-9 years</td>
</tr>
<tr>
<td>Yes %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n)</td>
<td>(126)</td>
<td>(128)</td>
</tr>
<tr>
<td>No %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n)</td>
<td>(146)</td>
<td>(249)</td>
</tr>
<tr>
<td>Pearson chi-square</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Return to prison because of a conviction for a property or violent offence (DV 2)

| Yes %                                |         |           |            |             |           |                   |                                      |
| (n)                                  | (24)    | (40)      | (42)       | (24)        | (44)      | (114)              | (50)                                  |
| No %                                 |         |           |            |             |           |                   |                                      |
| (n)                                  | (248)   | (337)     | (199)      | (118)       | (174)     | (827)              | (143)                                 |
| Pearson chi-square                    |         |           |            |             |           | 20.01***           | 24.63***                             |

*p ≤ .05  **p ≤ .01  ***p ≤ .001
A possible explanation for the association between longer periods of incarceration and increased recidivism is that high risk offenders are incarcerated for longer periods of time before being released on parole. Substantiating evidence for this was found when the association between length of incarceration and the predicted risk of recidivism among the 345 Caucasian male offenders who had been administered the SIR scale was examined.

The correlation between the SIR risk categories and length of incarceration is .29 (p ≤ .001), indicating that offenders who have a higher predicted risk of recidivism spend more time incarcerated prior to being released on parole. In fact, offenders with the worse SIR scores (66.7% predicted recidivism rate) spent almost four years longer incarcerated than offenders with the best (20% predicted recidivism risk) SIR scores. 26 Likewise, Blumstein, Cohen, Roth and Visher (1986:136) also report that there is a significant association between sentence length and predicted recidivism risk for federal offenders in the United States. What this means is that the association between length of incarceration and recidivism may be partly spurious because other factors, such as criminal history or marital status may be the true cause of changes in the recidivism rate. With multivariate analyses in Chapter 6, it will be possible to control for factors such as criminal history (previous federal incarceration, multiple murderer) and marital status.

Offenders who have to report to their parole officer at least once a week are significantly more likely to recidivate (DV 1: \( \chi^2 = 77.41; p \leq .001 \); DV 2: \( \chi^2 = 24.63; p \leq .001 \)). For both dependent variables, the recidivism rate for offenders that were

26 For the five SIR score risk categories (very good; good; fair; fair to poor; poor), offenders spent 9.8 (n = 150; S.D. = 3.8); 11.0 (n = 78; S.D. = 3.6); 11.3 (n = 53; S.D. = 3.5); 12.4 (n = 40; S.D. = 4.3), and 13.7 (n = 24; S.D. = 3.5) years incarcerated, respectively.
required to report to their parole officer at least once a week was double that of offenders reporting less than once a week.

Parole supervision level is initially determined from the Community Risk/Needs Management Scale which has been in use since 1989. The SIR scale may also be used to identify high risk offenders. Offenders that the CSC considers to pose a higher risk of recidivism have to report to their parole officer at least once a week. Therefore, a plausible explanation for the discrepancy in recidivism rates between offenders subjected to differential parole supervision levels is that the CSC is able to effectively identify high-risk offenders. This relationship will be further explored in Chapter 6.

5.63 Association between recidivism and criminal history variables

The next contingency table (Table 14) examines the relationship between recidivism and criminal history. This analysis shows that original offence type is not related to recidivism; that is, it does not matter whether offenders were convicted of manslaughter or first degree or capital murder, their recidivism rate is about the same.

Offenders who have been convicted of more than one homicide are about 2.5 times as likely to be convicted of a property or violent crime while on parole (DV 2: $\chi^2 = 12.91; p \leq .001$). Likewise, offenders who have previously served a federal sentence are significantly more likely to recidivate (DV 1: $\chi^2 = 24.09; p \leq .001$; DV 2: $\chi^2 = 28.11; p \leq .001$).
<table>
<thead>
<tr>
<th>Table 14 - Association between recidivism and criminal history</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Original offence</strong></td>
</tr>
<tr>
<td>1st degree or capital murder</td>
</tr>
<tr>
<td><strong>Return to prison for any reason (DV 1)</strong></td>
</tr>
<tr>
<td>Yes %</td>
</tr>
<tr>
<td>(n)</td>
</tr>
<tr>
<td>No %</td>
</tr>
<tr>
<td>(n)</td>
</tr>
<tr>
<td>Pearson chi-square</td>
</tr>
<tr>
<td><strong>Return to prison because of a conviction for a property or violent offence (DV 2)</strong></td>
</tr>
<tr>
<td>Yes %</td>
</tr>
<tr>
<td>(n)</td>
</tr>
<tr>
<td>No %</td>
</tr>
<tr>
<td>(n)</td>
</tr>
<tr>
<td>Pearson chi-square</td>
</tr>
</tbody>
</table>

*p ≤ .05  **p ≤ .01  ***p ≤ .001
5.64 Association between recidivism and life event variables

The last contingency table (Table 15) examines the relationship between recidivism and social bonds or life events. This analysis shows that married offenders are significantly less likely to recidivate (DV 1: $\chi^2 = 10.67; p \leq .001$; DV 2: $\chi^2 = 4.22; p \leq .05$) as predicted in Hypothesis 2.

Surprisingly enough, employment status was not significantly related to recidivism. It was predicted that offenders who were working full-time would be less likely to recidivate (H 3), but this is not the case. These results may reflect the validity of the variable as a measure of employment status at the time of recidivism. For the most part, it was not possible to determine the employment status of offenders on the date they recidivated. This is because of the long follow-up periods, and relatively recent focus of the CSC on collecting this information.

Offenders in this study started parole as early as 1976; however, about 85% of the employment records were not created until 1993. This means that detailed employment information is only available for most of the offenders for a three-year period (1993 - 1995). Considering the maximum 20 year follow-up period, this means that some offenders may have recidivated 17 years before any employment records were available for them.

Offenders who have completed grade 12 are significantly less likely to be convicted of a property or violent offence while on parole (DV 2: $\chi^2 = 7.97; p \leq .01$); however, level of education did not affect whether offenders return to prison for any reason (DV 1).
Table 15 - Association between recidivism, social bonds and life events

<table>
<thead>
<tr>
<th></th>
<th>Marital status</th>
<th>Employment status</th>
<th>Level of education</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Married</td>
<td>Other</td>
<td>Full-time</td>
</tr>
<tr>
<td>Return to prison for any</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>reason (DV 1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes %</td>
<td>31.5%</td>
<td>43.4%</td>
<td>34.6%</td>
</tr>
<tr>
<td>(n)</td>
<td>(69)</td>
<td>(447)</td>
<td>(180)</td>
</tr>
<tr>
<td>No %</td>
<td>68.5%</td>
<td>56.6%</td>
<td>65.4%</td>
</tr>
<tr>
<td>(n)</td>
<td>(150)</td>
<td>(582)</td>
<td>(303)</td>
</tr>
<tr>
<td>Pearson chi-square</td>
<td>10.60***</td>
<td>.13</td>
<td>3.13</td>
</tr>
<tr>
<td>Return to prison because</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>of a conviction for a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>property or violent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>offence (DV 2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes %</td>
<td>9.6%</td>
<td>14.9%</td>
<td>8.4%</td>
</tr>
<tr>
<td>(n)</td>
<td>(21)</td>
<td>(153)</td>
<td>(39)</td>
</tr>
<tr>
<td>No %</td>
<td>90.4%</td>
<td>85.1%</td>
<td>91.6%</td>
</tr>
<tr>
<td>(n)</td>
<td>(198)</td>
<td>(876)</td>
<td>(424)</td>
</tr>
<tr>
<td>Pearson chi-square</td>
<td>4.20*</td>
<td>.07</td>
<td>7.97**</td>
</tr>
</tbody>
</table>

*p ≤ .05  **p ≤ .01  ***p ≤ .001
It is interesting that offenders who have some post-secondary education are just as likely to recidivate as other offenders (DV 1: 41.7% vs. 42.6%; DV 2: 16.7% vs. 16.4%, respectively). These results present an unexpected finding, although it must be recognized that the total proportion of offenders with some post-secondary education is very low (4.1%). Hypothesis 4 predicts that offenders with higher education will be less likely to recidivate, but this does not seem to hold true at the bivariate level of analysis.

These results may reflect the fact that the average age of offenders in this study is 40 years old. It is possible that these offenders may have completed grade 12, or post secondary education, 20 years earlier. If this is true, then current level of education may not be an appropriate measure of commitment to educational goals.

5.7 SUMMARY

According to survival analysis results, a large proportion (40%) of homicide offenders released on parole are predicted to return to prison for any reason within five years of release. Substantially fewer (13%) are predicted to return to prison within five years because they have been convicted of a new property or violent offence.

Only 11 (0.9%) of the homicide offenders in this study were convicted of committing another homicide while they were on parole. All of these homicides were committed by offenders originally convicted of non-capital or second degree murder.

In total, 174 of the 1,250 offenders (14%) were convicted of committing a property or violent crime while on parole. About 62% (n = 108) of the 174 offenders were convicted of a new violent crime, while about 38% (n = 66) were convicted of a new property crime. It is difficult to classify offences as either violent or property crimes without the full details of the offence; however, using the classification system from
Table 6, 8.6% (n = 108) of the homicide offenders in the sample were convicted of a violent offence while on parole.

There is a significant association between age at release and recidivism (DV 1 and DV 2); however, the direction of this association will not be known until age at release is entered into the Cox (1972) regression model where its relative impact can be assessed.

There is also a significant positive association between length of incarceration and recidivism (DV 1 and DV 2). Offenders who were incarcerated for longer periods of time, had a higher recidivism rate. This finding provides support for the alternative hypothesis (H1 B) that offenders who are incarcerated for longer periods of time will be more likely to recidivate.

As predicted by Hypothesis 2, married offenders are less likely to recidivate (DV 1 and DV 2). These results are similar to those reported by Horney, Osgood and Marshall (1995:667), and provide support for Hirschi's (1969) social control theory which predicts that social bonds prevent crime and deviance. In the next chapter, Cox (1972) regression analysis will be used to determine whether or not this effect is due to intervening variables, such as age at release.

According to social control theory, offenders who are working are less likely to commit deviant or criminal acts because of increased attachment to conventional norms and values, and/or less opportunity to commit crimes (Hirschi, 1969:22). Similarly, Sampson and Laub (1993:143) believe that offenders who have been employed for long periods of time and have good work habits (job stability) will be less likely to commit a crime.
Hypothesis 3, which predicts that offenders who are working full-time will be less likely to recidivate, was developed from these two perspectives. However, the results discussed in this chapter (displayed in Table 15) show that offenders who are employed full-time are just as likely to recidivate as other offenders. Cox (1972) regression analysis will be used to further test the effect of employment status on recidivism. The problem may be that this variable is not a sufficiently valid measure of employment status at the time of recidivism.

Offenders who had completed grade 12 were significantly less likely to be convicted of a property or violent offence (DV 2) while on parole. This is the association predicted in Hypothesis 4; although, there was not a significant association between level of education and whether offenders returned to prison for any reason (DV 1).

Overall, this chapter has examined the timing and probability of recidivism among homicide offenders. The crimes that these offenders have committed while on parole have also been reviewed. Bivariate analyses were used to examine the relationships between recidivism and the independent variables.

In the next chapter, Cox's (1972) regression model will be used to assess the relative impact of the independent variables on recidivism. With available demographic and criminal history variables controlled, the net effect of formal and informal mechanisms of social control will be measured.
In this chapter, Cox's (1972) regression model is used to measure the effects of formal and informal mechanisms of social control on adult criminal behavior. Specifically, the effects of length of incarceration, marital and employment status, and level of education on recidivism will be measured. Other findings relevant to correctional policy will also be highlighted.

The modeling approach used by Hage, Collins, Hull and Teachman (1993) was adopted for this study. The offender characteristic or demographic variables will be the first block of variables entered into the Cox (1972) regression model (model 1). This will be followed by the criminal history or social control variables (model 2), and finally, the block of social bond or life event variables (model 3). This method of analysis provides a conservative test of the effects of incarceration and social bond or life events variables on recidivism (Hage et al., 1993:236).

Cox (1972) regression analysis results are presented in Tables 16 and 17 for the first and second dependent variables, respectively. Statistically significant variables in Table 16 represent those that affect return to prison for any reason.

- **DV 1) Return to prison because of parole termination or revocation.**

In Table 17, the measure of recidivism is strictly focused on the prediction of criminal behavior.

- **DV 2) Return to prison because of a conviction for a property or violent offence.**

Both tables present the estimated coefficients (β) and their related standard error (SE).
Table 16 - Cox regression analysis of the effects of offender characteristics, criminal history and social bonds on the probability that offenders will return to prison for any reason (DV 1)

<table>
<thead>
<tr>
<th></th>
<th>Model 1 (M1)</th>
<th>Model 2 (M2)</th>
<th>Model 3 (M3)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OFFENDER CHARACTERISTICS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender (Male = 1)</td>
<td>.983**</td>
<td>.944**</td>
<td>.701</td>
</tr>
<tr>
<td></td>
<td>(.337)</td>
<td>(.341)</td>
<td>(.423)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aboriginal (Yes = 1)</td>
<td>.235</td>
<td>.199</td>
<td>.292</td>
</tr>
<tr>
<td></td>
<td>(.143)</td>
<td>(.148)</td>
<td>(.184)</td>
</tr>
<tr>
<td>Visible minority (Yes = 1)</td>
<td>-.419</td>
<td>-.222</td>
<td>-.763</td>
</tr>
<tr>
<td></td>
<td>(.337)</td>
<td>(.338)</td>
<td>(.582)</td>
</tr>
<tr>
<td>Age at release (Years)</td>
<td>-.013**</td>
<td>-.013**</td>
<td>-.014*</td>
</tr>
<tr>
<td></td>
<td>(.005)</td>
<td>(.005)</td>
<td>(.007)</td>
</tr>
<tr>
<td><strong>CRIMINAL HISTORY AND SOCIAL CONTROL VARIABLES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Original offence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manslaughter (Yes = 1)</td>
<td>-.208</td>
<td>.049</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.264)</td>
<td>(.277)</td>
<td></td>
</tr>
<tr>
<td>Length of incarceration (Years)</td>
<td>.016</td>
<td>.030*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.012)</td>
<td>(.015)</td>
<td></td>
</tr>
<tr>
<td>Supervision level (≥ once per week = 1)</td>
<td>1.151***</td>
<td>1.333***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.105)</td>
<td>(.128)</td>
<td></td>
</tr>
<tr>
<td>Multiple murderer (More than one homicide = 1)</td>
<td>.265</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.237)</td>
<td>.349</td>
<td></td>
</tr>
<tr>
<td>Previous federal incarceration (Yes = 1)</td>
<td>.557***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.111)</td>
<td>.673**</td>
<td></td>
</tr>
<tr>
<td><strong>SOCIAL BOND AND LIFE EVENT VARIABLES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current marital status (Married = 1)</td>
<td></td>
<td>-.449**</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.172)</td>
<td></td>
</tr>
<tr>
<td>Level of education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 12 or 13 (Yes = 1)</td>
<td></td>
<td>-.093</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.186)</td>
<td></td>
</tr>
<tr>
<td>Post-secondary (Yes = 1)</td>
<td></td>
<td>-.161</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.309)</td>
<td></td>
</tr>
<tr>
<td>n of events</td>
<td>510</td>
<td>481*</td>
<td></td>
</tr>
<tr>
<td>- 2 Log likelihood (-2LL)</td>
<td>6771.477</td>
<td>6150.832</td>
<td>4143.003</td>
</tr>
<tr>
<td>Change in -2LL from previous model (model comparison)</td>
<td>620.845***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(M1/M2)</td>
<td>2628.474***</td>
<td>(M1/M3)</td>
<td></td>
</tr>
<tr>
<td>Degrees of freedom</td>
<td>5</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Change in -2LL from previous model (model comparison)</td>
<td>2007.829***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(M2/M3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degrees of freedom</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p ≤ .05  **p ≤ .01  ***p ≤ .001

* Twenty-nine offenders (510 - 481) were dropped from the analysis because their level of parole supervision was not available.

** A further 135 offenders (481 - 346) were dropped from the analysis because their level of education was not available.
Table 17 - Cox regression analysis of the effects of offender characteristics, criminal history and social bonds on the probability that offenders will return to prison because they have been convicted of a property or violent offence (DV 2)

<table>
<thead>
<tr>
<th>OFFENDER CHARACTERISTICS</th>
<th>Model 1 (M1)</th>
<th>Model 2 (M2)</th>
<th>Model 3 (M3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (Male = 1)</td>
<td>1.962* (1.003)</td>
<td>1.757 (1.008)</td>
<td>1.270 (1.016)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aboriginal (Yes = 1)</td>
<td>-0.068 (.279)</td>
<td>-0.206 (.292)</td>
<td>-0.286 (.320)</td>
</tr>
<tr>
<td>Visible minority (Yes = 1)</td>
<td>-0.177 (.507)</td>
<td>0.063 (.511)</td>
<td>0.023 (.717)</td>
</tr>
<tr>
<td>Age at release (Years)</td>
<td>-0.021** (.008)</td>
<td>-0.037*** (.011)</td>
<td>-0.030** (.012)</td>
</tr>
</tbody>
</table>

CRIMINAL HISTORY AND SOCIAL CONTROL VARIABLES

| Original offence         |              |              |              |
| Manslaughter (Yes = 1)   | -0.114 (.458)| 0.080 (.465)|              |
| Length of incarceration (Years) | .074*** (.020) | .068** (.024) |              |
| Supervision level (> once per week = 1) | 1.416*** (.178) | 1.452*** (.202) |              |
| Multiple murderer (more than one homicide = 1) | .957** (.305) | .911** (.310) |              |
| Previous federal incarceration (Yes = 1) | .940*** (.178) | 1.026*** (.195) |              |

SOCIAL BOND AND LIFE EVENT VARIABLES

| Current marital status (Married = 1) |              | -0.065 (.253) |
| Level of education |              | -0.738 (.392) |
| Grade 12 or 13 (Yes = 1) |              | -0.282 (.511) |
| Post-secondary (Yes = 1) |              |              |

| n of events | 173 | 163* | 134** |
| -2 Log likelihood | 2302.579 | 2032.575 | 1584.893 |
| Change in -2LL from previous model (model comparison) | 270.004*** (M1/M2) | 717.686*** (M1/M3) |              |
| Degrees of freedom | 5 | 8 |              |
| Change in -2LL from previous model (model comparison) |              | 447.682*** (M2/M3) |              |
| Degrees of freedom |              | 3 |              |

*p ≤ .05   **p ≤ .01   ***p ≤ .001

* Ten offenders (173 - 163) were dropped from the analysis because their level of parole supervision was not available.

** A further 29 offenders (163 - 134) were dropped from the analysis because their level of education was not available.
Employment status was initially entered into the regression model; however, it was excluded from the final analysis (Tables 16 and 17) because of the manner in which it affected the results.\textsuperscript{27} This variable was not considered to be a valid enough measure of employment status at the time of recidivism to allow it to affect the results in this manner.

The employment status variable was initially used to identify all offenders who were employed full-time. In analyses not reported here, the employment status variable was re-coded to determine if there was some problem with the initial coding schema (full-time or not). The original employment status variable was re-coded in two different ways.

First, the employment records of offenders were reviewed and offenders who had been employed full-time for one or more years were identified. This variable should provide an indication of job stability. However, when this new employment status dummy variable was entered into model 3 of the Cox (1972) regression model, the results were similar to those found with the original coding schema.

In the second re-coding attempt, the following five dummy variables were created: full-time, part-time (including seasonal, temporary, and occasional), retired (including unable to work), student and unemployed. Four of these five dummy variables were entered into model 3 of the Cox (1972) regression model (unemployed was excluded); however, the results were affected in about the same manner as when just the original employment status variable was entered.

\textsuperscript{27} For the first dependent variable (Table 16), age at release, length of incarceration and marital status lost their significance when employment status was added to model 3. The Aboriginal offender variable became significant. For the second dependent variable (Table 17), age at release, length of incarceration, supervision level and the variable identifying multiple murderers lost their significance.
This problem is probably occurring because 85% of the employment records do not start until 1993; however, the first offender recidivated in 1977, 16 years earlier. In order to determine whether investment in, and commitment towards a job reduces recidivism, information on employment status throughout the follow-up period is needed.

The impact of length of incarceration on recidivism for both dependent variables was slightly modified\(^\text{28}\) when the dummy variable for first degree or capital murder was added to the model. Because of the moderate correlation (.39) between this variable and length of incarceration, it was dropped from the model.

The easiest way to interpret the Cox (1972) regression model is to take the antilog \([\text{Exp}(\beta)]\) of the statistically significant coefficients (Allison, 1984:28; Zatz, 1985:21). Significant antilogs which are reported in-text, are also known as risk ratios because they indicate the degree to which the independent variables affect recidivism. Risk ratio values indicate percentage increases or decreases in the likelihood of recidivism.

For interval variables measured in years (age at release and length of incarceration), the antilogs represent the percentage change in the probability of recidivism over a one year period. Values above 1.0 indicate an increase in the probability of recidivism while values below 1.0 indicate a decrease in the probability of recidivism (Zatz, 1985:21).

\(\text{28 For the first dependent variable (Table 16), the significance for length of incarceration increased to } p \leq .01, \text{ and the risk ratio went up about } 1\% \text{ from } 1.0301 (3.01\%) \text{ to } 1.0399 (3.99\%). \text{ For the second dependent variable (Table 17), the significance for length of incarceration increased to } p \leq .001, \text{ and the risk ratio went up about } 2\% \text{ from } 1.0698 (6.98\%) \text{ to } 1.0873 (8.73\%).\)
For the dummy variables, antilogs indicate the degree to which the presence of a characteristic (coded as 1; e.g., male or married) affects the probability of recidivism. Placing the antilog ($e^θ$) into this formula, $100(e^θ - 1)$ yields the percentage increase or decrease in recidivism when the characteristic is present (Allison, 1984:28; Zatz, 1985:21).

A value of 1.0 indicates that the variable does not affect recidivism. Values below 1.0 indicate that recidivism is less likely (lower risk ratios), and values above 1.0 indicate that recidivism is more likely (higher risk ratios).

6.1 TEST OF HYPOTHESES

6.11 Incarceration

According to specific deterrence theory, offenders who are incarcerated for longer periods of time should be less likely to recidivate (Orsagh and Chen, 1988:155). This led to the first hypothesis.

- **H1 A)** The longer an offender is incarcerated, the less likely he or she is to recidivate following release from prison.

Alternatively, from the labeling perspective (Tannenbaum, 1938; Becker [1963] 1966; Lemert 1967, 1972), it was hypothesized that longer periods of incarceration will increase recidivism because offenders will become more socialized into the deviant or criminal role.

- **H1 B)** The longer an offender is incarcerated, the more likely he or she is to recidivate following release from prison.
The results from Tables 16 and 17 show that there is no specific deterrence effect associated with longer periods of incarceration as predicted by Hypothesis 1A (DV 1 and DV 2). Offenders who are incarcerated for longer periods of time are more likely to return to prison for any reason (DV 1) when offender characteristic, criminal history, social bond and life event variables are controlled (Table 16: \( \beta = .030, p \leq .05 \)). The risk ratio for length of incarceration is 1.030 indicating that for every year an offender spends incarcerated, the probability that he or she will return to prison for any reason (DV 1) increases by 3%.

The association between length of incarceration and recidivism is even stronger for the second dependent variable (Table 17: \( \beta = .068; p \leq .01 \)) with offender characteristic, criminal history, social bond and life event variables controlled. In this case, the risk ratio is 1.070 or 7%. This means that for each year offenders spend incarcerated, the likelihood of them engaging in criminal behavior upon release, as measured by criminal convictions (DV 2), increases by 7%.

Sampson and Laub (1993:255) note that the impact of incarceration on recidivism may really be a measure of the criminogenic effects that imprisonment has on captive prisoners. Incarceration affects inter-personal relationships (e.g., marriage) and employment prospects; therefore, longer periods of incarceration indirectly affect criminal behavior.

For the second dependent variable (Table 17), the addition of model 3 to the equation very slightly reduces the risk ratio for length of incarceration from 7.7% to 7.0%. This level was affected by both marital status and level of education, thus providing some support for Sampson and Laub’s (1993) argument that incarceration has an indirect, rather than direct effect on criminal behavior. Better measures of the
social bond, such as those utilized by Sampson and Laub (1993), are needed before the criminogenic effects of incarceration can be further tested.

Interestingly enough, the association between length of incarceration and recidivism is stronger than the expected reduction in recidivism as age at release increases. The effect of age at release was significant for both dependent variables (DV 1 and DV 2) for all three models.

For the first dependent variable, the risk ratio for age at release after the third model was added was .986 (Model 3; β = -.014, p ≤ .05). This means that a one year increase in age at release decreases the probability of an offender returning to prison for any reason (DV 1) by 1.4%.

For the second dependent variable, the risk ratio for age at release after the third model is added is .970 (Model 3; β = -.030, p ≤ .01). This means that the probability of an offender being convicted of a property or violent offence (DV 2) is reduced by 3% for each one year increase in his or her age at release.

In summary, the recidivism rate of offenders is lowered indirectly by longer periods of incarceration because the older an offender is, the less likely he or she is too recidivate. However, the positive association between time spent incarcerated and recidivism is still stronger than this maturation effect. The relationship between length of incarceration and recidivism is confounded by the fact that the CSC keeps high risk offenders incarcerated for longer periods of time. However, once released from prison, these higher risk offenders are still more likely than lower risk offenders to recidivate.

From these findings, the general conclusion that can be drawn is that incarceration does not appear to have a specific deterrence effect as predicted by the first hypothesis (H1 A). These data offer indirect support for the hypothesis that the
longer offenders are incarcerated, the more likely they are to recidivate following release from prison (H1 B). The process of socialization within the prison has been referred to as the "criminalization", "prisonization", or "hardening" of offenders (Lemert, 1967:50). Lemert (1967:50) notes that this process of socialization becomes worse over time as offenders learn the special knowledge and skills of other offenders, and come to accept that they are expected to act as criminals. More criminal (e.g., previous juvenile and adult convictions) and social (e.g., previous marital and employment status) history control variables are needed to fully test the argument behind Lemert's (1967) theory.

It may be possible to test Lemert's (1967) theory without a recidivism study. As part of an initial risk assessment process, the CSC is administering the SIR scale to all new offenders as they start their sentence in the penitentiary. If the SIR scale, or other valid risk assessment instrument was also administered to offenders as they leave the institution it would be possible to measure whether their level of assessed risk had changed. An increase in assessed level of risk would provide support for Lemert's (1967) secondary deviance hypothesis.

6.12 Social bonds

From Hirschi's (1969) social control theory and Sampson and Laub's (1993) life course perspective, it was hypothesized that marital and employment status, and level of education should affect criminal behavior. As noted, employment status was dropped from the model because of concerns about its validity; however, both marital status and level of education were incorporated into the Cox (1972) regression model.
Level of education was not significantly associated with recidivism for either dependent variable (DV 1 or DV 2). Two dummy variables were used to measure the effect of education on recidivism (grade 12 and post-secondary education). In addition, level of education was also entered into the third model as an interval variable (results not presented), but it still did not have a significant effect on recidivism. Level of education does not significantly affect the recidivism of homicide offenders; thus, the fourth hypothesis is tentatively rejected.

Marital status had a significant effect on whether offenders return to prison for any reason (DV 1: $\beta = -.449; p \leq .01$). The risk ratio or antilog is .638 indicating that married offenders are 36.2% less likely to return to prison for any reason (DV 1). These results support the second hypothesis that married offenders will have a lower recidivism rate than other offenders (including offenders involved in common-law relationships. These findings are similar to those reported by Horney, Osgood and Marshall (1995:660) who found that married offenders were significantly less likely to commit assault.

6.2 OTHER SIGNIFICANT FINDINGS

6.21 Offender characteristics

As noted, age at release has a significant effect on recidivism (DV 1 and DV 2). Another interesting finding is that ethnicity does not explain the recidivism (DV 1 or DV 2) of homicide offenders. However, there are only 12 visible minority offenders included in the analyses (compared to 73 Aboriginal offenders), so no conclusions can
be drawn. As well, only 14 female homicide offenders were included in the analyses, so the same problem exists with trying to interpret why gender is significant until criminal history, social control, marital status and level of education are controlled (DV 1 and DV 2).

6.22 Criminal history and social control

Original offence type does not have an effect on the recidivism of homicide offenders (DV 1 and DV 2). In analyses not reported here, the effect of original offence type was measured with length of incarceration excluded from model 2. This analysis was conducted separately because of the moderate degree of association between length of incarceration and offenders originally convicted of first degree or capital murder ($r = .39$) and second degree or non-capital murder ($r = -.31$). The results show that regardless of whether offenders were serving time for first degree or capital murder, second degree or non-capital murder, or manslaughter, original offence type did not have a significant effect upon recidivism.

The risk assessment instruments used by the CSC to identify high-risk offenders (SIR scale and Community Risk/Needs Management Scale) are valid for homicide offenders. The Community Risk/Needs Management Scale is used to identify high-risk offenders who have been released on parole. These high-risk offenders are required to report to their parole officer at least once a week. The results shows that these high-risk offenders are much more likely to recidivate than other offenders.

For the first dependent variable (DV 1), the risk ratio for supervision level after the third model is added is 3.79. This means that the likelihood of a highly supervised
offender returning to prison for any reason (DV 1) is 279% higher than it is for offenders who are not highly supervised (reporting frequency < once per week). This high risk ratio is not due to the fact that highly supervised offenders are more likely to have their parole terminated or revoked for "minor" violations (e.g., alcohol or drug use) due to administrative (parole officer) discretion. The risk ratio for the second dependent variable is even higher at 4.12. This means that the likelihood of a highly supervised offender returning to prison because he or she has been convicted of a property or violent offence (DV 2) is 312% higher than it is for other offenders.

These results indicate that the CSC is effectively identifying high-risk offenders. Of course, these results also show that parole supervision is not an effective deterrent to criminal behavior because the high-risk offenders are still committing, and being convicted of criminal acts regardless of their supervision level.

Homicide offenders who have a previous federal sentence are also significantly more likely to recidivate (DV 1 and DV 2). Offenders with a previous federal sentence are 96.1% more likely to return to prison for any reason (DV 1), and 179% more likely to return to prison because they have been convicted of a property or violent offence (DV 2). One further criminal history variable also affected the likelihood of offenders returning to prison because they had been convicted of a property or violent crime (DV 2). Offenders who have ever been convicted of more than one homicide were 148.6% more likely to be convicted of a property or violent crime while on parole.

These results indicate that past criminal behavior is an excellent predictor of future criminal behavior. One possible explanation suggested by Gottfredson and Hirschi (1990:232) is that the underlying cause of criminal behavior is low self-control. However, the findings do not rule out the possibility that other intervening variables can
alter the pattern of adult criminal behavior. That is, marital attachment and job stability may very well affect adult criminal behavior as predicted by Sampson and Laub (1993:248); however, these measures were not available in the ideal form required.

6.3 SUMMARY AND DISCUSSION

In this chapter, Cox (1972) regression analysis was used to test hypotheses and examine the relative effects of independent variables on recidivism. The results indicate that offenders who spend longer periods of time incarcerated are significantly more likely to recidivate. For each year offenders spend incarcerated, the probability that they will return to prison for any reason (DV 1) increases by 3%. The probability of offenders returning to prison because they have been convicted of a property or violent offence (DV 2) increases by 7% for each year of incarceration.

As noted, these results partly reflect the fact that offenders who pose a higher risk of recidivism (as measured by the SIR scale), spend more time incarcerated. These results show that incarceration does not have a specific deterrence effect as predicted by Hypothesis 1 A. In his study, it was not possible to tell whether incarceration is having a direct effect on recidivism as predicted by Lemert's (1967:50) secondary deviance hypothesis (H1 B), or an indirect effect on criminal behavior as predicted by Sampson and Laub (1993:255). To determine this, more social and criminal history control variables are needed. As well, information on offenders' employment and marital status throughout the follow-up period is needed.

For the first and second dependent variables, each one year increase in age at release reduces the risk of recidivism by 1.4% and 3%, respectively. Both marital
status and level of education slightly modify the effects of longer periods of incarceration for the second dependent variable. This provides some support for Sampson and Laub's (1993:255) contention that longer periods of incarceration are indirectly causing higher recidivism rates.

For the first dependent variable, married offenders are 36.2% less likely to recidivate as predicted by Hypothesis 2; however, the association between marital status and the second dependent variable was not significant. As with the employment status variable, the marital status variable also had measurement problems because it is a measure of current marital status only.

Hypothesis 3 was not tested because the validity of the employment status variable as a true measure of the effect of employment status on recidivism was in doubt. This problem occurred because it was not possible to match most employment records with the dates offenders recidivated.

It was expected that offenders with a commitment towards conventional educational and occupational goals, as measured by the level of education variable, would have significantly lower recidivism rates. However, since level of education did not affect the recidivism of homicide offenders, Hypothesis 4 is tentatively rejected.

In order to determine if strong social bonds in adulthood can reduce recidivism, better measures of the social bond need to be incorporated into the models. Ideally, measures used by Sampson and Laub (1993) such as job stability, occupational and educational commitment, and marital attachment can be constructed and used in a future study; however, such a study will have to utilize self-report data gained from interviews.
Risk assessment plays an important role in corrections. In Chapter 5, it was found that the SIR scale is a valid and reliable risk assessment instrument for homicide offenders. Similarly, the results in this chapter indicate that the Community Risk/Needs Management Scale is also a valid and reliable risk assessment instrument for homicide offenders. The Community Risk/Needs Management Scale is used to identify high-risk offenders who must report to their parole officer at least once a week. Information on parole reporting frequency was available for this study, and the results indicate that these high risk offenders are more likely to recidivate.

High risk offenders are 279% more likely to return to prison for any reason (DV 1) in comparison to other offenders. The risk of recidivism is even higher for the second dependent variable. High risk offenders are 312% more likely to return to prison because they have been convicted of a property or violent offence while on parole.

These results indicate that the CSC is effectively identifying offenders who pose a high risk of recidivism. However, the results also show that high risk offenders are still committing criminal acts while on parole, despite the fact that they face a higher level of parole supervision than low risk offenders. From this study, it is not possible to tell how parole supervision is affecting the behavior of high-risk offenders. It is possible that the recidivism rates for these offenders would be even higher if they did not have a high supervision level.

Criminal history was also a significant predictor of recidivism. Offenders who have ever been convicted of more than one homicide are 148.6% more likely to return to prison because they have been convicted of a property or violent offence (DV 2). Likewise, offenders with a previous federal sentence are 179% more likely to return to
prison because they have been convicted of a property or violent offence (DV 2). For the first dependent variable, offenders with a previous federal sentence are 96.1% more likely to recidivate.

In the next chapter, I conclude this thesis with some comments on the recidivism of homicide offenders and associated explanatory variables. I also point out the limitations of this study in terms of the explanation of adult criminal behavior, and outline some directions for future research.
An important criminological debate is why some offenders recidivate while others do not. Of particular interest is whether mechanisms of formal and/or informal social control directly affect recidivism. Three theoretical perspectives are particularly relevant to this question.

Specific deterrence theory (Beccaria, [1764] 1986; Bentham, [1789] 1961) and labeling perspective (Tannenbaum 1938; Becker [1963] 1966; Lemert, 1967) proponents argue that formal mechanisms of social control, such as arrest and incarceration have direct, although opposite effects upon criminal behavior.

According to specific deterrence theory (Beccaria, [1764] 1986; Bentham, [1789] 1961), if punishment is swift, certain, and severe, offenders will be less likely to recidivate because they will not want to experience such punishment again. In this study, the severity component of specific deterrence theory was tested with the hypothesis that offenders who serve longer periods of time incarcerated will be less likely to recidivate.

Alternatively, proponents of the labeling perspective (Tannenbaum 1938; Becker [1963] 1966; Lemert, 1967) argue that criminal justice sanctions, such as incarceration increase the likelihood that offenders will re-offend once released. According to Lemert's (1967:50) secondary deviance hypothesis, offenders are subjected to a socialization process within the prison that leads them to become criminalized and hardened, and thus more likely to re-offend upon release. It was hypothesized that the longer offenders are subjected to this socialization process, the more likely they would
be to re-offend upon release from prison. That is, offenders who are incarcerated for longer periods of time, will be more likely to recidivate.

Sampson and Laub's (1993) life course perspective is also pertinent to the study of recidivism. In contrast to specific deterrence theory and the labeling perspective, Sampson and Laub (1993:255) argue that incarceration is only indirectly linked to criminal behavior because it weakens offenders ties to society, thus making it more difficult for them to maintain marriages, other family relations, and employable skills.

Sampson and Laub (1993) argue that informal mechanisms of social control, such as marital attachment, job stability, and educational and occupational commitment explain a significant proportion of recidivism. These precise measures of the social bond were not available. Nonetheless, Sherman and Smith (1992:683) argue that marital and employment status are adequate measures of the social bond because married and employed offenders have more to lose (higher stake in conformity) if they recidivate. Similarly, level of education is also a measure of the social bond because it is an indicator of commitment to conventional educational and occupational goals. In an assessment of Sampson and Laub's (1993) life course perspective, two of these three variables (marital status and level of education) were included in multivariate analyses.

The results provide limited support for Sampson and Laub's (1993) life course perspective. Married offenders were significantly less likely to recidivate, but only for one of the two measures of recidivism. Married offenders were less likely to return to prison for any reason, but were just as likely as unmarried offenders to be convicted of a property or violent crime while on parole.
It was also expected that offenders with a commitment towards conventional educational and occupational goals, as measured by level of education would have significantly lower recidivism rates. However, level of education was not associated with the recidivism of homicide offenders. Offenders with post-secondary education were just as likely as offenders with lower levels of education to return to prison for any reason, or because they had been convicted of a new property or violent offence.

The results show that offenders who are incarcerated for longer periods of time are significantly more likely to recidivate. This means that longer periods of incarceration show no beneficial effects in terms of reducing recidivism as predicted by specific deterrence theory. It is not possible to tell whether incarceration is having a direct effect on recidivism as predicted by Lemert's (1967:50) secondary deviance hypothesis, an indirect effect as predicted by Sampson and Laub (1993:255), or no effect.

For future research, more criminal history and social bond control variables are needed in order to tell if there is a causal relationship between length of incarceration and recidivism. The lack of control variables was the major limiting factor of this study. Likewise, it was not possible to link life event or social bond information to the dates that offenders recidivated in order to provide a direct test of Sampson and Laub's (1993) thesis that these informal mechanisms of social control can reduce recidivism. Ideally, information on the employment and marital status of offenders should be collected throughout the follow-up period.

Other control variables should include all the criminal and social history variables from the Statistical Information on Recidivism (SIR) scale, as well as a measure of low self-control (Gottfredson and Hirschi, 1990). Historical criminal and social history
variables from the SIR scale should be controlled because they accurately estimate recidivism rates among offenders. Together with current life event information and a measure of low self-control this would allow for a better test of Sampson and Laub's (1993) thesis.

There are two correctional policy issues addressed in this study. The first issue deals with the recidivism of homicide offenders, and the second with the effectiveness of risk prediction. First, very few homicide offenders are ever convicted of a further offence once released on parole. The over-all recidivism rate was about 14%, but over a five year period only 4 - 6% of homicide offenders are predicted to return to prison each year because they are convicted of a property or violent offence.

Because homicide offenders present such a low recidivism risk, descriptive results (e.g., recidivism rates) cannot be generalized to other offenders. However, since the SIR scale is a valid and reliable risk assessment instrument for homicide offenders this leads to the conclusion that the characteristics contributing to the recidivism of homicide offenders are not different from those associated with other types of offenders. The SIR scale only applies to non-Aboriginal males which represent about 83% of the sample.

Risk assessment plays an important role in corrections. As found in this study, and noted by Blumstein et al. (1986:136), there is a significant association between length of incarceration and predicted recidivism risk. Offenders who pose a higher risk of recidivating spend more time incarcerated prior to being released on parole. More recently (since 1989), parole supervision level has been determined from the results of the Community Risk/Needs Management Scale; however, the SIR scale may also be used in the determination of parole supervision level.
Offenders assessed by either of these two scales as high risk are significantly more likely than low risk offenders to be convicted of a property or violent crime upon release on parole. Likewise, these high risk offenders are also more likely than low risk offenders to return to prison for any reason. The results indicate that the CSC is able to identify offenders who pose a high risk of recidivating. Unfortunately, these results also indicate that high-risk offenders are still committing, and being convicted of criminal acts regardless of their parole supervision level.

Overall, the SIR scale did an excellent job of predicting the recidivism of homicide offenders. Actual recidivism rates are slightly lower than the predicted rates for four of the five risk categories; however, in the highest risk category, the predicted recidivism rate was exactly the same as the actual recidivism rate.

It is likely that the actual recidivism rates would have come even closer to the predicted SIR scale rates if it had been possible to control for offenders released on day parole. According to routine activities theory (Cohen and Felson, 1979), offenders released on day parole should have a lower recidivism rate than those on full parole because they have to spend the night at a correctional facility in the presence of capable guardians against crime. However, a more thorough analysis distinguishing between the recidivism of offenders released on day and full parole is required before this hypothesis can be tested.

Overall, the most important finding in this study is that there is no evidence that longer periods of incarceration serve to deter or rehabilitate homicide offenders. With available demographic, criminal history and life event variables controlled, there is a significant positive association between length of incarceration and both measures of recidivism: return to prison for any reason, and return to prison because of a conviction.
for a property of violent offence. With each year that a homicide offender is incarcerated, the probability that he or she will recidivate upon release on parole increases. The results are partly explained by the fact that offenders who pose a higher risk of recidivating are incarcerated for longer periods of time; however, the results also provide indirect support for Lemert's (1967) secondary deviance hypothesis.
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110


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