PUTTING CRIMINAL VIOLENCE INTO CONTEXT: A MULTI-LEVEL ANALYSIS OF THE CORRELATES OF VIOLENCE SEVERITY AMONG EARLY- AND LATE-START MENTALLY DISORDERED OFFENDERS

by

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A thesis submitted in conformity with the requirements for the Degree Doctor of Philosophy

Faculty of Social Work

University of Toronto

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Putting Criminal Violence into Context: A Multi-Level Analysis
of the Correlates of Violence Severity among Early- and
Late-Start Mentally Disordered Offenders

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Abstract

The current research utilizes a multi-level analysis of historical, clinical,
situational and neighbourhood factors to predict violence severity among persons with
major mental illness. In addition, it draws on the typologies of offenders proposed by
Moffitt (1993) and Hodgins and Janson (2002) to explore whether different predictors of
violence severity exist for early-start, persistent offenders and late-start offenders.
Finally, it compares early-start and late-start offenders with major mental illness to
determine if differences exist in their criminal history, clinical presentation, motive for
violence, crime-scene behaviours and neighbourhood backgrounds.

A retrospective chart review of a mental health court support program in Toronto,
Canada is utilized to explore the correlates of violence severity. Clinical charts and
supplemental arrest records are content analyzed to extract data on arrestee/offender
characteristics and on crime scene behaviours and tract-level data from the 2001 Canada
Census is used to identify structural features of the neighbourhood environment of
arrestees/offenders at the time of their arrest. Violence severity is measured using the
Cormier-Lang System of Quantifying Criminal History (Quinsey, Harris, Rice, & Cormier, 1998). In total 1806 charts were reviewed and 245 subjects were subsequently included within the analyses.

Using a variety of analytic techniques, the following results were obtained: 1) offense characteristics such as victim gender, victim-offender relationship, instrumental motive, and use of a weapon were the most robust predictors of violence severity while clinical factors such as diagnosis and comorbid clinical conditions were marginally significant predictors and historical factors such as previous violence and early-start offending were not significant predictors of violence severity; 2) context-specific measures accounted for more of the explained variation in violence severity than did individual-specific measures; 3) early-start and late-start offenders did differ with respect to history of violence, presence of a comorbid clinical condition such as a personality disorder or substance abuse and current life circumstances.

Implications for theory refinement, clinical practice and program development are discussed and future avenues of research are considered.
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Chapter 1: Introduction

Despite considerable progress in the assessment and treatment of mental illness, the stigma associated with having a mental illness remains significant. A recent survey of public opinion in Canada by the Canadian Medical Association (2008) found that 27% of Canadians are fearful of being around a person with serious mental illness. Persons with mental illness, especially those with psychosis, are often perceived to be violent (Monahan, Steadman, Silver, Appelbaum, Robbins, Mulvey et al., 2001). This perception has had a significant effect on mental health policy and practice and has guided the allocation of limited resources in the mental health and criminal justice systems (Canadian Institute for Health Information, 2009; Monahan et al., 2001).

Much research has focused on the possible link between mental illness and violence; however, while significant contributions have been made, the inquiry into the nature of this potential relationship has engendered disparate results which have yet to be reconciled. Consequently, much more research is needed. Such research is required to properly inform public perception to avoid stigmatizing persons with mental illness. Part of the reason for the lack of consistency among studies may be related to a focus on the clinical correlates of violence rather than on how clinical and environmental factors interact to increase or decrease the risk of violence and criminality by persons with mental disorder. Future research needs to look beyond diagnosis and clinical correlates of violence and consider the interplay of historical, situational, clinical and communal factors in explaining violence occurring among persons with mental illness. Such an understanding is pivotal to the formulation of appropriate and effective policies for the provision of mental health services aimed at preventing crime and violence and is necessary for matching patient need and treatment and for making decisions.
concerning managing any potential risk of crime and violence among persons with mental illness. This dissertation seeks to build on previous research by conducting a multi-level analysis of factors posited to be related to violence among persons with mental illness and by exploring the application of an ecological perspective to a typology of offending identified within the medical and criminological literature. It is hoped this research will provide information relevant to mental health clinicians working in criminal justice, correctional and forensic mental health settings.

**Statement of Problem**

The possible relationship between mental illness and violent and criminal behaviour has been the subject of considerable debate and controversy and the focus of extensive research. Over the last 20 years, the scholarly literature examining a possible association between mental disorder and crime has grown exponentially. The extant research has mapped out individual-level correlates and has begun to explore the community- and situational-level correlates to crime and violence. Researchers have also begun to consider interactions between individual characteristics and contextual factors in producing violence among persons with mental disorder (Steadman, Mulvey, Monahan, Robbins, Appelbaum, & Grisso et al., 1998; Steadman & Silver, 2000). To date, however, much of the research has focused on individual-level factors such as intrapsychic forces. Moreover, the research using multilevel analyses of the role of individual and contextual factors in predicting violence among persons with mental illness has tended to examine factors at two levels of analysis by exploring, for example, the role of clinical characteristics and neighbourhood structure in predicting violence (Silver, 2000a; 2000b; Silver, Mulvey & Monahan, 1999; Silver, Mulvey & Swanson, 2002) or by examining the role of clinical and situational
variables in predicting violence (Monahan et al., 2001; Steadman & Silver, 2000). However, a multilevel perspective which combines individual-, situational- and community-level factors would serve to optimize explanatory power (Sampson & Lauritsen, 1994). A further benefit of a multi-level perspective is the potential for progress toward the goal of theoretical integration across fields such as criminology, psychology and social work.

Much of the research to date has also operationalized violence as if it were a homogeneous construct, using logistic regression analyses to identify the relationship and predictive power of various offender background variables as predictors of violence. However, while useful in identifying factors relevant for future research, placing all violent behaviours on an equal footing may mask differences among predictors across different types or degrees of violence. That is, factors associated with one type of violence may not be the same as those associated with another (Côté, 2000). There is a need for further research on violence among persons with mental disorder which operationalizes violence as a heterogeneous construct that varies in degrees of seriousness.

In addition to lumping different types of violence together much of the research has also tended to lump together all persons with major mental disorder (e.g. Swanson, Holzer III, Ganju, & Jono, 1990; Hodgins, 1992) or all individuals within a diagnostic category (e.g. Lindqvist & Allebeck, 1990; Wessely, 1998; Wessely, Castle, Douglas, & Taylor, 1994). However, there may be distinct groups within these clinical categories. For example, Hodgins and colleagues (1998; 2002) suggest that criminality conceals two distinct groups of mentally disordered offenders: early-start offenders and late-start offenders. It has been hypothesized that the relationship between mental disorder and
criminal behaviour may be different for the two groups (Hodgins et al., 1998). It is posited that early-start offenders begin offending prior to the onset of symptoms of a major mental disorder whereas late-start offenders begin offending in adulthood after the onset of such symptoms. For early starters the aetiology of offending may be related to the presence of anti-social personality traits whereas for late starters offending may be a direct consequence of the symptoms of a serious mental disorder. To date, however, few studies have examined the characteristics and behaviour of early-start and late-start offenders with major mental disorder. Further research is required to determine if different predictors of violence exist for the early-start and late-start offenders with major mental disorder.

This study builds on previous efforts to integrate knowledge across different levels of analysis through a multi-level study of historical, clinical, situational and communal factors which may predict severity of violence among persons with major mental disorder. It also explores whether contextual factors add to the explanatory power of individual-level factors in predicting the severity of violence committed by individuals with mental disorder. In addition, it explores whether different predictors of serious violence exist for the early-start and the late-start mentally disordered offender groups. Finally, it compares early-start and late-start offenders with major mental disorders to determine if differences exist in their criminal history, clinical presentation, motive for violence, crime-scene behaviours and neighbourhood backgrounds.

Research Questions

This dissertation seeks to address four interrelated questions:
1) What factors related to clinical presentation, crime-scene setting, current life circumstances, neighbourhood residence and criminal history are associated with increased severity of violence among persons with major mental disorder?

1) What is the relative importance of contextual and individual level characteristics in terms of the amount of variation in severity of violence by persons with mental disorder?

3) Are there different individual- and contextual-level predictors of severity of violence for early-start as opposed to late-start offenders with major mental disorder?

4) How do early-start and late-start offenders with major mental disorder compare with regard to clinical presentation, crime-scene behaviour, current life circumstances, neighbourhood background and criminal history?

**Significance of Study**

A contribution of the current study to the research literature is to apply an ecological and situational perspective to a sample of mentally disordered persons derived from a criminal justice context in order to explore factors associated with violence. While previous research has examined the effect of neighbourhood structure (e.g. Silver 2000a) or the influence of situational precursors of violence among persons with mental illness (e.g. Steadman and Silver, 2000), this research has been undertaken with discharged psychiatric patients. Though the research to date has advanced knowledge about the contextual correlates of violence among persons with mental disorder discharged from psychiatric hospital; the findings from these studies may not be generalizable to individuals in forensic, judicial or correctional settings. Côté and colleagues (1997) compared persons with mental illness in prison settings and
psychiatric in-patients and found the two groups were clinically distinct, with the prison subsample more likely to have a comorbid disorder such as a substance abuse disorder, personality disorder or anxiety disorder. In like manner, criminal justice samples may be distinct from hospital samples with regard to the influence and role of contextual factors as precipitants of violent behaviour. By identifying the context in which serious violence is more likely to occur among persons with mental illness involved in the criminal justice system, we may consider how the risk of violence may be attenuated by modifying the proximate and distal contextual factors or by targeting individuals’ response to criminogenic environments. Such information is relevant for social workers operating in detention, correctional or forensic mental health facilities as discharge planners as well as court-based and community-based mental health workers providing services to mentally ill persons involved in the criminal justice system.

Prior research on violence among persons with mental disorder has also tended to examine factors at one or perhaps two levels of analysis. A second contribution of the current study is the utilization of a multi-level analysis consisting of individual-, situational- and neighbourhood-level characteristics to examine violence severity among persons with serious mental illness. In so doing, it builds on the relative dearth of existing research exploring how contextual influences interact with individual characteristics in the occurrence of serious violence among persons with mental illness. The simultaneous consideration of these levels of analysis will provide a more complete framework for studying the clinical and contextual aspects of violence among persons with mental disorder. The more we can integrate levels of explanation (i.e. individual, community and situational factors), the deeper our understanding of the phenomena of violence among persons with mental disorder will become and
consequently the more able we will be to propose and test strategies of intervention and rehabilitation that contribute to the prevention of violence.

Another contribution of the current research is its conceptualization and operationalization of violence along a continuum of severity. Whereas previous research has tended to dichotomize the construct of violence as present or absent and explored correlates of different categories of violence (e.g. serious violence versus minor violence versus any violence), the current study operationalizes violence as a continuous variable. This conceptualization and operationalization of violence enables examination of the relationship between violence risk factors and increasing levels of violence severity. With limited intervention resources available, identification of factors related to more serious violence may in future enable matching the level and intensity of intervention to the level of seriousness of the potential violence.

Finally, the current research attempts to integrate social ecological and situational theories of crime with developmental typologies of offenders by using a multi-level ecological framework to examine differences in violence severity among early-start and late-start offenders among persons with serious mental illness. Such integration may assist to address prior inconsistencies in results across studies of violence and mental disorder.

**Organization of Chapters**

Chapter Two of this dissertation reviews the empirical literature on crime and violence among persons with mental disorder. This literature review is organized into four sections representing research on four broad categories of factors associated with violence: demographic variables, historical variables, clinical variables and contextual variables. Chapter Three provides an overview of developmental and ecological theoretical models of
crime and violence and presents a broad conceptual framework that encompasses key components from these criminological theoretical models as well as hypotheses which test the relationship of the relevant constructs within the posited framework to violence severity. Chapter Four describes the data collection procedures, operationalization of measures and statistical procedures used in the analyses. Chapter Five describes the development of a data extraction instrument used to collect data from the clinical charts of a mental health court support program and provides the results of a pilot study testing the inter-rater reliability of items within the data extraction instrument. Chapter Six describes the methods used to handle missing data and provides descriptive statistics for the study sample. Chapter Seven presents results addressing each of the four research questions outlined above and examines differences among cases included in the study to those excluded from the study due to missing data or outlier values. Finally, Chapter Eight discusses the implications of the results for clinical practice and for future research.
Chapter 2: Review of Empirical Literature

Over the past 20 years, much research has been conducted on the relationship between mental disorder and crime and violence. This chapter provides a comprehensive and critical assessment of the existing empirical literature on the correlates of crime and violence among persons with mental disorder and a detailed discussion of the gaps and inconsistencies within the literature. It attempts to reconcile disparities across studies by taking into account methodological differences and by considering the potential role of confounding factors. It also identifies areas for further research that are needed for the development of our understanding of the nature of the relationship of mental disorder to crime and violence. To facilitate this review, the literature is organized into four sections that encompass research on variables that fall into one of the following four domains: demographic variables, historical variables, clinical variables, and contextual variables.

Demographic Variables

There are a number of demographic variables considered within the literature to be of interest in understanding any potential relationship between mental disorder and violent or criminal behaviour. Foremost among these is biological sex. In the general population, males are much more likely than females to engage in violent and criminal behaviour (Bonta, Law, & Hanson, 1998; Gendreau, Little, & Goggin, 1996). However, among psychiatric populations, this sex effect is less clear. For example, in community-based epidemiological studies of self-reported violence and in studies of criminality among persons with mental disorder, male sex is a significant predictor of violent and criminal behaviour (Bonta et al., 1998; Elbogen & Johnson, 2009; Hwang & Segal, 1996; Lovell, Gagliardi, & Peterson, 2002; Solomon & Draine, 1999; Stueve & Link, 1998; Swanson et
al., 1990; Wessely et al., 1994); however, among retrospective and prospective studies of violence utilizing samples of psychiatric patients recently admitted or recently discharged from hospital, males were no more likely to be violent than females (Hiday, Swartz, Swanson, Borum, & Wagner, 1998; Robbins, Monahan, & Silver, 2003). Some studies have explored the relative effect of mental disorder on each sex’s potential for criminality and found that mental disorder had more of an effect on the criminal-potential of females than of males. For example, a number of patient cohort studies using data obtained from psychiatric case registries and criminal record registries found that the crime rate among males with schizophrenia was almost the same as that of males with other mental disorders (Wessely et al., 1994) or that of the general male population (Lindqvist & Allebeck, 1990; Modestin & Ammann, 1995); conversely, the crime rate among females with schizophrenia was two to four times higher than that of females with other mental disorders (Wessely et al., 1994) or no mental disorder (Lindqvist & Allebeck, 1990; Modestin & Ammann, 1995; Wessely et al., 1994). Among individuals with a major mental illness, Hodgins (1992) found that males’ risk of criminality increased twofold and that of females increased fivefold while Fazel and Grann (2006) found the risk of criminal violence among males with schizophrenia or other psychotic disorders increased fourfold and that of females increased sixfold. Similarly, among homicide offenders the risk of homicide based on diagnosis was found to be substantially greater among females in most diagnostic categories than among males (Eronen, Hakola, & Tiihonen, 1996; Tiihonen, Eronen, & Hakola, 1993). Sex differences have also been found in the severity and consequences of violence perpetrated by persons with mental disorder, with males more likely to commit serious injury and to be arrested (Hiday et al., 1998; Robbins et al., 2003).
Conceivably, the confluence of two phenomena may explain the mixed findings relating to the role of biological sex as a determinant of crime and violence among persons with mental disorder. First, it is possible that police are more likely to lay criminal charges against males than females for delinquent behaviour. Busfield (1996) posits that deviant behaviour is apt to be framed as criminal when perpetrated by males and as psychopathological when perpetrated by females. Alternatively, men may be more likely to be arrested because the violence they commit is more likely to lead to serious injury. This may explain the elevated arrest rates among males with mental disorder. Second, it is possible that biological sex is a powerful risk factor among offender populations and community samples but a less robust predictor among hospitalized patient samples which include subjects who are typically acutely ill. That is, symptom risk factors may mask or overshadow sex effects. Further research is required to untangle the potential interactive effect of biological sex on the relationship between mental disorder and violent and criminal behaviour.

Like biological sex, age is another risk factor for violence as well as criminal behaviour in the general population (Gendreau et al., 1996). When official rates of crime are plotted against age, the rates for both prevalence and incidence of offending appear highest during adolescence and young adulthood but drop precipitously thereafter (Moffitt, 1993). Age also appears to be a risk factor for persons with mental disorder. Individuals with mental disorder in their late teens and early twenties are at the highest risk for criminal and violent behaviour (Bonta et al., 1998; Feder, 1991; Hodgins, 1992; Steadman, Silver, Appelbaum, Robbins, Mulvey, Grisso et al., 2000; Swanson, 1993; Swanson, Borum, Swartz, & Hiday, 1999; Swanson et al., 1990; Warren, Hurt, & Loper, 2002). However,
this age effect may be moderated by the presence of psychiatric symptoms. For example, in a 30-year retrospective birth cohort study (N = 15,117), Hodgins (1992) found that young age was a predictor of criminal behaviour and that criminality among males with no mental disorder decreased with age; however, she also found that a significant number of males with major mental illness began their criminal careers across all age groups. As with biological sex, the age effect may be eclipsed by symptom risk factors (Otto, 2000).

Race is a third demographic variable associated with arrests for violent crime in the criminological literature (Gendreau et al., 1996). Studies of patients and of mentally ill offenders have found a correlation between race and violence, with African Americans having higher rates than Caucasians (Bonta et al., 1998; Grisso, Davis, Vesselinov, & Appelbaum, 2000; Hiday et al., 1998; Warren, Hurt, et al., 2002). However, the effect of race appears to be moderated by other factors. For example, Silver (2000b) found the relationship between race and violence among psychiatric patients was eliminated when the variable neighbourhood disadvantage was considered. Similarly, Swartz and colleagues (1998b) and Hiday and colleagues (1998) found that African Americans were at greater risk for perpetrating violence but only when they themselves have previously been the victims of violence. It is possible that these two moderating variables (i.e., neighbourhood disadvantage and victimization) may be interrelated. That is, victimization may be a common experience among persons living in disadvantaged neighbourhoods. Further, victimization may not be an individual level risk factor linking mental disorder and violence, but rather a measure of deleterious environmental conditions (Hiday, Swanson, Swartz, Borum, & Wagner, 2001). Further research is required to ascertain whether the connection between race and violence by persons with
mental disorder is contextually driven and possibly a product of socioeconomic factors (Otto, 2000).

The connection between socioeconomic status (SES) and criminal and violent behaviour among individuals with mental illness appears complex. Within the criminological literature, SES is modestly correlated with risk of criminal recidivism. In a meta-analysis of the predictors of recidivism among general offender populations, Gendreau and colleagues (1996) found SES is a weak predictor ($r = .05$). Within the literature relating to mentally ill persons, however, the association is less clear. Bonta and colleagues (1998) found no relationship between SES and general or violent recidivism. In contrast, however, Swanson and colleagues (1990) found a relationship between violence and SES and Stueve and Link (1997) found that weapons use among persons with psychotic or bipolar disorders was related to SES. This variation may be a product of the potential differential role SES plays in different populations (e.g., mentally disordered offenders versus community samples of mentally ill persons). Alternatively, it may be an artifact of the manner in which SES is operationalized. For example, Bonta and colleagues undertook a meta-analysis of predictors of criminal recidivism and did not indicate how SES was defined presumably because its operationalization varied among the studies they included in their analysis. By comparison, Swanson and colleagues combined information about respondents’ occupation status, education level and household income whereas Stueve and Link (1997) used years of education as a proxy for SES. Another possibility is that any potential relationship between SES and criminality or violence is mediated by other factors. For example, Silver, Mulvey, and Monahan (1999) found SES was less predictive of violence than was neighborhood poverty.
Further research is required using various indexes of SES to ascertain any relationship it has with criminality and violence among mentally ill persons.

**Historical Factors**

Prior violence and criminality have been found to be the best predictors of future violence and criminality within the criminological literature (Gendreau et al., 1996). Similar relationships have been found among mentally disordered offender samples (Bonta et al., 1998; Feder, 1991; Harris, Rice, & Quinsey, 1993; Phillips et al., 2005; Porporino & Motiuk, 1995; Rice, Harris, Lang, & Bell, 1990), hospital-discharged patient samples (Elbogen, Swanson, Swartz, & Van Dorn, 2005; Satsumi, Inada, & Yamauchi, 1998; Steadman et al., 2000), patient cohorts (Wessely, 1998; Wessely et al., 1994), mental health outpatient service user samples (Brekke, Prindle, Bae, & Long, 2001; Hwang & Segal, 1996) and community-based epidemiologic samples (Elbogen & Johnson, 2009; Swanson, 1993). Prior arrests, prior convictions, and self-reported prior violence are highly predictive of future offending and violence. Moreover, recent time series models provide evidence of an association between past violence and subsequent violence over relatively short time periods. Skeem and colleagues (2006) found that a violent incident increased the odds of violence occurring in the following week by 1.4 times whereas Mulvey and colleagues (2006) found violence reported on any given day increased the odds of violence occurring on the next day by 5.4 times. In both studies, participants were sampled from among patients who were evaluated in the emergency room of an urban psychiatric hospital and were selected using a prescreening procedure because of their high potential for repeated involvement in violence. Participants were limited to individuals aged 14-30 who did not present with delusions or carry a diagnosis
of schizophrenia but endorsed heavy substance use and a recent history of violence (within prior two months).

A history of delinquency prior to adulthood has also been found to be a significant factor related to violence and criminality. This is borne out in both non-disordered offender samples (Gendreau et al., 1996), mentally disordered samples (Hodgins & Janson, 2002; Solomon & Draine, 1999; Tengström, Hodgins, & Kullgren, 2001) and community epidemiological samples (Elbogen & Johnson, 2009). For example, among mentally disordered samples, juvenile delinquency (Bonta et al., 1998; Solomon & Draine, 1999), early arrests (Rice et al., 1990; Tengström et al., 2001), and young age at index offense (Harris et al., 1993; Hodgins & Côté, 1993) have been found to be robust predictors of criminality and violence. Similarly, among a community epidemiological sample, detention in a juvenile correctional facility was related to increased risk of violence (Elbogen & Johnson, 2009). Hodgins and colleagues have suggested that there are two distinct groups among persons with major mental disorder who come into conflict with the law (Hodgins, 1998; Hodgins & Côté, 1993; Hodgins et al., 1998; Hodgins & Janson, 2002). One group is composed of individuals who are convicted of offenses in early adolescence, probably before the symptoms of major mental disorder were evident, and display a stable pattern of persistent antisocial behaviour from a young age. A second group is composed of individuals who began offending in adulthood and display an episodic pattern of offending. These two groups have been referred to as early-starters and late-starters, respectively (Hodgins, et al. 1998; Hodgins and Janson 2002). There is some evidence to suggest that the sub-group of persons who develop major mental disorders and display antisocial behaviour from a young age have a comorbid diagnosis of antisocial personality disorder.
(ASPD) and/or elevated levels of psychopathy (Hodgins & Côté, 1993; Tengström et al., 2001), both of which are known correlates of criminality (discussed in the Clinical Variables section below). It is possible that the episodic pattern of offending among late-starters is a result of an exacerbation of psychiatric symptoms which are ephemeral in nature (Hodgins et al., 1998). Tentative support for this theory can be found in a study by Taylor and colleagues (1998). In a survey of the clinical records of 1740 patients of a high security hospital, she found that delusions and hallucinations were more related to pre-admission criminal violence in individuals with psychosis who did not have a secondary diagnosis of personality disorder compared to those who did. However, in a chart review of 109 homicide offenders diagnosed with schizophrenia, Laajasalo and Häkkänen (2005) did not find a difference between the early-start and late-start group in the presence of delusions or hallucinations at the time of the offense. Further research is required to ascertain any potential relationship between psychotic symptomatology and violence in the late-start group.

Additional historical factors identified in the research literature as possibly related to violence by persons with mental disorder relate to parental factors. Parental crime was found to be related to violent recidivism among mentally disordered offenders and to self-reported violence among psychiatric patients discharged from hospital (Harris et al., 1993; Monahan et al., 2001; Rice et al., 1990; Steadman et al., 2000). Similarly, parental substance abuse has also been found to be associated with crime and violence. For instance, parental alcohol abuse was found to be associated with violence among post-discharge psychiatric patients and mentally disordered offenders (Harris et al., 1993; Monahan et al., 2001; Rice et al., 1990; Steadman et al., 2000). Father’s excessive drug use
was found to be associated with violence among discharged psychiatric patients, though the association was stronger for white patients than for African American patients. The effect of excessive maternal drug use was found to interact with patient biological sex, with all of the effect taking place for males and none occurring for females (Monahan et al., 2001). Parental substance abuse was also found to impact upon the frequency of violence and criminality among persons with mental disorder (Tengström et al., 2001). Separation from parents before the age of 16 also predicted violent recidivism among mentally disordered offenders (Harris et al., 1993; Rice et al., 1990); conversely, having lived with either parent until age 15 was associated with a decreased rate of violence among psychiatric patients discharged from hospital. In addition, witnessing parents physically fighting prior to the age of 18 was found to increase the risk of violence among persons with serious mental illness in a community epidemiological sample (Elbogen & Johnson, 2009). Finally, parental socioeconomic status was found to be negatively associated with violence among mentally disordered offenders (Rice et al., 1990) and with criminality among females with major mental disorder (Hodgins, 1992). These findings demonstrate the conditional nature of many of the relationships between specific childhood experiences and later violence and criminality.

Other childhood experiences identified as affecting subsequent violent behaviour and criminality among persons with mental disorder relate to childhood abuse. Mixed results have been found regarding the association of serious physical abuse as a child and violence in adulthood among mental health patients. For example, Monahan and colleagues (2001) found that the seriousness and frequency of prior childhood physical abuse was positively associated with an increased rate of postdischarge violence (OR =
1.50 and 1.40 respectively). By comparison, Swanson and colleagues (2002) found that early victimization was only related to violence if accompanied by victimization after the age of 16. This possible interactive effect of childhood abuse and adult victimization on violence was not tested in the study by Monahan and colleagues (2001).

Mixed results have also been found regarding the association between childhood sexual abuse and violence. Experiences of sexual abuse as a child was not found to be associated with violence among patient groups (Monahan et al, 2001; Swanson et al., 2002); however, it was found to be related to institutional violence among incarcerated mentally disordered female offenders (Warren, Hurt, et al., 2002). Warren and colleagues (2002) did not control the potential mediating effect that comorbid personality disorder may have upon the association between childhood sexual abuse and adult violence. Further research is required to examine the interrelationship of personality pathology, childhood sexual abuse, and violence in adulthood by persons with mental disorder.

The experience of being a victim of violence as an adult has also been found related to violence among mentally ill persons. Swanson and colleagues (2002) found that physical abuse occurring after the age of 16 was significantly associated with violent behaviour (OR = 5.91) in the previous year but only if victimization also occurred before the age of 16. As noted above, others found that the effect of victimization on violence was limited to African American mentally ill subjects (Hiday et al., 2001; Hiday et al., 1998; Swartz et al., 1998b). African Americans with mental disorder experiencing previous victimization were approximately four times more likely to have engaged in serious violence than whites with no endorsed history of victimization. However, African Americans who were not victimized were less likely than whites with no
victimization to be violent. Recent research has found an association between victimization and aggressive behaviour. Using a retrospective survey and chart review of individuals with serious mental illness admitted to an inpatient unit, Hodgins and colleagues (2007) found that risk of violent victimization in the previous six months was increased (OR = 6.57) by having engaged in violent behaviour in the same period. Research has not yet ascertained what role victimization plays in non-violent criminality.

**Clinical Factors**

The importance of psychopathology in explaining criminal and violent behaviour among persons with mental disorder is an issue of considerable empirical complexity. A substantial amount of research has explored this issue. Studies have been conducted using both cross-sectional and longitudinal designs and have included samples of the general population, birth cohorts, psychiatric patients, and incarcerated offenders. Yet, the empirical literature yields equivocal findings.

A number of studies have found a relationship between mental disorder and criminality or violence. For example, in a series of birth cohort studies conducted in Scandinavian countries, persons who developed major mental disorder (MMD) were at increased risk (OR=2.6 - 8.7) across their lifespan for committing non-violent and violent crime (Hodgins, 1992; 1998; Hodgins, Mednick, Brennan, Schulsinger, & Engberg, 1996; Tiihonen, Isohanni, Räsänen, Koiranen, & Moring, 1997). It is important to note, however, that while these studies found an increased relative risk of criminality among persons with major mental disorder, the absolute risk of crime among persons with major mental disorder is relatively modest. In a population case register study in Sweden covering the period 1988-2000, Fazel and Grann (2006) found that the overall crude odds
ratio for patients with severe mental illness acquiring violent convictions during the study period was 3.8 but the population attributable risk fraction of these patients to violent crime was 5.2 per cent (i.e., these patients accounted for 5.2 per cent of all violent crime during the study period). Support for a modest association between major mental disorder and violent behaviour has also been found in community-based epidemiological studies (Corrigan & Watson, 2005; Stueve & Link, 1997; Swanson, 1993; Swanson et al., 1990). Similarly, some studies of persons with mental disorder using outpatient mental health services (Link, Andrews, & Cullen, 1992) and inpatient mental health services (Modestin & Ammann, 1995) found users of these services had a higher percentage of violent and illegal behaviours than never-treated community residents. Finally, some studies estimating the prevalence of major mental disorder among male offenders have found that rates of such disorders exceed those of men in the general population (Côté & Hodgins, 1990) and that rates of major mental disorder among homicide offenders in particular, both male and female, exceed those for the general population (Eronen et al., 1996; Tiihonen et al., 1993).

There is also a considerable amount of evidence to discount suggestion of any relationship between mental disorder and crime or violence. In studies examining rates of recidivism among mentally disordered and non-disordered offenders, major mental disorder has been found to be either unrelated or inversely related to recidivism (Bonta et al., 1998; Harris et al., 1993; Phillips et al., 2005; Porporino & Motiuk, 1995; Rice & Harris, 1995; Rice et al., 1990; Villeneuve & Quinsey, 1995). In a longitudinal epidemiological study of a community sample of 34 653 individuals, Elbogen and Johnson (2009) found no direct relationship between serious mental illness and violence.
Similarly, in a study of patients utilizing mental health services, Fulwiler, Grossman, Forbes, and Ruthazer (1997) found no difference in the rate of violence between patients with major mental disorder and those with other mental disorders. By comparison, Monahan and colleagues (2001) found an inverse relationship. Asnis, Kaplan, van Praag, and Sanderson (1994) did not find any difference among patients engaging in attempted homicide on the basis of diagnosis.

Other studies found mixed results. Eronen and colleagues (1996) found males with schizophrenia were at elevated risk for homicide but individuals with bipolar disorder or major depression were not. By comparison, Solomon and Draine (1999) found that only mania was associated with a greater number of lifetime arrests among mentally disordered offenders on probation. In a twin study, Coid, Lewis, and Reveley (1993) found that male probands with schizophrenia were more likely than probands with affective psychosis to have a criminal record. Conversely, Hodgins, Lapalme, and Toupin (1999) found in a two-year follow up of psychiatric patients discharged from hospital that those with major affective disorders were twice as likely to be convicted of any offence than those with schizophrenia while Corrigan and Watson (2005) found in an epidemiological study that individuals with major affective disorders were two to six times more likely to have engaged in violence in the previous year. By comparison, Modestin and Wuermle (2005) found that individuals with schizophrenia were at increased risk of violent criminality but individuals with affective disorders had a greater probability of committing property offenses. Still, other studies of violence among hospital discharged mental health patients found no difference in the rates of violence between patients with major affective disorders and schizophrenia (Swanson et al., 1999;
Swartz et al., 1998b). Mixed results have also been found within diagnostic categories. Wessely (1998), Wessely and colleagues (1994) and Lindqvist and Alleback (1990) found the overall crime rate among males with schizophrenia to be the same as that in the general population but violent crime was higher among males with schizophrenia. Female cases had a higher overall crime rate and a higher violent crime rate than females from the general population.

The reasons for these disparities may be manifold. First, the differences in findings across studies may be methodologically-based. Some of the divergence in the findings may be related to how major mental disorder is operationally defined and measured across studies. For example, in some studies, major mental disorder refers to schizophrenia-spectrum disorders, bipolar disorder, and major depression (Hodgins, 1992; Hodgins & Côté, 1993; Hodgins et al., 1996), in others it is limited to schizophrenia and affective psychosis (Belfrage, 1998; Coid et al., 1993), and in still others it includes a broader category of diagnoses (e.g., schizophrenia, schizophreniform, schizoaffective disorder, depression, dysthymia, mania, cyclothymia, brief reactive psychosis and delusional disorder) (Steadman & Silver, 2000). In addition, diagnoses are not always made using standardized measures, and some instruments have not been validated for use with specific populations. For example, birth cohort studies often rely upon the discharge diagnosis provided to patients leaving hospital rather than a diagnosis obtained with a standardized measure. In addition, studies of the prevalence of mental disorder among offender samples often rely upon the Diagnostic Interview Schedule (DIS), a diagnostic instrument which may have limitations when used with offender populations. The DIS was designed to be used with subjects who participate in good faith with the research interview and who do not
have anything to gain or lose by participating in the interview (Hodgins, 1995). As such, it may not provide a valid measure of mental disorder among prison inmates and jail detainees who may be motivated to maligner by a desire to avoid criminal sanction or obtain benefits bestowed mentally ill inmates. In addition, the DIS was not developed to diagnose MMD when multiple disorders are present yet some studies of offenders suggest that many have multiple mental disorders (Côté & Hodgins, 1990; Tiihonen et al., 1993; Warren, Burnette et al., 2002). Similarly, the manner in which violence and criminality is measured may also account for the inconsistency of the findings. For example, reliance on official crime records may result in reporting biases as not all crimes are reported and individuals engaged in antisocial behaviour recognized as mentally ill may be diverted to the mental health system in lieu of arrest or prosecution (Arbóleda-Florez, Holley, & Crisanti, 1998; Hodgins, 1998; Teplin, 1990). In addition, criminal history data provide an inadequate measure unless the data are corrected for the time at risk—that is the time the subject is not in hospital, jail, or prison and therefore able to engage in crime or violence in the community (Teplin, Abram, & McClelland, 1996). Moreover, some measures of self-reported violence lacked specificity and consequently a single violent event could be recorded as multiple events (e.g., a single occurrence could involve the use of a weapon, fighting, and threats but could be recorded as three separate events though each occurred within a single context and at a single point in time) (Côté, 2000).

Another methodological factor which may account for the discrepancy in findings is the heterogeneity of the samples. Studies have included samples of the general population, birth cohorts, psychiatric patients, and incarcerated and non-incarcerated offenders. All the studies are subject to selection bias. Community-based epidemiological studies such as the
Epidemiological Catchment Area study (Swanson et al., 1990) and the National Epidemiologic Survey on Alcohol and Related Conditions (Elbogen & Johnson, 2009) may underestimate the true prevalence of violence and criminality among persons with mental disorder as individuals who are incarcerated or hospitalized would not be included in the sampling frame. Conversely, studies of hospitalized patients or incarcerated offenders may overestimate the true association between mental disorder and criminality and violence as individuals who are aggressive may be expected to be selected into a patient group by being hospitalized or an offender group by being incarcerated (Eronen, Angermeyer & Schulzer, 1998). Birth cohort studies (e.g., Hodgins, 1992; Hodgins et al., 1996; Tiihonen et al., 1997) relying on case tracking through official population registries (i.e., hospital records registries and criminal records registries) could overestimate the potential association, as only individuals who are hospitalized would be included, but could also potentially underestimate the true rate due to reliance on official crime records as a measure of violence and criminality (Wessely, 1998).

It is also important to consider the context within which these studies are conducted. If the level of violence and crime among mentally disordered persons were more or less constant across countries, the relative magnitude of the association between violent and delinquent behaviour and mental disorder would be contingent upon the level of crime existing within the specific country under study (Hodgins, 1998). For example, most of the birth cohort studies have been conducted in Scandinavian countries which have a low crime rate and relatively uniform prosperity. Given the relatively low crime rate, persons with mental disorder may appear to be at an elevated risk of criminality relative to the general population. However, in countries like the US, which have high overall crime
rates, the relative importance of mental disorder is apt to be understated given that crime is more pervasive.

Similarly, it is also important to consider the comparison group used within studies. For example, persons with major mental disorders may have a lesser rate of criminality and violence than incarcerated offenders but a greater rate of criminality and violence than persons with no mental disorder at all (Monahan et al., 2001). Consequently, when persons with psychosis are matched against persons who have a very minimal risk of committing offenses or violence, as in epidemiological research, a positive relationship is found; when they are matched against high-risk offenders, most of whom have a personality disorder, a negative association is found. Another related methodological issue is the difficulty of studies in providing controls drawn from the same neighbourhoods as test cases (Wessely, 1998). As is noted below, contextual variables related to neighbourhood disadvantage appear to influence the relationship between mental disorder and criminality and violence.

The lack of continuity in the research findings may also be a product of confounding or intervening variables which are not controlled across studies. A number of factors, some alluded to above, may account for the disparity in results. Key among these is the presence of a personality disorder. Though most studies do not control for the presence of a comorbid personality disorder among samples, a number of studies have found a significant relationship between violent and delinquent behaviour and personality disorder (Eronen et al., 1996; Harris et al., 1993; Kjelsberg, 2004; Modestin & Ammann, 1995; Phillips et al., 2005; Putkonen, Kotilainen, Joyal, & Tiihonen, 2004; Rasmussen & Levander, 1996; Rice et al., 1990; Stuart & Arbóleda-Florez, 2001; Warren, Burnette et al., 2001).
In particular, antisocial personality disorder (ASPD) is an especially important diagnostic category in predicting criminality and violence among persons with mental disorder. Persons who meet the diagnostic criteria for this disorder are typically characterized by a history of impulsive, social convention-breaking, rule-breaking, and law-breaking behaviour. A considerable number of incarcerated offenders and jail detainees have been found to meet the criteria for ASPD (Côté & Hodgins, 1990; Jordan, Schlenger, Fairbank, & Caddell, 1996; Teplin, 1994; Teplin, Abram, & McClelland, 1996). Côté and Hodgins (1990) found that ASPD and substance abuse were the most common diagnoses and the most common co-occurring disorders among male incarcerated offenders. Similarly, Putkonen and colleagues (2004) found that ASPD and substance abuse were the most common co-occurring disorders among homicide offenders with major mental illness. ASPD was found to be a significant predictor of violent and non-violent recidivism among male mentally disordered and non-disordered offenders (Bonta et al., 1998), and was found correlated with violence prior to arrest (Warren, Hurt et al., 2002) and with violence within correctional settings (Warren, Burnette et al., 2002) among female incarcerated offenders. In studies of homicide offenders, ASPD was found to increase the risk of committing homicide from between ten-fold for males to more than 50-fold for females (Erronen, Haloka & Tiihonen, 1996). In addition to mentally disordered offender samples, anti-social personality disorder has also has been associated with criminal and violent behaviour among patient (Crocker et al., 2005; Hodgins et al., 1999) and epidemiological samples (Link, Monahan, Stueve, & Cullen, 1999). These findings help to explain results of studies in which major mental disorder was found unrelated or inversely related to violence and criminality. Many of these studies drew on offender samples which
have a high prevalence of individuals with ASPD. Consequently, it is quite plausible that the presence of ASPD among control subjects in studies of mentally disordered offenders served to conceal the effect of major mental disorders on violent and delinquent behaviour.

Conduct disorder, a clinical precursor to ASPD, is another covariate predictive of adult criminality and violence. Hodgins and colleagues (2008) examined the association between a diagnosis of conduct disorder (CD) prior to the age of 15 (a necessary but not sufficient criterion for ASPD) and aggressive behaviour and criminality in a sample of severely mentally ill inpatients and found CD prior to age 15 was associated with an increased risk of assault over the lifespan (OR = 3.98), aggressive behaviour in the previous 6 months (OR = 2.66) and convictions for violent crimes (OR = 2.50) and non-violent crimes (OR = 3.19), after controlling for age, biological sex and alcohol and drug use. In addition, a dose-response was found whereby each symptom of CD prior to age 15 was associated with an increase in the risk of serious assault over the lifespan and an increase in the risk of assaults in the past six months.

Psychopathy is also an important personality construct that is not often controlled for but has been found to be robustly correlated with persistent criminality and violence. Psychopathy is a clinical construct often used in forensic contexts referring to a constellation of affective, interpersonal and behavioural characteristics, including grandiosity, shallow affect, lack of empathy, guilt or remorse, manipulativeness, and adult and adolescent anti-social behaviour. It was found to be the strongest predictor of violence in longitudinal studies of mentally disordered offenders (Harris, Rice, & Cormier, 1991; Harris et al., 1993) and civil psychiatric patients (Monahan et al., 2001; Steadman et al., 2000). Further, even individuals who did not meet the full criteria for a diagnosis of
psychopathy but who had elevated scores on the Psychopathy Checklist—Shortened Version (PCL-SV), a measure of psychopathy, were found to be at elevated risk of violence (Skeem & Mulvey, 2001). Thus, psychopathy may overshadow the effects of other mental disorders like schizophrenia in violence toward others. Though persons with schizophrenia may be at elevated risk of violence, when compared to individuals with psychopathy (or with elevated scores of psychopathy) they may appear to be at reduced risk.

In addition to comorbid personality disorder, psychiatric comorbidity generally may explain some of the divergence across studies. Most studies do not control for comorbidity, in fact, a number use a hierarchical approach of diagnostic categorization whereby individuals are placed in one diagnostic category according to an established hierarchy of diagnoses (Grisso et al., 2000; Hodgins, 1992; Hodgins et al., 1996; Silver, 2000b; Steadman & Silver, 2000). Yet, especially among incarcerated mentally disordered offenders, comorbidity is quite common (Côté & Hodgins, 1990; Rasmussen & Levander, 1996). Failure to control for comorbidity may confuse the effects of specific disorders. In addition, comorbidity is a relevant construct as it may be a proxy indicator of the severity of psychopathology present (Swanson et al., 1990) which itself may be related to elevated risk of violence. For example, in the epidemiological studies, higher rates of violence were found among persons with multiple diagnoses (Corrigan & Watson, 2005; Swanson et al., 1990).

A particularly important class of comorbid disorders known to increase the risk of violence and criminality among persons with mental disorder (as well as non-disordered persons) is substance abuse disorders. Across sample groups, substance abuse or dependence was the most consistent predictor of violence or criminality among persons
with mental disorder (Bonta et al., 1998; Corrigan & Watson, 2005; Elbogen & Johnson, 2009; Eronen et al., 1996; Estroff, Swanson, Lachicotte, Swartz, & Bolduc, 1998; Fulwiler et al., 1997; Grisso et al., 2000; Harris et al., 1993; Hartwell, 2004; Hodgins, 1992; Link et al., 1999; Modestin & Ammann, 1995; Räsänen, Tiilikonen, Isohanni, Rantakallio, Lehtonen, & Moring, 1998; Rice & Harris, 1995; Rice et al., 1990; Silver et al., 1999; Steadman et al., 1998; Steadman et al., 2000; Swanson, 1993; Swanson et al., 1999; Swanson et al., 1990; Swartz et al., 1998a; Swartz et al., 1998b; Teplin, 1994; Tiilikonen et al., 1993; Tiilikonen & Hakola, 1994; Wessely et al., 1994). The combination of drug and alcohol abuse was found to be the best predictor of violence, (Modestin & Ammann, 1995; Swartz et al., 1998a) and subjects with alcohol or drug abuse were found to have the highest rates of violence (Kjelsberg, 2004; Swanson et al., 1990) (though these findings are based on studies which did not control for psychopathy or prior history of violence). Age of onset of substance abuse may also be important as two studies found that onset of substance abuse before age 15 was an even better predictor of violence than adult onset of substance abuse (Fulwiler et al., 1997; Tiilikonen & Hakola, 1994). The effect of substance abuse on risk of violence appears to hold across diagnostic groups except for psychopathy and possibly schizophrenia. Rice and Harris (1995) found that alcohol abuse was related to violent recidivism only among nonpsychopathic mentally disordered offenders. Similarly, Tengström and colleagues (2004) found that among offenders with schizophrenia and offenders with no mental illness who had high psychopathy scores, those with and without substance use disorders committed similar numbers of offenses. These findings suggest that among offenders with significant psychopathic traits, the traits, not substance abuse, are associated with criminality. By
comparison, Swanson and colleagues (2006) found that a bivariate effect of substance abuse on serious violence among individuals diagnosed with schizophrenia was rendered nonsignificant when age, childhood conduct problems, positive psychotic symptoms, and recent nonviolent victimization were controlled. The findings by Rice and Harris (1995), Hodgins and colleagues (2004) and Swanson and colleagues (2006) raise the possibility that the effect of substance abuse on serious violence within subpopulations of mentally disordered persons may be mediated or potentiated by psychopathological features and other factors or eclipsed by the presence of psychopathy.

In addition to the above noted confounding variables, it is also possible that the presence or absence of specific mediating variables account for the discrepancy in the findings about the relationship between major mental disorder and violent and criminal behaviour. For example, the difference in rates of violence or delinquency between those with and without mental illness may not be a product of the existence of specific disorders, per se, but rather may relate to the occurrence of specific symptoms associated with mental disorder (Otto, 2000). That is, it may prove more useful to study active symptoms of major mental disorders as well as dimensional psychological traits rather than categorical disorders such as schizophrenia or antisocial personality disorder. The transient and episodic nature of symptoms of major mental disorder may be central to understanding any relationship existing between mental illness and crime and violence and may account for the different results found across studies. For example, if symptoms of mental disorders are ameliorated then perhaps the risk of violence is attenuated irrespective of whether or not a particular disorder remains. Similarly, specific personality traits such as uncontrolled anger may be more relevant in the study of
aberrant behaviour than actual personality disorders. A variety of symptoms have been considered within the literature in an effort to explain the potential relationship between mental illness and violence.

Some of the research has focused on the effect of psychotic symptomatology and yielded equivocal findings. Link and colleagues (1992) found that the presence of psychotic symptoms accounted for an elevated level of violent and illegal behaviours among mental health service users relative to never-treated community residents. Similarly, Swanson and colleagues (1997) found a curvilinear relationship between psychotism and violence whereby risk of violence increases as the number of psychotic symptoms increase from zero to two but decreases with three or more symptoms. However, Swanson and colleagues (1999) found psychotic symptoms were not related to violence among civil psychiatric patients. The most recent study by Swanson and colleagues (2006) of violence among individuals diagnosed with schizophrenia found positive psychotic symptoms significantly increased the risk of violence but only when negative psychotic symptoms were minimal or absent. That is, increased negative psychotic symptoms were significantly associated with reduced risk of serious violence and served to moderate the effect of positive symptoms upon risk of violence. These four studies used cross-sectional designs but used different measures of psychotic symptomatology which may account for the divergence. In addition, apart from the later study by Swanson and colleagues (2006), the studies did not examine the potential suppressing role of negative psychotic symptoms (e.g., blunted affect, social withdrawal, difficulty with abstract thinking, and lack of spontaneity and flow in conversation) upon positive psychotic symptoms (e.g., persecutory delusions with accompanying hostility.
and command hallucinations) which may account for the divergence in findings. In addition, none of the four studies controlled for comorbid personality disorder which may overshadow any potential relationship between psychotic symptoms and violence.

Research on the effects of specific psychotic symptoms has also yielded ambiguous findings. For example, while studies found that command hallucinations in general did not predict violence (Junginger, 1995; McNeil, Eisener, & Binder, 2000; Monahan et al., 2001), the effect of the specific content of command hallucinations is not clear. Junginger (1995) found that compliance with command hallucinations was negatively correlated with the dangerousness of the command whereas Monahan and colleagues (2001) found that auditory hallucinations involving commands of violent acts increased the likelihood of violence.

Similar uncertainty surrounds the effect of delusions on violence. Two studies found delusions in general were not associated with a higher risk of violent behaviour among civil psychiatric patients (Appelbaum, Robbins, & Monahan, 2000; Junginger, Parks-Levy, & McGuire, 1998) and one study found delusions were related to increased risk for violence (Taylor et al., 1998). Mixed results were found for threat/control override symptoms (TCO), a particular subgroup of delusions. Threat/control override symptoms refer to delusional beliefs of threats from others and beliefs that one’s thoughts and/or actions are being controlled by external forces (Otto, 2000). Some studies found that TCO symptoms increased the risk of violence two to three fold (Link, Stueve, & Phelan, 1998) and accounted for a large portion of the association between psychiatric diagnoses and violence (Link et al., 1999). Other studies, however, have found a negative relationship between the presence of TCO symptoms and violence (Appelbaum
et al., 2000; Monahan et al., 2001; Steadman et al., 2000). Yet another found a qualified relationship between these symptoms and violence. In a retrospective comparison of Austrian mentally disordered offenders with schizophrenia and nonoffending schizophrenia patients, Stompe, Ortwein-Swoboda, and Schanda (2004) found that TCO symptoms were unrelated to violent behaviour in general, but, taking into account the severity of the violence, they found threat symptoms as being associated with severe violence (i.e., violence resulting in victim’s death or victim’s hospitalization). Control-override symptoms, however, were not found to be associated with the severity of violent behaviour.

This lack of congruity may be a methodological artefact. With respect to command hallucinations and violence, the studies of Junginger (1995) and Monahan and colleagues (2001) varied on the basis of sample size (93 versus 304 subjects respectively), on the use of retrospective as opposed to prospective designs (asking subjects to recall their last command hallucination within the last two years versus interviewing subjects on the presence and nature of hallucinations every ten weeks over the course of a year), and on the sources of information used regarding subject violence (self-report versus self-report, collateral informant and clinical and arrest records). Monahan and colleagues’ use of a larger sample, prospective design, and multiple sources of information maximize the probability of detecting a possible effect. Similar methodological variance exists among studies examining the relationship between TCO symptoms and violence. The differences in the findings across studies may be a result of the studies using different measures of TCO and violence, different protocols to ascertain whether subjects’ responses were delusional (Appelbaum et al., 2000) and different
samples (Teasdale, Silver & Monahan, 2006). Those studies that did not find a relationship (Appelbaum et al., 2000; Monahan et al., 2001; Steadman et al., 2000) used clinically trained researchers rather than laypersons in the administration of measures of TCO, thereby minimizing the risk of mislabelling as delusions other phenomena such as non-delusional suspiciousness that could be related to violence. In addition, the TCO studies that found a relationship (Link et al, 1998; Link et al., 1999; Stompe et al., 2004) used retrospective designs while those that did not used prospective designs. It is possible that the use of retrospective methods interposed unapparent biases into the data (Appelbaum et al., 2000). Finally, the disparity in results across studies may be a result of sample composition. Compared to previous studies, the MacArthur study had a relatively higher proportion of females to males in the sample (Teasdale, Silver & Monahan, 2006). Using the same data from the MacArthur Violence Risk Assessment study as Appelbaum and colleagues (2000), Monahan and colleagues (2001) and Steadman and colleagues (2000), Teasdale, Silver and Monahan (2006) found a gender difference in response to TCO symptoms. Specifically, they found that men were more likely to engage in violence during periods when they experienced threat delusions compared with periods when they did not experience such delusions. In contrast, women were less likely to engage in violence during times they experienced threat delusions compared with periods when they did not. Control-override symptoms were not related to violence with either group. Teasdale and colleagues (2006) posit that the absence of a correlation between TCO delusions and violence in previous studies involving the MacArthur study data reflects differences in the gender composition of samples and a differential response to threat delusions by males and females, that when examined
together, cancelled each other out in the MacArthur study. Moreover, they note that other characteristics such as race/ethnicity, social class and cultural differences may similarly interact with TCO symptoms and other risk factors for violence.

Apart from methodological explanations, it is possible that the incongruence in the findings is a product of other potentiating variables. For example, symptom severity may account for the differences. With regard to command hallucinations, it is possible that the frequency of the hallucinations and the intensity of the auditory perceptual disturbance (e.g., whispers vs. shouting voices) influence the likelihood of compliance with the command (Bjorkly, 2002b). In addition, the presence of hallucination-related delusions may moderate the effect of compliance with command hallucinations. Taylor and colleagues (1998) found hallucinations were related to violence when delusions were also present and Junginger (1990) found the co-occurrence of hallucination-related delusions (i.e., delusions which incorporated auditory hallucinations into subjects’ delusional belief system as evidence of the validity of their delusions) was related to compliance with command hallucinations. Assigning an identity to a hallucinated voice was also found to be related to compliance with command hallucinations (Junginger, 1990; 1995). The presence of hallucination-related delusions and the identification of voices may suggest a more severe psychotic disturbance and a more systematized or consistent distortion of reality (Junginger, 1990; Junginger & McGuire, 2004).

With regard to TCO symptoms, a curvilinear effect may explain its (non-)association to violence. Link, Stueve and Phelan (1998) found evidence of a negative interaction effect where the presence of both threat symptoms and control override symptoms lowered the risk of violence compared to the presence of either symptom
alone. Similarly, as noted above, Swanson and colleagues (1997) found a curvilinear relationship between severity of psychotic symptomatology and violence in which violence increases as the number of psychotic symptoms rises from zero to two and falls with the occurrence of three or more symptoms. The presence of negative psychotic symptoms may also serve to suppress the potential influence of TCO symptoms and command hallucinations.

Alternatively, the effect of command hallucinations or TCO symptoms could be suppressed by treatment adherence. It is possible that individuals who are receiving treatment may endorse command hallucinations and TCO symptoms but may be less inclined to act violently if treatment serves to diminish the affective arousal which is assumed to underlie command hallucinations and TCO symptoms. That is, treatment may attenuate feelings of fear or hostility, though the perceptual or cognitive aspects of the symptoms persist. Consequently, though an individual may endorse violent command hallucinations or persecutory or control/override delusions, they may be less likely to act violently. A number of studies have found that non-adherence to medication increased the risk of violence among psychiatric patients (Brekke et al., 2001; Robbins et al., 2003; Swartz et al., 1998a; Swartz et al., 1998b), though Steadman and Silver (2000) found that violent acts committed by persons with major mental disorder and no substance abuse were more likely to have occurred while the individual was taking psychotropic medications (however, the major mental disorder group included individuals with a broad range of diagnoses—schizophrenia, depression, dysthymia, mania, cyclothymia, and brief reactive psychosis—and did not control for comorbid personality disorder which may account for their finding).
Bjorkly (2002a) refers to the emotional distress resulting from a delusional belief system as delusional distress. Delusional distress may have an important intervening role in the link between delusions and violence. That is, delusional distress may mediate the association between delusional belief systems and violent behaviour (Bjorkly, 2002b). Indirect support for this mediated relationship was found by Swanson and colleagues (1999) who reported that feelings of rage, anxiety, and fear of harm were the most common feelings experienced at the time of the commissions of a violent act as reported by a sample of hospitalized patients. Monahan and colleagues (2001) also found that patients endorsing high rates of anger were twice as likely as patients endorsing low rates of anger to engage in violence.

A potential confounder variable which may explain the mixed findings regarding the role of TCO symptoms is nondelusional suspiciousness, a personality trait involving a tendency toward misperception of others’ behaviour as hostile. Preliminary research has found a link between this trait and violence (Arseneault, Moffitt, Caspi, Taylor, & Silva, 2000). It is also possible that the presence of a comorbid personality disorder (especially those characterized by impulsivity) may disinhibit an individual causing him or her to act on psychotic symptoms.

These data suggest that personality traits may moderate the relationship between symptoms of major mental illness and violence. Researchers have started to explore the relationship between specific personality traits and violence among persons with serious mental disorder. Skeem, Tiemann, Miller, Mulvey, and Monahan (2005) assessed the relationship between general personality traits included in the five-factor model (FFM) of personality (McCrae & Costa, 1990) and violence in the community among a sample of
The FFM conceives of personality as being structured by five broad dimensions, including agreeableness (vs. antagonism), conscientiousness, extraversion, neuroticism, and openness to experience. Each of these dimensions subsumes six specific traits or facets. Skeem and colleagues (2005) found that the strongest correlates of violence were antagonism ($\eta = .26, p < .01$) and, to a lesser extent, neuroticism ($\eta = .10, p < .01$). Antagonism includes such personality traits as arrogance, combativeness, deceptiveness, lack of empathy and suspiciousness. On the other hand, neuroticism includes traits of angry hostility, anxiousness, impulsiveness, and trait depression.

Skeem and colleagues (2006) found further evidence of a relationship between angry hostility and violence among a sample of non-psychotic patients with a recent history of violence and heavy substance use. Using a longitudinal design which obtained weekly reports from participants about their level of hostility and their engagement in acts of violence, Skeem and colleagues (2006) found anger is strongly related to itself over time, suggesting that it is trait like. Moreover, Skeem and colleagues (2006) found a concurrent relationship between hostility and violence ($OR = 2.0$) within any given week. In addition, anger modestly predicted violence in the following week ($OR = 1.2$). Future research is required to ascertain any potential role of specific personality traits on the expression of violent and illegal behaviour by persons with symptoms of a major mental disorder.

**Contextual Factors**

The risk for violence among persons with mental disorder may not only vary as a function of the degree to which particular psychiatric symptoms or personality
dimensions are present but also by the extent to which contextual factors or environmental events restrain or exacerbate their expression (Nestor, 2002). Consequently, consideration of the situational correlates and environmental contributors of violence may serve to explicate the complex relationship of mental disorder to risk of violence and criminality.

Though it has been postulated that situational stressors may moderate the relationship between violent behaviour and mental disorder (Hiday, 1995; Hiday, 1997; Otto, 2000), relatively little research has explored this possibility. Hiday (1995; 1997) suggests that stressful events or circumstances lead to tense or conflictive situations which can result in violence. There is some preliminary support for such a connection. Silver and Teasdale (2005) found higher levels of stress among persons with mental disorder who engaged in violence. Further, they found that the relationship between major mental illness and violence was attenuated by 18 per cent when stressful events were controlled such as injury, family illness, change in financial status, change in employment status, or significant change in family situation. Similarly, Elbogen and Johnson (2009) found that the stress of divorce or unemployment increased the risk of violence. Stress related to housing status may also be related to violence. Residential instability has been found to be associated with risk of arrest or involvement with the criminal justice system among outpatient service users (Brekke et al., 2001; Sheldon, Audry, Arbóleda-Florez, Wasylenki, & Goering, 2006). Similarly, Bonta and colleagues (1998) found that poor living arrangements and family problems were associated with general and violent recidivism among mentally disordered offenders. Stress related to financial matters may also be associated with elevated risk of violence. Estroff and
colleagues (1998) found that the risk of violence among psychiatric patients with serious mental illness toward a family member increased fourfold when subjects were financially dependent on the family member. Similarly, increased risk of violence (OR = 2.11) toward family was found among recently discharged psychiatric patients with serious mental illness who had formal financial arrangements with family members such as representative payeeships or trusteeships which involve family members controlling the income of their mentally ill relative (Elbogen et al., 2005). This risk doubled (OR = 4.45) when subjects on payeeships or trusteeships had frequent contact with family members. A lack of autonomy associated with not controlling one’s own money may engender stress and conflict and ultimately precipitate violence toward those controlling one’s income and resources.

Broader environmental factors have also been implicated in the association between violent behaviour and mental disorder. The chronic strain of neighbourhood social disorganization and poverty has been postulated to be a cause of stress which in turn may lead to conflictive situations and ultimately to violence (Hiday, 1995). In support of this supposition, Silver and colleagues (1999) found that concentrated neighbourhood poverty increased risk of violence among patients discharged from hospital by nearly threefold. Similarly, Steadman and colleagues (1998) found that the prevalence of violence among psychiatric patients discharged from hospital was the same as the prevalence of violence among a community comparison group living in the same disadvantaged neighbourhood when substance abuse was controlled. By comparison, Silver (2000a) found that neighbourhood disadvantage (a composite variable which included measures of neighbourhood poverty, neighbourhood wealth, neighbourhood
family structure, neighbourhood employment, and racial composition of a
neighbourhood) explained a relatively small amount of variation in patient violence (4
per cent) as compared to individual patient characteristics (23 per cent). In addition, a
sizeable portion (5 per cent) of explained variance in patient violence was shared by both
individual- and neighbourhood-level factors.

Research on the contextual correlates of violence by persons with mental disorder
has also begun to examine the targets and setting of violence. The targets of violence
were generally known to the mentally ill individual perpetrating violence. Steadman and
colleagues (1998) found that the individuals at highest risk of violence are family
members and friends who are in their own homes or in the home of the mentally ill
subject. Similarly, Steadman and Silver (2000) found that individuals with major mental
disorder but no substance abuse were more likely to target family than strangers and that
violence was more likely to occur within the context of regularly scheduled activities.
Estroff, Zimmerman, Lachicotte, and Beniot (1994) found that more than half the targets
of violence were relatives, most were the mother of the perpetrator. However, a number
of studies found a gender effect where females were more likely to target family and to
be violent in the home whereas males were more likely than females to target strangers in
public (Hiday et al., 1998; Robbins et al., 2003; Swanson et al., 1999).

Research has also begun to explore the possible moderating influence of formal
and informal supports. The findings at this early stage in the research are equivocal.
With regard to formal supports, some studies found that individuals who had mental
health professionals within their social network were at reduced risk of violence (Estroff
et al., 1998; Estroff et al., 1994). Similarly, Swanson and colleagues (1997) found that
risk of violence among persons with major affective disorders and schizophrenia was increased when individuals did not have contact with a mental health professional in the community. The risk-reducing effect of community support, however, did not extend to individuals who had a comorbid substance abuse diagnosis. In contrast, Draine and Solomon (1994) found that more face-to-face service time with case managers was associated with increased risk of criminal recidivism among mentally disordered offenders discharged from jail, while Jacoby and Kozie-Peak (1997) found that social support (both formal and informal) received before and after release from prison was not related to risk of recidivism. With regard to informal supports, Estroff and colleagues (1994) found that individuals with mental disorder who had large social networks were at increased risk of violence.

The disparity of the above findings may be the result of a number of factors. First, the inconsistency of the findings with regard to the role of formal supports may be due to differences in the specific type of support provided and to the possibility that some forms of formal support may be more likely to attenuate risk of violence or criminality than others. Second, it may be that mental health supports are more likely to reduce risk of violence among civil mental health patients but less likely to reduce the risk of recidivism among mentally disordered offenders. Third, the increased rate of recidivism found among individuals who had more face-to-face time with case managers may result from the efforts of case managers to increase contact with individuals assessed as being at elevated risk of recidivism. Increased monitoring may also increase the likelihood that criminal behaviour will be detected. Fourth, the results found may be a function of how social support is operationalized within the studies. For example, Jacoby and Kozie-Peak
(1997) did not differentiate between formal support provided by a mental health service provider and informal support provided by family and acquaintances. It is conceivable that the former may help to reduce risk of violence or criminality while the latter may exacerbate the risk. The type of support received may also interact with the mentally ill person’s level of functioning. There is some evidence to suggest that an interaction between severity of functional impairment and frequency of social contact is associated with an increased risk of violence. Specifically, moving from low to high frequency of social contact (i.e., from monthly contact or less to weekly contact or more) with family and friends increases the risk of violence among individuals whose functional impairment is high as a result of mental disorder (Swanson, Swartz, Estroff, Borum, Wagner, & Hiday, 1998). Conversely, frequent social contact was associated with lower risk of violence among individuals with lower functional impairment. It was hypothesized that increased social contact among seriously mentally ill individuals with severe functional impairment was not perceived as supportive but rather was experienced as a source of conflict because the illness undermined the individual’s ability to resolve conflict and communicate meaningfully with others. On the other hand, among higher-functioning individuals, increased contact with others is experienced as supportive and had the effect of improving the quality of relationships with family, thus diminishing the risk of violence. Further research is required to test the posited mechanisms that may underlie the potential relationship between social support and violence.

Another possible situational correlate of violence and criminality is intoxication. Few studies of mental disorder and violent or criminal behaviour have attempted to untangle the effects of chronic substance abuse from the situational effects of intoxication.
(Arseneault et al., 2000). In one such study, Arseneault and colleagues (2000) found that individuals with schizophrenia reported more substance use before engaging in violence as compared to community-based controls. Substance use prior to violence accounted for 19 per cent of the association between violence and schizophrenia-spectrum disorders and 58 per cent of the association between violence and a diagnosis of alcohol dependence. By comparison, Hiday and colleagues (1998) found that among male inpatients 19 per cent used alcohol and 13 per cent used drugs prior to a violent incident while among female inpatients 29 per cent used alcohol and 14 per cent used drugs before a violent incident. Among those who consumed these substances before fighting, most (80 per cent of males and 57 per cent of females) reported getting into physical altercations at times without using alcohol or drugs prior to violence. Both of the afore-noted studies used retrospective designs asking participants to recall the proximate relationship between alcohol and/or drug consumption and violence that occurred in the past year or the past four months, respectively.

Support for a relationship between the consumption of alcohol and/or drugs and the commission of acts of violence among persons with mental disorder was also garnered in a prospective longitudinal study of non-psychotic emergency room psychiatric patients who had a recent history of violence and heavy substance use. Examining the relationship between substance use (alcohol, marijuana, and other drug use) and violence at the daily level, Mulvey and colleagues (2006) found an increased risk of violence on days following the use of alcohol (OR = 1.8) or the use of alcohol in combination with marijuana and other drugs (OR = 4.1). However, if only alcohol and marijuana use was reported, the risk of violence the next day decreased to the point where
it was no longer statistically significant. The same finding held for the combined effect of marijuana and other drug use. Mulvey and colleagues (2006) also found that participants were 1.7 times more likely to engage in serious violence on days that only alcohol was consumed and were 3.4 to 7.1 times more likely to engage in serious violence on days when multiple substances were used. Though they did not collect data regarding the ordering of substance use and violence on the same day, Mulvey and colleagues do provide evidence that the consumption of alcohol especially in combination with street drugs is a proximate correlate of involvement in violence as well as a proximate precursor of violence in the near future. Further research using prospective research designs is required to explore the relationship between violence and the consumption of alcohol and/or drugs among different clinical and community samples.

**Conclusion**

Within the last 20 years substantial gains have been made in our knowledge of risk factors for violence and crime associated with mental disorder. This literature has yielded important findings about historical, clinical and contextual factors associated with violence and criminality among individuals with mental disorder. However, though significant contributions have been made, our knowledge of the precise nature of the relationship between mental disorder and violence and crime is still embryonic. The inquiry into the nature of this potential relationship has engendered disparate results, which have yet to be reconciled.

The inconsistency of the findings may be a product of a lack of control for potentially confounding variables. Factors such as psychiatric comorbidity (including substance abuse and the presence of a personality disorder) and medication adherence may
be important variables to consider in future research. In addition, there may not be adequate specificity with regard to predictor or criterion variables to be able to discern the effects of mental disorder on criminal and violent behaviour. Much of the research to date has focused on broad categories of disorder or on specific diagnoses in attempting to explicate the association between mental illness and violent and/or illegal behaviour. However, studying active symptoms of major mental disorder may have greater utility. It may also be useful to distinguish among forms of violence and criminality as both of these constructs include a broad range of acts which differ in nature and kind (Côté, 2000). It may also be important to consider the influence of environmental factors. To date, the empirical literature has been focused upon individual-level factors and intrapsychic forces and has not yet developed an understanding of the role of community-level factors and situational correlates of violent and delinquent behaviour among mentally ill persons (Hiday, 1995). Failing to control for contextual correlates of violence and criminality increases the risk of overstating the effect of clinical variables (Hiday, 1995). Indeed, part of the reason for the lack of consistency among prior studies may be related to a myopic fixation on the clinical correlates of violence and crime and a concomitant inattention to how clinical and environmental factors may interact to increase or attenuate the risk of violence and criminality by person with mental disorder.

It is also important that future research be based on theoretical frameworks which inform the choice of variables to be investigated. There is a general preoccupation within the empirical literature toward assessment of risk of violent and illegal behaviour. Much of this literature is devoid of theoretical frameworks which could guide the research agenda. Consequently, though we have substantial knowledge of the correlates which
predict violence or delinquency, we have yet to develop an understanding of the process by which violence and criminality occurs among persons with mental disorder. However, knowledge of which individuals are at elevated risk does not serve in the identification of effective interventions (other than incapacitation) that prevent violent and criminal behaviour and promote autonomous community functioning.

In the following chapter a theoretical framework is developed along with a set of testable research hypotheses aimed at beginning to reconcile disparities in findings across studies examining the relationship between mental disorder and crime and violence.
Chapter 3: Theoretical Models for Analysis

The previous chapter highlighted the empirical evidence of the correlates of crime and violence among persons with mental disorder. Although this literature has yielded important findings about the historical, clinical and contextual factors related to crime and violence, much of the published research has not explicated the process by which violence or delinquency occurs. The purpose of this chapter is to articulate a theoretical framework which takes into account the complexity of influences by numerous historical, clinical and contextual variables in criminal violence and to identify the specific research questions and hypotheses that this study will address. Toward this end, relevant developmental and ecological theoretical models that posit the mechanisms and process by which violence and criminality occurs are reviewed. A broad conceptual framework that integrates key elements from these criminological theoretical models is developed to guide examination of the factors influencing criminal violence among persons with serious mental illness. Finally, based on previous research and on the conceptual framework developed for this study, four research questions are posed and a number of hypotheses posited which form the basis of this inquiry.

Developmental and Life Course Theories of Crime

Given that historical factors are robust predictors of crime and violence among persons with mental disorder, any comprehensive model seeking to explain crime and violence by persons with mental disorder should include a developmental perspective. Two life course theories of crime are critically reviewed in the section below: Moffitt’s developmental taxonomy of antisocial behaviour and Hodgins’ taxonomy of early-start and late-start mentally disordered offenders.
Moffitt’s Developmental Taxonomy of Antisocial Behaviour

Moffitt (1993) proposed a developmental taxonomy of antisocial behaviour with two primary prototypes with distinct aetiologies and trajectories: adolescence-limited offenders and life-course-persistent offenders. The first group of offenders in Moffitt’s theory is referred to as adolescence-limited offenders because they limit their offending activity to the adolescent developmental period. Crime occurs among this group because of two factors: 1) a maturity gap between biological maturity and social maturity and 2) peer influence. In contrast to adolescence-limited offenders, life-course-persistent offenders begin their antisocial behaviour earlier in the life-course, offend more frequently, and often persist in their criminal conduct well into midlife. According to Moffitt, life-course persistent offending occurs as a result of an interaction of early neurodevelopmental and family adversity risk factors. Early behavioural difficulties are perpetuated or exacerbated by interactions with criminogenic early childhood environments which lead to early school failure, peer rejection, loss of opportunities to practice prosocial behaviour, and a gradual narrowing of life options. As the individual develops, a disordered personality with features of physical aggression and antisocial behaviour is gradually constructed.

Following validation studies of this two-group typology, Moffitt and colleagues (2002) further refined this offender classification system to include a group labelled low-level chronic offenders. These offenders are so-named because they offend persistently, but at a low rate, from adolescence to adulthood (Nagin, Farrington & Moffitt, 1995). This group is distinguished from the life course persistent offenders by the frequency of offending. They were found to have a substantially lower rate of offending than the life
course persistent offenders in adolescence and early adulthood and to have an intermittent or discontinuous pattern as opposed to a persistent pattern of offending. This group was also found to be suffering from internalized forms of psychopathology such as depression or anxiety disorder and was more likely to be socially isolated both as adolescents and as adults (Moffitt, Caspi, Harrington, & Milne, 2002).

**Hodgins’ Taxonomy of Antisocial Behaviour among Persons with Major Mental Illness**

Hodgins’ typology of mentally disordered offenders builds on the work of Moffitt. Hodgins and colleagues (Hodgins et al., 1998) hypothesize that among persons with major mental disorder (MMD) there are at least two distinct types of offenders. The developmental paths and the causal factors involved in the criminality of these two groups differ. The first is the early starter group who closely resemble the life-course-persistent group identified by Moffitt. The early starters are characterized by a stable pattern of antisocial behaviour in childhood and adolescence, long before the symptoms of a MMD develop. The second group is the late starters. In contrast to the early starters, the late starters do not exhibit antisocial behaviour until after the symptoms of the MMD become manifest. Whereas antisocial behaviour among early starters is a continuation of a life pattern of antisociality from a young age, more proximal factors related to symptomatology such as threat/control-override (TCO) delusions are thought to play a role in the offending of the late-starters.

Moffitt’s and Hodgins’ taxonomy provide a useful framework upon which to build a comprehensive model of violence by persons with MMD. Both models account for many of the historical factors found to be related to crime and violence in the
empirical literature. Both propose that there are qualitatively distinct types of offenders who offend for different reasons and over different periods of time. Hodgins’ model is of particular importance to understanding crime and violence among mentally disordered persons as it begins to account for some of the clinical factors found to be related to crime and violence. However, neither model takes into account contemporaneous contextual influences on the occurrence of crime or violence. Theory in this area must move beyond a circumscribed focus on individual differences or clinical characteristics toward a perspective that takes into account the community and interpersonal contexts within which crime and violence occur. It is toward this end that the next section reviews models that consider situational and broader social factors related to crime and/or violence which may be applied to persons with mental disorder.

**Theories of Crime and Violence Integrating Person and Environment**

Two theories are considered which attempt to integrate knowledge about temporally proximate individual, community and situational influences on the commission of acts of crime and violence: Hiday’s social context model linking social stratification with mental illness and violence and Wikström’s Situational Action Theory of Crime. Both conceptual frameworks attempt to explain crime or violence by employing a multilevel, multi-factorial perspective. Both posit a general causal system in which trajectories of crime or violence are understood within the same theoretical framework (*contra* Moffitt and Hodgins) rather than in differential causal structures based on a typology of offender. Finally, both utilize a linear rather than a taxonomic approach to understanding crime and violence.
Hiday’s Model Linking Social Stratification with Mental Illness and Violence

Hiday (1997) presents a model that connects not only the immediate social context but also the broader social environment with both severe mental illness and violence. She posits that the social context is mainly responsible for violence committed by persons with major mental illness, influencing both their symptom-induced behaviour and behaviour that is unrelated to symptomatology. Figure 1 depicts Hiday’s model.

Figure 1. Causal Model Linking Social Stratification with Mental Illness and Violence

The model presented by Hiday identifies several pathways in which severe mental illness is a link in a causal chain to violence. Violence may result directly from TCO symptoms or indirectly from psychotic symptoms which may engender frustration and hostility in others which can lead to tense and conflictive situations and ultimately to violence. In addition, severe mental illness may be related to violence through comorbid substance abuse and/or ASPD. Substance abuse disorders and ASPD are also believed to be indirectly linked with violence as they may lead to stressful events such as divorce, arrest or unemployment which in turn can lead to tense situations that result in violence.

Hiday also identifies a number of pathways in which mental illness is coincidental to violence but not linked through a causal sequence. Hiday identifies social disorganization as a key variable explaining the aetiology of violence and mental disorder. Socially disorganized neighbourhoods are characterized by persistent poverty, by an inability to provide employment opportunities beyond illegal or menial jobs and by an incapacity to exert informal social control over residents. Individuals living in socially disorganized communities have few options for overcoming poverty and consequently live in a state of anomie, with little sense of control. Hiday suggests that social disorganization is a principal cause of stressful life events such as job loss and separation. Stress in turn can lead to tense or conflictive situations, and tense situations may result in provocation and conflict and ultimately in violence.

Social disorganization is also viewed as a potential root cause of ASPD and, along with neurobiological pathology, as a potential root cause of severe mental illness and substance abuse/dependence.
By simultaneously considering the effects of contextual and individual factors in violence among persons with mental disorder and drawing on constructs from criminological theories, Hiday has significantly advanced theoretical development on antisocial behaviour by persons with MMD. However, Hiday’s model does have limitations. Hiday does not distinguish between ASPD, an individual level factor, and the causal mechanism by which this factor leads to violence. Moreover, she does not specify how psychopathy may cause acts of crime or violence. Hiday also does not contemplate opportunistic offending as a cause of violence in which a rational choice to use violence instrumentally is made in order to achieve a specific goal or to take advantage of a particular opportunity. To the contrary, violence is seen largely as the result of the strain caused by economic and social deprivation and/or severe mental disorder. In so doing the model reduces the role of human agency and rational choice in the commission of acts of violence.

**Wikström’s Situational Action Theory of Crime**

Wikström’s theory may be seen to address some of the limitations of Hiday’s model. Wikström (2005) developed the Situational Action Theory of Crime in an effort to integrate individually oriented and ecologically oriented explanations of crime involvement. For Wikström crime is the product of an interaction between individuals and settings. He argues that criminal acts are a consequence of how individuals perceive alternatives and make choices which in turn is shaped by the interaction of their moral and executive functions and the characteristics of their setting. Figure 2 schematically depicts Wikström’s theory.
The key individual differences related to individual engagement in acts of crime (i.e. causes of individual propensity) are an individual’s moral values and emotions and his or her executive functions. Moral values pertain to a person’s beliefs about what is right and wrong to do. By comparison, moral emotions are emotions such as empathy, guilt and shame which are associated with obeying morals or rules. Moral judgment refers to the application of individual morals to a setting. A person whose beliefs of what is right and...
wrong does not correspond with prescriptions in law and who does not experience guilt or shame in breaking legal prescriptions of right and wrong would be more likely to see crime as an option in a given setting. Executive functions refers to an individual’s capacity for self-regulation, response inhibition and planning and organizing behaviour (Wikström, 2004; Wikström, 2005). Executive functions affect an individual’s level of self-control. Self-control is the extent to which the individual is able to make choices in accordance with his or her moral judgments when confronted with provocations or temptations (Wikström, 2004). An individual’s potential to exercise self-control is influenced by his or her capability to inhibit or interrupt a response to a situation as an effect of the executive functions of the brain. For example, individuals who are apt to be impulsive may be more prone to give in to temptations which diverge with their moral judgments than those who tend to be less impulsive.

The concept of criminal propensity is always applied in reference to a setting. Some settings are more likely to contribute to an individual’s perception of crime as an alternative and to influence an individual’s choice to engage in crime. The key characteristics of the setting which influence an individual’s perceptions and choices are whether the setting creates opportunity for unlawful actions and causes temptation to act criminally, whether the setting creates frictions between individuals and produces provocations to violence or whether the setting involves monitoring which may serve to deter criminal activity.

What links the individual and the setting to actions is what Wikström (2005) refers to as the situation. The situation involves a merging of the individual’s propensity and criminogenic features of the setting. That is, the extent to which individuals get tempted or
provoked and thus perceive a criminal act as an alternative and choose to engage in the
criminal act is in part dependent upon their morality and self-control. The deterrent effect
of a specific setting is also contingent upon their individual propensity. However, some
types of behaviour settings are more criminogenic than others in that they are more likely
to produce temptations, provocation and weak deterrence. Emphasizing the significance of
interaction between person and setting does not however discount that the relative
importance of each will vary. Wikström posits that for individuals with low crime
propensity, the setting plays a greater role in influencing their crime motivation than for
those with a high crime propensity. Conversely, for individuals with high crime propensity,
the setting is likely to play a less important role because their temptation and provocation
thresholds are much lower and their sensitivity to deterrence much weaker than for those
with a low crime propensity. The key supposition of Wikström’s Situational Action
Theory is that individual acts of crime are always contingent upon who is in what setting
(Wikström, 2004). He notes “it is not about kinds of individuals or kinds of settings but
about kinds of individuals in kinds of settings”(Wikström, 2004).

Wikström’s theory provides a broad framework to conceptualize the interaction of
individual and situational variables. Like Hiday, Wikström provides a conceptual
framework for integrating levels of explanation that is a basis for evaluating how individual
and environmental conditions interact in moving people to engage in acts of crime.
However, he extends beyond the scope of Hiday’s model by incorporating situational
factors such as opportunities to commit crime and by including rational decision making in
his theory of crime. Wikström’s theory emphasizes perception, choice and human agency
in deciding to offend. As such, his model is less deterministic than Hiday’s model.
Moreover, Wikström not only identifies causal variables but also causal mechanisms or processes that specify how specific risk factors transform into action.

While Wikström’s theory is wide-ranging in that it incorporates factors related to individual criminal propensity and factors related to criminogenic settings, it does not elaborate on the role of mental disorders and substance abuse in people’s engagement in crime. Though acknowledging parenthetically that intoxication and psychotic disorders may impact upon executive functioning and have important implications for the alternatives a person perceives and the choices he or she makes, Wikström (2004) does not explain how these individual factors lead to crime involvement. Wikström’s model also does not consider the influence of current life circumstances (such as recent stressful events) in producing criminogenic behavioural settings (e.g. frictions) or, conversely, in bringing forth behavioural settings which inhibit criminality or violence.

**An Integrated Developmental and Multi-Level Model of Crime**

A model is proposed (Figure 3) that combines but also extends Hiday’s causal model linking social stratification with mental illness and violence and Wikström’s Situational Action Theory of Crime Causation. Then, using the typology of offenders developed by Hodgins as an organizing device to inform particular lines of inquiry, a series of research questions are proposed. It is hoped that this research may begin to reconcile some of the disagreements and controversies within the research literature on the causes of crime and violence among persons with mental disorder and enable social workers to tailor intervention strategies to different categories of offenders and thereby enhance treatment responsivity and efficacy.
Figure 3 Historical, Clinical and Contextual Factors Related to Offending

- Historical Factors
  - Individual Differences
    - Neurobiological Pathology
    - Difficult Temperament
    - Neuropsychological Deficits
  - Structural Background
    - Family Poverty
    - Family Disruption
    - Parental Deviance
    - Inconsistent Discipline
    - Victimization
- Individual/Clinical Factors
  - Severe Mental Illness
  - Psychotic Symptoms
    - ASPD/ASP Traits
    - Moral Values/Emotions
    - Executive Functions
  - Intoxication
  - Substance Abuse/Dependence
  - Treatment Adherence
  - Criminal Propensity
  - Moral Judgment
  - Intoxication
- Current Contextual Factors
  - Social Disorganization
    - Life Circumstances
      - Economic Deprivation
      - Companions/Peer Group
    - Behavioural Setting
      - Frictions
      - Opportunities
    - Provocation
    - Temptation
    - Perception of Alternatives
    - Choice
    - Deterrence
    - Life Circumstances
      - Social Supports/ Controls
    - Social Organization
    - Non-Criminal Action
    - Property Crime
    - Violent Crime

Act

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The comprehensive model presented in this study (Figure 3) links three categories of variables: historical, individual and contextual. The historical factors identify the early causative agents in pathways to crime and violence by persons with mental disorder. The historical factors include both early individual characteristics and contextual factors. With regard to early individual differences, neurobiological pathology involving abnormalities in both brain structure and function is posited to be causative of severe mental illness and substance abuse/dependence. Dispositional factors related to neuropsychological variations (e.g. subtle cognitive deficits, hyperactivity or a difficult temperament) in conjunction with early adverse contextual factors (e.g. family disruption, parental deviance, economic disadvantage) are hypothesized to lead to early conduct problems, early school failure, early criminal behaviour and a gradual reduction of prosocial prospects and the development of a personality disorder with significant antisocial features. These historical factors influence adult clinical syndromes which may elevate an individual’s propensity to commit acts of crime and violence.

Individuals with severe mental illness such as a psychotic disorder or a major mood disorder (e.g. bipolar affective disorder) are more likely to experience psychotic symptoms which, unless ameliorated by medication, may elevate the risk of violence. Threat/control override symptoms or delusion-congruent command hallucinations may alter an individual’s capacity for moral judgment. For example, a normally non-violent, prosocial individual experiencing persecutory delusions fearing for his life or experiencing command hallucinations believed to be the voice of a deity may conclude that violence is a necessary course of action to protect himself from perceived harms or to comply with some preordained, sanctioned (and thus morally justified) violent action. Moreover, symptom-
congruent affect such as fear, panic or anger may overcome a normally self-controlled prosocial individual and lead to violence. Psychotic symptomatology may also engender animosity and irritation in others and lead to provocation and ultimately to violence.

Individuals with significant antisocial personality traits are also posited to have a greater propensity for crime and violence as they are more likely to possess moral values and emotions congruent with criminality and to have limited capacity for response inhibition. That is, they are more likely to embrace antisocial values, to lack empathy or guilt and to be impulsive and sensation seeking.

Individuals with substance abuse disorders/problems are believed to have a greater propensity for criminality and violence. Intoxication is expected to be a common occurrence among this population and intoxication is believed to compromise executive functioning and self-control. A substance abuse problem may be a manifestation of antisocial values and attitudes or of sensation seeking personality traits. Alternatively, it may be a consequence of serious mental illness as persons experiencing psychotic symptoms or symptoms of a major mood disorder may use psychoactive substances to self-medicate. Some substances, however, such as stimulants or hallucinogens may exacerbate psychotic symptomatology and thereby indirectly increase the propensity for violence. Alternatively, substance abuse may engender conflict with family about consumption which may erupt into violence.

The model also posits that these clinical conditions can interact with contextual factors to elevate the risk of violent or criminal behaviour. The model puts forth three levels of contextual variables. The first and most proximate level is behavioural settings. Such settings are part of the environment to which the individual is directly exposed and
reacts to (e.g. other persons, objects and events). They may enable or constrain and guide human behaviour. Behavioural settings may be criminogenic to the extent that they create opportunity for criminal activity, cause friction which may lead to violence and/or fail to provide monitoring sufficient to inhibit or deter antisocial behaviour. Opportunity refers to the presence of events, objects and persons necessary for carrying out unlawful actions to realize gain or pleasure. Settings that provide opportunity tend to produce temptation which is a perceived option to satisfy a particular desire in an unlawful way. Friction refers to events that lead to antagonistic responses (e.g. anger or irritation) to other people’s behaviour that increase the probability for unlawful responses (e.g. assault). Settings that engender friction tend to produce provocations which are perceived attacks on the person’s property, security or self-respect that generate anger or similar emotional states that may instigate a criminal act. The distinction between opportunity and friction parallels the difference between instrumental and expressive crimes, widely used in the criminological research literature. Instrumental crimes are those conducted for explicit, future goals (like to acquire money), whereas expressive offenses involve reactions of anger, rage or frustration (Miethe and Drass, 1999). Finally, monitoring pertains to the probability of detection and intervention if people act unlawfully. Settings that involve monitoring tend to have a deterrent effect. Deterrence is conceptualized as the perceived risk of intervention, and the associated risk of sanction for acting unlawfully in pursuit of a temptation or in response to a provocation. Hence, temptation and provocation are processes that tend to promote criminal acts while deterrence tends to inhibit criminal action.

The second tier of contextual variables which contributes to an individual’s perception of crime as an alternative is current life circumstances. These are current life
conditions which may increase or decrease exposure to behavioural settings which may trigger criminal or violent behaviour. The model posits that stressful life circumstances such as economic deprivation may contribute to the emergence of criminogenic behavioural settings. Unemployment, homelessness and significant financial strain related to a meagre income may increase exposure to behavioural settings where conflict over the allocation of scarce resources is common. The model also proposes that the presence of delinquent or antisocial companions may create positive inducements toward delinquency by teaching techniques of committing crime and by fostering the specific direction of motives, drives, rationalizations and attitudes. The influence of antisocial companions may increase the likelihood that an individual views a particular behavioural context as favourable for engagement in criminal activity. That is, antisocial companions may contribute to an individual’s perception that a particular setting provides an opportunity for a criminal venture. Conversely, the presence of formal social supports and controls may have the opposite effect. Formal social supports and controls refer to social relationships that serve to curb crime rather than promote it. Included in this category are mental health treatment services and community correctional services such as probation or parole. The presence of these social relationships may increase the prevalence of behavioural settings in which the individual is monitored. Such monitoring may serve to deter opportunitistic criminal activity and to encourage treatment adherence (which in turn would reduce the likelihood of symptom-induced violence).

The third, more distant contextual factor which indirectly influences offending behaviour is the neighbourhood context. The model posits that offending rates vary by neighbourhood context as structural characteristics of neighbourhoods (e.g. concentrated
poverty) affect community social organization. Social organization is conceptualized as the capacity of a community to effectuate the shared standards and values of its residents and to assert effective social controls (Silver, 1999). Conversely, social disorganization is conceptualized as the inability of a community structure to actualize the shared standards and values of its residents and to maintain effective social controls. Thus, social organization and social disorganization are conceptualized as opposite poles on the same continuum with regard to systems of community social control (Sampson, 1993). In socially organized communities, residents are socially invested in their neighbourhoods and are likely to act as community guardians and afford assistance, either directly or indirectly, to an individual with mental illness who displays evident signs of decompensation (Silver, 1999). They may appeal to neighbourhood-based social networks (including social services agencies, mental health experts or family members of the mentally ill individual). As a result mentally ill individuals may be more likely to obtain treatment for their symptoms and other needed supports, thereby diminishing the risk that they will commit a violent act. By comparison, neighbourhoods characterized by concentrated poverty, income inequality, high percentages of single parent families, high residential mobility, and significant population turnover tend to exhibit low levels of social cohesion which weakens the neighbourhood’s ability to control the behaviour of individuals within its boundaries and discourage deviant behaviour (Sampson & Groves 1989; Sampson, Raudenbush, & Earls, 1997; Wilkinson, Kawachi, & Kennedy, 1998). Moreover, neighbourhoods high in social disorganization are not only less able to exert informal social control over residents but may promote conditions conducive to crime and violence by producing criminogenic behavioural settings with high levels of friction and
criminal opportunity. For example it is not uncommon for a “code of the streets” to predominate in such neighbourhoods whereby interpersonal violence becomes an expected and tolerated means of conflict resolution (Silver et al., 1999). In a climate of violence, tension and conflict are ubiquitous, ready to erupt into new violence. In addition, opportunities associated with crime and violence such as the presence of drug distribution networks are apt to be more prevalent in such neighbourhoods. Socially disorganized neighbourhoods may also have a more indirect effect on crime by influencing individuals’ life circumstances. Stressful life events (which may result in frictions and ultimately violence) are more likely to occur in conditions of social disorganization. Moreover, contact and interaction with antisocial peers who may increase exposure to criminal opportunities is more likely as such individuals may seek out neighbourhoods that have prominent criminogenic features.

Research Questions

The above model informs this study’s examination of historical, individual and contextual factors as they relate to severity of criminal violence among persons with major mental disorder. The proposed model was further enhanced by using the typologies of Moffitt and Hodgins to explore whether different predictors existed for early-start and late-start offenders as different causal processes may exist for developmentally distinct groups of offenders. Past research which lumped all mentally disordered offenders together may have resulted in attenuated effect sizes which may have concealed some possible causal factors and muted the importance of others (Moffitt, 1993). Using Moffitt’s and Hodgins' typology of offenders may add explanatory value as the different categories of offenders may not only engage in different patterns of offending (persistent versus episodic) but may
be differentially influenced by clinical and environmental factors. The research questions that emerge from the application of these typologies to the model proposed herein include the following:

1) What factors related to clinical presentation, crime-scene setting, current life circumstances, neighbourhood residence and criminal history are associated with increased severity of violence among persons with major mental disorder?

2) What is the relative importance of contextual and individual level characteristics in terms of the amount of variation in severity of violence by persons with mental disorder?

3) Are there different individual- and contextual-level predictors of severity of violence for early-start as opposed to late-start offenders with major mental disorder?

4) How do early-start and late-start offenders with major mental disorder compare with regard to clinical presentation, crime-scene behaviour, current life circumstances, neighbourhood background and criminal history?

Research Hypotheses

Based on previous research and the comprehensive theoretical framework described above, the following hypotheses were tested in this exploratory study of violence severity among persons with serious mental illness:

H1: Presence of psychotic symptoms, antisocial personality disorder, and a substance abuse problem will be associated with increased severity in criminal violence.

H2: Increased severity of violence will be positively associated with neighbourhood social disorganization and with behavioural settings with low monitoring or friction.
H3: Individual level characteristics will account for a greater amount of the explained variance in the severity of criminal violence among persons with mental disorder than contextual characteristics.

H4: Early- and late-start offenders will have different predictors of severe violence.

H5: Early- and late-start offenders will differ with regard to clinical presentation, crime-scene behaviour, current life circumstances, neighbourhood background and criminal history.

This chapter presents a comprehensive theoretical framework grounded in both a developmental and ecological perspective that examines the effects of historical, clinical and contextual factors on the prediction of violence severity among persons with serious mental illness. From this theoretical framework a testable set of research hypotheses are posited. Taken together, these hypotheses examine the correlates of violence severity among offenders with mental disorder and explore the utility of applying a developmental and ecological perspective to account for the degree (i.e. severity) of violence perpetrated. In the following chapter, the procedures used to generate the study sample and the research design and analytical techniques used to address the research hypotheses are described.
Chapter 4: Methodology

This chapter describes the data sources, data collection strategies and statistical procedures used to test the research hypotheses outlined in Chapter 3. This chapter is organized into four sections. The first section describes data sources used for this study. The second section outlines the procedures used for data collection. The third provides operational definitions for each of the variables within this study. The final section describes the statistical procedures used to address the four research questions posed in the previous chapter.

Data Sources

This investigation relied upon two data sources. The primary data source was the clinical files of a mental health court support program located in east Toronto, Canada. The mandate of the program is to assist mentally ill persons with criminal charges to access mental health treatment and supports. To be eligible for assistance by the program, individuals have to have a mental illness and have current criminal charges at the Ontario Court of Justice located in the former city of Scarborough. Clients of the program include individuals who have been convicted of an offense (offenders) as well as individuals awaiting resolution of their criminal charges (arrestees). The program works with individuals with all manner of criminal charges ranging from murder to public nuisance offenses. The specific functions undertaken by the program include facilitating the diversion of mentally ill individuals with minor offenses from the criminal justice system to the mental health system, formulating service care plans to assist with the release of accused/offenders from custody onto bail or probation, arranging court-ordered psycholegal psychiatric assessments, and liaising between forensic hospitals and the court.
In addition, the program provides information and support to the families of mentally ill accused currently involved in the criminal justice system. The program is staffed by two mental health court workers, two outreach workers and two forensic psychiatrists.

The work of the program and information about the clients served is kept in hardcopy files and an electronic database. The hardcopy client files of the program include detailed information concerning sociodemography, diagnosis and treatment history, clinical presentation at referral and criminal history. As part of the intake process for direct service provision (be it for assistance with bail, sentencing or mental health diversion), court support workers complete a two-page intake assessment form which includes information about clients’ source of income, housing type, previous hospitalizations, diagnosis, current treating psychiatrist, current formal supports, current treatment regimen, current substance use and current mental status. Though formal checklists of signs and symptoms of mental disorder are not used during mental status examinations at intake, assessment of mental status routinely involves queries about the presence of hallucinations, delusions (e.g. control-override), paranoid ideation and suicidal and homicidal ideation. In addition, it includes observations about thought form/process (thought form/process refers to flow of thought and the manner in which ideas are organized), speech rate and affect.

Also included in the files is information from the Crown’s brief. In the course of the intake process for either direct or indirect services, program staff routinely collect the following documents from the Crown’s brief: (1) the record of arrest which details personal identifying information such as name, address, age, race and occupation as well as arrest information such as time of arrest, location of arrest, and physical condition at time of arrest (including intoxication); (2) Crown’s show cause which provides additional
background information, a summary of the allegations and an opinion by the police Officer-In-Charge of the case as to whether or not a detention order should be sought by the Crown at the bail hearing of the accused and the basis for such a detention order;
(3) synopsis for a guilty plea which provides a detailed account of the specific allegations against an accused outlining the actions of the accused as well as other parties to the offense (i.e. victim(s) and third parties) and information about where and when the alleged offense occurred and about the nature of the relationship between the accused and the victim(s); and, (4) criminal record which lists previous convictions and sentences. (The term arrest record will be used in this dissertation to refer to the composite of the afore-noted documents found in the Crown brief.)

In addition to arrest records, the files may also include psychiatric reports from a variety of sources such as forensic hospitals, local schedule I psychiatric facilities, court-based forensic psychiatrists and community-based psychiatrists. Most of the psychiatric reports hail from out-patient psychiatrists or from the program’s two forensic psychiatrists. The reports from out-patient psychiatrists are generally limited in nature, speaking to diagnosis and treatment recommendations and compliance. Reports from the program’s court-based psychiatrists are also brief (one-to-two pages) but speak to diagnosis, mental status observations and treatment recommendations as well as brief opinions on psycho-legal issues such as fitness to stand trial or suitability for mental health diversion. Some of the files contain comprehensive psychiatric reports from forensic mental health facilities. Such reports will often provide detailed information about social and personal history, illness history, diagnosis and clinical presentation as well as opinions about issues related to criminal responsibility or dangerousness.
The completeness of files varies with the nature of service provided to clients. The files of clients receiving direct service for assistance with bail, sentencing and mental health diversion by in large include intake assessment information (including mental status), arrest records and brief psychiatric reports. Of the sources and types of information contained in the files, information related to the arrest record is most consistently collected while information related to mental status examination by court workers at intake is least consistently collected. Though the latter is routinely collected, some clients may refuse to disclose information related to symptoms at intake. In addition, court workers may on occasion face time constraints interviewing in-custody accused scheduled to appear in court for sentencing matters. Where time is restricted, the court worker may be required to focus the intake interview on obtaining information about existing or previous service providers in order to formulate a service care plan for the accused’s release from custody. Consequently, the assessment of mental status is apt to be cursory in such circumstances though even then some critical information related to mental status (e.g. suicidal/homicidal ideation) is likely to be collected in order to inform the decision of whether there is the potential need for emergency psychiatric hospitalization.

The files of clients receiving indirect service (such as the provision of support to families) generally do not include diagnostic or other clinical information. Such files were not included in the study. However, some files of individuals receiving indirect service do contain comprehensive clinical and arrest record information. The program arranges court-ordered psychiatric assessments at forensic mental health facilities for the purpose of assessing criminal responsibility or assessing risk of violent recidivism. It is quite common
for the program to have reports which are the product of such assessments. However, only a small minority of individuals (less than 10%) receive such assessments.

The second data source for this investigation is tract-level data from the 2001 Canada Census. Census tracts (CTs) are small, relatively stable geographic areas that usually have a population of 2,500 to 8,000, with a preferred average of 4000. They are located in metropolitan areas with an urban core population of 50,000. Census tract boundaries are delineated to follow permanent and easily recognizable physical features, such as major streets or railroads and are drawn to be relatively uniform in terms of socio-economic characteristics, such as economic status of residents and social living conditions at the time of their creation. For the purpose of statistical comparison and reporting, census tract boundaries are formulated to be maintained over a long period of time; however, physical changes in street patterns and new construction may require a redrawing of tract boundaries as would population increases over 8000 persons. The upper limit of 8000 facilitates retention of relatively homogeneous tracts and permits data comparability across CTs (Statistics Canada, 2003).

Previous research suggests that most people consider their neighbourhood as smaller than an entire city sector (e.g. the South side of a city), but larger than one city block (Lee & Campbell, 1997). Census tract boundaries are situated between these two extremes and are drawn to embody relatively homogenous populations in terms of socio-economic characteristics and easily recognizable physical features in terms of urban landscape. As such they come closer than any commonly available statistical geographic unit in approximating the usual conceptualization of a neighbourhood (Silver, 2000a). In addition, census tracts are commonly used to operationalize the construct of neighbourhood.
within the empirical literature (Massey, Gross, & Shibuya, 1994; Robert, 1998; Silver, 2000a; Silver et al., 2002; South & Crowder, 1997).

Using the above data sources, a multi-level analysis consisting of individual-, situational- and neighbourhood-level characteristics was possible for individuals with serious mental illness involved in the criminal justice system. As noted previously, prior research undertaking a multi-level analysis of violence did so on patient samples (e.g. Silver, 2000a; Steadman & Silver, 2000). Consequently, results of such analyses may not be transferrable to offender populations. Prior research suggests that patient populations and offender populations may differ with respect to clinical presentation (Côté et al., 1997). It is conceivable that they may also differ with respect to contextual antecedents of violence.

Though these data sources hold promise for providing useful information about the interaction of clinical and contextual correlates of violence among persons with mental illness charged with violent offenses, there are nevertheless limitations with these data sources. First, though individuals charged with very serious violent offenses (e.g. homicides or attempted homicides) are referred to the court support program, these individuals are usually referred for the purpose of obtaining a hospital-based, court-ordered psychiatric assessment of their fitness to stand trial or their criminal responsibility. Individuals with mental disorder charged with such serious offenses whose counsel do not seek such assessments are not as likely to be referred to the program as they have little prospect of bail and no possibility of obtaining mental health diversion (i.e. having their charges withdrawn in lieu of participating in treatment). Similarly, individuals that are charged with other very serious violence (e.g. armed robbery of a bank) and who have very
lengthy criminal records may be less likely to be referred to the program, unless a psycho-
legal psychiatric assessment is required, as they have very limited hope of achieving a
release from custody (on bail or probation). On balance, the sample to be derived from the
clinical data source is likely to be more representative of mentally disordered persons
coming into conflict with the criminal justice system than samples derived from forensic
mental health centres as such facilities generally deal with individuals with more serious
offenses as well as individuals with profound psychiatric impairment; however, the sample
is also more likely to under-represent those individuals charged with the most serious of
offenses and/or those possessing the lengthiest criminal records. Second, while individuals
with severe psychiatric impairment are likely to be referred to the program either for
assistance with bail or diversion, some individuals with serious mental illness may decline
the assistance of the program, preferring not to be connected to or associated with any
mental health services. As such, the sample may not be representative of individuals with
serious mental illness who are not adherent to treatment and are averse to receiving mental
health services. However, individuals with profound impairment are likely to come to the
attention of the program as such individuals will often require an assessment of their fitness
to stand trial and will thus be seen by the court worker and court psychiatrist. Third, most
of the clients charged with a violent offense tend to be charged with simple assault or
assault with a weapon. A quantification of the seriousness of their violent offense using
established scoring conventions (e.g. Cormier-Lang System for Quantifying Criminal
History) is likely to produce a violence offense distribution that is positively skewed. Such
skewness however is likely the product of a low base rate of serious assault offenses rather
than a result of a systematic exclusion of individuals charged with more serious forms of
assault (e.g. aggravated assault). Fourth, data extracted from the 2001 Census are based on administrative demarcations of neighbourhood boundaries (i.e. census tracts) and may not be representative of the actual boundaries of neighbourhoods as perceived by the residents and constituents of local geographic communities. To the extent that administrative demarcations of neighbourhoods are not congruent with the collective conceptualization among residents of a geographic community, neighbourhood effects on violence may be under-estimated (Silver, 1999). Finally, the census data only affords a snapshot of neighbourhood structural conditions at one point in time (i.e. conditions existing on May 15, 2001). However, because the reference period of the study extends over eight years (1998 to 2006), the census data can only provide an approximation of the structural conditions of neighbourhoods within which subjects resided at the time of their arrest.

**Data Collection Procedures**

A retrospective chart review of program files on client admissions beginning in the year 1998 through to 2006 was utilized to address the research questions. The study was initially limited to charts with admissions between 1999 and 2005; however, because the number of charts meeting the selection criteria for the study within the time frame 1999 and 2005 fell below the anticipated number, the period of review was expanded and charts with admission dates in 1998 and 2006 were included in the study. Clinical charts and supplemental arrest records were content analyzed to extract data on arrestee/offender characteristics and on crime scene behaviours. The clinical charts also provided the home address of arrestees/offenders at the time of arrest. This allowed the mapping of arrestee/offender addresses to census tract data from the 2001 Census to identify the structural features of the home environment of arrestees/offenders at the time of their arrest.
arrest. Details of this mapping process are outlined below in the section entitled Geo-
coding.

**Coding Strategy**

The program charts and census tract record provided valuable data on a number of
historical, clinical, and contextual variables identified in the afore-noted model. However,
these data sources did not enable direct measurement of some of the constructs identified in
the model. Specifically, the data available through the program files did not permit
measurement of criminal propensity variables (i.e. moral judgment and self control),
subjective situational variables (i.e. perception of alternatives and process of choice), as
well as historical contextual and psychobiological variables (e.g. adverse family
environment, neurobiological pathology, neuropsychological deficits and difficult
temperament). In like manner, direct indicators of social disorganization and peer
group/companions were not available. To address the absence of measures of these
constructs within the data source a number of coding strategies were undertaken including
theoretical or deductive inference, application of proxy measures and exclusion. With
respect to the criminal propensity variables, the presence of these intervening variables was
inferred on theoretical grounds. For example, though the program charts did not enable
direct measurement of criminal propensity variables such as moral judgment and self-
control, they did permit measurement of variables thought to influence these constructs
such as the presence of psychotic symptoms, substance abuse problems or an antisocial
personality disorder which are hypothesized to influence variables related to criminal
propensity. Psychotic symptoms are posited to influence both moral judgement and
executive functioning. For example, an individual experiencing threat/control-override
symptoms may, as a result of persecutory delusions, fear for his life and thus believe the use of violence is morally justified as an act of self-defence against perceived attackers. Moreover, emotional distress (e.g. panic or rage) resulting from a delusional belief system may compromise an individual’s capacity for self-control and result in violence. By comparison, a substance abuse problem may be indicative of the presence of impulsivity and sensation-seeking personality traits which affect an individual’s capacity for self-regulation and response inhibition. Substance abuse also affects executive functioning through intoxication which may compromise an individual’s capacity for self control. Moreover, intense drug cravings may also overcome self-control and result in violent offenses motivated by a need for money to support continued drug use. Finally, antisocial personality disorder may be indicative of the presence of criminogenic moral values and emotions and/or of compromised executive functioning. Antisocial personality disorder is characterized by a pattern of disregard for and violation of social norms with respect to lawful behaviour and deceitfulness for the purpose of personal profit or pleasure, by a lack of empathy and remorse, and by impulsivity and an inability to tolerate boredom.

In addition to theoretical inference, logical deduction will be applied to infer the presence of variables. Direct indicators of variables such as the perception of crime as a behavioural alternative and the decision to commit an offense (i.e. making the choice to commit a crime) were also not available in the data source but the presence of these constructs was inferred on the basis that individuals have engaged in behaviours resulting in criminal arrest.

Another form of inference utilized in the study involves the application of proxy measures. For example, the measures selected from the census tract records are not direct
indicators of neighbourhood social disorganization processes (Silver, 1999); rather, they represent measures of the posited structural antecedents of social disorganization which have been identified in the literature (Miethe & Meier, 1994; Sampson & Groves, 1989; Silver, 1999; Silver, 2000a). These measures thus serve as proxy indicators of neighbourhood social organization/disorganization and conclusions drawn regarding the effects of neighbourhood social disorganization must be inferred from the effects of these structural antecedents (Silver, 2000a).

Where proxy measures were not available exclusion of the theoretical construct was required. For example, data on peer group and companions was not consistently reported in the program files and a reliable proxy measure was not available. As such, this variable was not included in the investigation. Similarly, information was not available from the study data sources to permit measurement of the hypothesized developmental precursors of early onset persistent criminal behaviour as well as the neurobiological determinants of severe mental illness or substance abuse. Consequently these variables were excluded from the study.

These strategies address the absence of indicators within the data sources for constructs identified within the conceptual model presented above; however, a strategy was also required to deal with variables for which indicators are available in the data sources but no guidance exists within the theoretical literature about how the variables ought to be operationalized. Though Wikström’s Situational Action Theory of Crime (upon which the model presented herein is based) provides a useful framework for the conceptualization of how the proximal contextual antecedents of crime may be categorized, his theory does not identify the specific configuration of objects, persons and
events found within behavioural settings that provide opportunities for crime or cause friction. Consequently, the concepts of instrumental and expressive violence were used as an analytic device to categorize violence with specific behavioural themes based on descriptions of violent offenses noted within arrest records. The distinction between instrumental and expressive violence has been widely used in the criminological research (Cornell, Warren, Hawk, Stafford, Oram, & Pine, 1996; Miethe & Drass 1999; Salfati, 2000; Santtila, Canter, Elfgren, & Häkkänen, 2001). These categories refer to the apparent motive for violence. Instrumental violence is goal-directed behaviour designed to achieve an objective beyond the actual violent act and is often related to co-opting resources (e.g. robbery) whereas expressive violence occurs in response to anger-inducing conditions such as insults or provocations (see Salfati & Dupont, 2006). Thus, the instrumental/expressive distinction closely parallels Wikström’s distinction between social contexts which provide opportunity for crime and those that cause friction. Consequently, the type of behavioural settings within which violence occurs may be inferred from the resulting style of violence. This inference could, in future research, open up the possibility of deducing characteristics of the behavioural setting which engender opportunity or friction from the instrumental or expressive actions exhibited by the offender at the crime scene. Such research may facilitate theoretical cross-fertilization across conceptual frameworks. Such an investigation however is beyond the scope of the current research.

Within the present study, the concepts of instrumental violence and expressive violence were used as proxy indicators of the presence of objects, persons and events (i.e. behavioural settings) associated with crimes of opportunity and those that are associated
with crimes of emotion (engendered by friction). Such a strategy provides a way to elaborate upon Wikström’s conceptual framework as well as the model presented in this dissertation. Toward this end, a review of arrest records was undertaken to classify violent crimes with specific behavioural themes related to the apparent motive of the crime.

Once violence was coded according to apparent motive, measures of the proximal social context were also used to explore differences across crime scene settings. The dimensions of the proximal social context that were explored include time and location of violence, target of violence, and weapon use during violent offense.

Table 4.1 summarizes the variables drawn from the conceptual model presented in Chapter 3 and, where applicable, identifies the strategies used for their operationalization. The operational definitions of these variables are outlined below and are detailed in Appendix A (Chart Review Protocol).

**Geo-coding**

Geo-coding is the process of assigning geographic identifiers (codes) to map features and data records. The resulting geo-codes permit data to be linked geographically. A three-step process was utilized to geo-code each subject’s address to its respective census tract. First, where not already included in the chart/arrest record, the postal code of each individual’s home address was obtained through Canada Post’s online Postal Code Look-Up database. In situations where an individual had no fixed address, the last known address prior to the index offense identified in the file was used. Individuals residing in shelters were geo-coded according to the address (i.e. postal code) of the shelter. Where no address was available (e.g. the individual was living on the
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<tr>
<th>Concept</th>
<th>Indicator/Proxy</th>
<th>Measure</th>
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<tr>
<td>Individual Differences</td>
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<td>Neurobiological Pathology</td>
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<td>Family Disruption</td>
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<td>Inconsistent Discipline</td>
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<td>Parental Deviance</td>
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<td>Victimization</td>
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<tr>
<td>Early Onset Criminal Behaviour</td>
<td>Arrest prior to Age 18</td>
<td># Arrest prior to Age 18</td>
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<td>Severe Mental Illness</td>
<td>Primary Diagnosis</td>
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<td>Psychotic Symptoms</td>
<td>TCO Symptoms; Command Hallucinations</td>
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<td>ASPD</td>
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<td>Alcohol/Drug Use Problem</td>
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<td>Treatment Adherence</td>
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<td>Criminal Propensity</td>
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<td>Moral Values/Emotions</td>
<td>Psychotic Symptoms</td>
<td>TCO Symptoms; Command Hallucinations</td>
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<td>Executive Functions</td>
<td>Psychotic Symptoms</td>
<td>TCO Symptoms; Command Hallucinations</td>
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<td>Perception of Alternatives</td>
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<td>Expressive Motive</td>
<td>Expressive Motive</td>
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<td>Opportunity</td>
<td>Instrumental Motive</td>
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Table 4.1 Indicators and Measures of Conceptual Variables  Continued

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<thead>
<tr>
<th>Concept</th>
<th>Indicator/Proxy</th>
<th>Measure</th>
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<tr>
<td>Monitoring</td>
<td>Presence of Third Party</td>
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<td>Third Party Known to Victim</td>
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<td>Third Party Intervened</td>
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<td>Companions/Peers</td>
<td>Homeless</td>
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<td>Social Supports/Controls</td>
<td>Use of Mental Services</td>
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<td>On Bail/Probation</td>
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<td>Socio-economic Level</td>
<td>% LICO Economic Families</td>
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<td></td>
<td>% LICO Single Person</td>
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<td>% LICO Private Households</td>
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<td>% Primary Income Government Assistance</td>
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<td>Median Income Private Households</td>
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<td></td>
<td>Median Income Unattached Person</td>
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<td></td>
<td>% Persons Income over $60000</td>
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<td>% Census Families Income over $100000</td>
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<td>% Private Households Income over $100000</td>
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<td>% Unemployed</td>
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<td>% Senior Managers</td>
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<td>Population Mobility</td>
<td>% Resident Longer than 5 years</td>
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<td>Ethnic Heterogeneity</td>
<td>% Foreign Born Residents</td>
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<td>% Recent Immigrant</td>
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<td></td>
<td>% Visible Minority</td>
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<tr>
<td>Family Disruption</td>
<td>% Single Parent Households</td>
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<tr>
<td>Non-Criminal Action</td>
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<tr>
<td>Property Crime</td>
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<tr>
<td>Violent Crime</td>
<td>Most Serious Violent Index Offense</td>
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<td></td>
<td>Composite Seriousness Violent Index Offenses</td>
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street) the postal code of the address of the offense location was used as a proxy indicator of the individual’s neighbourhood residence. Second, using Statistics Canada Postal Code Conversion File, the obtained postal codes were used to geo-code each subject’s address to its respective census tract. The Postal Code Conversion File (PCCF) provides the correspondence between the six character postal code and Statistics Canada’s standard geographical areas (e.g. Census divisions, Census subdivisions, Census tracts) for which census data are produced. Each CT is assigned a seven-character numeric “name” by Statistics Canada to enable identification of specific tracts. Third, data on specific census tract variables were obtained through the University of Toronto Data Library Service using the seven-character CT reference code. Data on census variables were downloaded to a Microsoft Excel spreadsheet and then imported into SPSS Version 16 for analysis.

Coding Framework

To extract data from the files of the court support program, a Microsoft Access data extraction software package was developed along with a coding manual with clear protocols and guidelines instructing chart reviewers where and how data was to be extracted (see Appendix A). Two reviewers were used to extract data from the program’s clinical charts. The data extraction instrument was first piloted on a selected subsample of approximately twenty percent of the total sample of charts by the two raters to determine the inter-rater reliability of the instrument. To assess inter-rater reliability, Cohen’s Kappa was utilized for categorical variables and interclass correlation coefficients for continuous variables. A minimum of 80% reliability was required and variables with reliability below 80% were re-operationalized or excluded. In total, data was collected on
65 variables for the current study. The section entitled Measures below provides a summary of the operational definitions of the variables for which data was obtained. The data extraction instrument and protocols in Appendix A provide detailed operational definitions for all variables within the current study. The next chapter in this dissertation (Chapter 5) provides details about the procedures utilized for the extraction of data from clinical charts of the court support program and the results of a pilot study of the data extraction instrument.

Sample Selection

Eligibility for inclusion in the study was limited to males, over the age of 18 charged with a violent criminal offense and possessing a primary chart diagnosis of schizophrenia, schizoaffective disorder, delusional disorder, other psychotic disorder (including major affective disorders with psychotic features, organic brain syndrome such as dementia, psychotic disorder not otherwise specified), bipolar affective disorder (types I and II), and major depressive disorder. The sample was limited to males in order to avoid sample bias as only out-of-custody females with criminal charges are processed at the courthouse where the mental health court support program is located.

Research Ethics Board Consent

Written consent to access the client records and to collect data for the purpose of the study was obtained from the Director of Specialized Services of the Canadian Mental Health Association, Toronto Branch. The Director is responsible for the operations of the program and has the organizational authority within the agency to provide the required consent to access client files and to collect data for the purpose of this research project. Informed consent of the sample subjects however was not possible given the size of the
sample and the retrospective nature of the study. Data was to be collected from files of clients who received service from the program in the years 1998 through to 2006. Consequently, the likelihood of residential mobility among a significant proportion of the sample precluded the possibility of contacting all the sample subjects. It was not economically feasible or methodologically practicable to track down and contact individuals who were previous clients of the program. The Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans stipulates that Research Ethics Boards may waive the need for informed consent from subjects where the research could not practicably be carried out without a waiver and involves minimal risk to subjects and is unlikely to adversely affect the rights and welfare of subjects (Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, Social Sciences and Humanities Research Council of Canada, 2005). The Research Ethics Board of the University of Toronto provided approval for the study described above. See Appendix B for the Research Ethics Board letters of approval.

**Measures**

The main purpose of this study is to evaluate the extent to which factors associated with the prediction of the occurrence of violence among persons with mental illness also predict the extent or severity of violence perpetrated. More specifically, it is designed to assess the influence of ecological factors for a typology of offender based on age of onset and persistence of offending in accounting for violence severity among persons with mental illness charged with a violent crime. Consequently, the following criteria were used to select specific factors for inclusion in this study: 1) they have been demonstrated by prior research or theory to be associated with risk of violence among persons with mental
illness; 2) measures of these factors were readily available in the data sources (i.e. the clinical charts of the court support program and the census data of Statistics Canada). The specific variables selected for inclusion in data collection are described below. Appendix A provides a detailed description of the operationalization of variables drawn from the clinical charts of the court support program for the current study.

**Demographic Variables**

Two demographic characteristics were measured for this study: *age* and *race*. *Age* was the number of years since birth; *race* was categorized according to one of four groupings including African American, East Asian or other race, South Asian, and white. This variable was subsequently dichotomized into two groups for bivariate and multivariate analyses: person of colour and white.

**Criminal History**

Criminal history was measured along two dimensions: quantification of official recorded offense history and early onset of criminal history.

**Quantification of Official Recorded Criminal History.** Four measures quantifying official criminal histories were used based on subjects’ official criminal records: *total prior sentencing events*, *total prior offenses*, *total violent offenses*, and *cumulative seriousness of prior violent offenses*. *Total prior sentencing events* was measured by the total number of times an individual was sentenced for one or more criminal offenses. *Total prior offenses* was measured by the total number of offenses (both violent and non-violent). *Total prior violent offenses* was measured by the number of prior violent offenses. And lastly, *cumulative seriousness of prior violent offenses*, a measure of the seriousness of past
violent criminal offenses, was calculated using a modified version of the Cormier-Lang System for Quantifying Criminal History (Quinsey, Harris, Rice, & Cormier, 1998).

The Cormier-Lang system is a classification system for quantifying criminal history in which weights are assigned to offenses based on the type of crime. To obtain a single overall violent (or non-violent) criminal history score, all arrests for all counts of criminal offenses are scored and then summed. This classification system, which is predicated on the Criminal Code of Canada, is used in scoring criminal history in the Violence Risk Appraisal Guide, an actuarial measure of the risk of violent recidivism (Quinsey et al., 1998). According to Quinsey and colleagues, the Cormier-Lang system “can be used to quantify an offender’s past criminal offenses, a current or index offense, or a particular subgroup of offenses (such as violent or property offenses)…The system can be used when only official police “rap sheet” information is available, but when possible, police reports from investigating officers and witnesses should also be used to clarify details” (1998: 250-251). This classification system was used to categorize offenses as violent or non-violent and to quantify the seriousness of violent criminal history according to the weights specified.

A number of modifications to this classification system were required to obtain a cumulative seriousness of previous violent offense score because of the limited availability of detailed information regarding prior offenses. One of the changes made was the classification and scoring of the charge of robbery. Quinsey and colleagues draw a distinction between robbery involving physical violence and other types of robbery (e.g. robbery involving the threat of violence or purse-snatching). Information about criminal history was obtained from criminal records (i.e. “rap sheets”); however, while specifying
the type of offense (e.g. assault, robbery) this data source does not provide the detailed information required to discern whether a robbery offense involved physical violence or involved threats of violence or purse snatching. Consequently, for the purpose of this investigation the offense of robbery as it appears in criminal records was classified as a violent offense. In addition, one consistent score (i.e. weight) was given to the offense of robbery. According to the conventions of the Cormier-Lang system, robbery of a bank or store is scored 7 and robbery involving purse snatching is scored 3. Given the limitations of the data source to distinguish between these subcategories of robbery, all robbery offenses (not involving a weapon) were scored 5 (the average weight of these types of robbery offenses). A second change to the classification system relates to the offense of armed robbery. Quinsey and colleagues distinguish between armed robbery of a bank or store and armed robbery of other entities; the former scoring 8 and the latter scoring 4. However, because it was not possible to discern the target of armed robbery from the criminal record, a weight of 6 (the average of the two subcategories of the offense type) was assigned to all armed robbery offenses. A third related modification was made to the scoring of sexual assault offenses. Quinsey and colleagues distinguish between sexual assault involving vaginal or anal penetration or forced fellatio and sexual assault involving attempted rape, uninvited sexual touching or oral sex performed on the victim. Within the Cormier-Lang classification system, the former set of sexual offenses is scored 10 while the latter set of sexual offenses is scored 6. However, because criminal records do not specify details of the sexual offense, convictions for sexual assault were assigned a weight of 8 (the average of the weights assigned to these two subcategories of sexual offenses specified by Quinsey and colleagues). The above modifications to this
classification system were undertaken to ensure continuity in scoring of items because of the limited availability of detailed information regarding prior offenses.

**Early Onset Persistent Criminal Behaviour.** In order to distinguish between early-start and late-start offenders, the number of arrests as a youth (i.e. prior to the age of 18) was collected. An early-start offender was defined as an individual who, based on their criminal record and/or their clinical file, has been charged with a crime prior to the age of 18. Late-start offenders were defined as individuals who, based on their criminal record and/or clinical file, have been charged with a crime after the age of 18. (The variables early-start and late-start offenders were created after data collection but prior to data analyses by dichotomizing the variable number of arrests as a youth.) It should be noted that within Canada, a youth’s criminal record is expunged after varying lengths of time, depending upon the seriousness of his or her offense(s). Young persons found guilty of a summary conviction offense (which is punishable by up to 6 months in jail) have their youth records expunged after three years. Young persons found guilty of an indictable offense (a more serious category of offenses) have their youth records expunged after five years. However, where a young person is found guilty of a subsequent summary conviction, the original offense will be retained on record until three years after the subsequent summary conviction. And, where a young person is found guilty of a subsequent indictable offense, the original offense will be retained on record until five years after the subsequent indictable offense conviction. Notwithstanding these time limits, where, before the expiration of the above-specified time periods, the young person is found guilty of a subsequent offence as an adult, the young person’s youth record shall become part his or her adult criminal record. Consequently, it is conceivable that some early starters
may be misclassified as late starters in that they may have been charged with minor crimes which have been deleted from the criminal record registry prior to incurring criminal offenses as an adult, thus leaving the data on their criminal record incomplete. The misclassification of early-start offenders as late-start offenders would result in an underestimation of the strength of any potential effect size and thus could lead to type II errors.

Clinical Variables

Primary Diagnosis. Primary diagnosis was established by an extensive review of the subject’s chart. If two or more psychiatric reports within the chart provided conflicting information regarding diagnosis, subjects were assigned the diagnosis they received in the psychiatric report within their chart that involved the longest duration of hospitalization/assessment. The study focused on five general types of diagnoses: 1) schizophrenia, 2) schizoaffective disorder, 3) delusional disorder, 4) other psychotic disorder (including major affective disorder with psychotic features, organic brain syndrome such as dementia, psychotic disorder not otherwise specified, 5) bipolar affective disorder (types I and II), and 6) major depressive disorder. To deal with comorbidity among the 5 categories, primacy was given to the diagnosis with the highest rank on the above list (1 is highest) in assigning a person to a category.

Comorbid Clinical Issues

Personality Disorder. Information about the presence of a personality disorder was obtained from a review of the clinical portion of individuals’ files. Two dichotomous variables were used to code the presence of a personality. One variable, anti-social personality disorder (ASPD), was used to code for the diagnosis of anti-social personality
disorder or psychopathy as well as for the presence of sub-clinical anti-sociality (i.e. medical notation of presence of anti-social personality traits). The other was coded for the presence of a personality disorder other than anti-social personality disorder or psychopathy (Other PD). APSD was separated from other personality disorders in the data collection because of its significance in the theoretical frameworks outlined above.

Substance Abuse Problems. Three measures of problem substance use were used: alcohol use problem present, drug use problem present, alcohol and drug use problem present. Subjects were considered to have an alcohol use problem if they had a DSM-IV or DSM-IV-TR Axis I alcohol abuse/dependence diagnosis in their clinical record, and/or received substance abuse treatment while in the program and/or were mandated or encouraged to participate in substance abuse treatment and/or reported problem use to court clinicians. Similarly, subjects were defined as having a drug abuse problem if they had a drug abuse/dependence diagnosis in their clinical record, and/or received or were mandated or encouraged to participate in substance abuse counselling or endorsed problem drug use. Finally, subjects who had an alcohol and drug use problem using the above definitions for problem use were classified as having an alcohol and drug use problem. This latter variable was not included in the chart protocol but created prior to data analysis by combining the variables alcohol use problem and drug use problem present. This variable was included to examine if cross problem use increased violence severity over and above problem use in one area.

The above operationalization of substance abuse allows for inclusion of “at-risk” substance users who have not been formally diagnosed with a substance abuse disorder. Since research suggests that substance abuse is underdetected and underdiagnosed in
psychiatric settings (Ananth, Vandewater, Kamal, & Brodsky, 1989; Drake & Wallach 1989) and that alcohol or illicit drug use below a diagnostic threshold by persons with major psychiatric disorders can lead to symptom exacerbation, behavioural difficulties and treatment complications (Drake, Alterman, & Rosenberg, 1993), the study will employ “problem use” as the key severity threshold. Such an approach is congruent with previous research on the effects of substance abuse among persons with mental disorder as related to violence (Swartz et al., 1998a; 1998b).

**Psychotic Symptoms**

*Threat/control-override.* In previous studies, researchers have operationalized TCO symptoms directly from items taken from inventories of psychiatric symptoms (Link et al., 1999; Swanson et al., 1999). In the current study, TCO was measured through 4 indicators: 1) belief that others are following one (*persecutory ideation—followed*); 2) belief that others are plotting against one, trying to harm or poison one (*persecutory ideation—harm*); 3) belief that others are controlling one’s mind or body (*delusion of control*); and, 4) belief that others can put thoughts directly into one’s mind or conversely that others can steal thoughts from one’s mind (*thought insertion/withdrawal*). The former two variables are indicators of threat symptoms while the latter two are indicators of control-override. This operationalization of TCO is congruent with the definition used by Swanson and colleagues (1997) and closely approximates that used Link and colleagues (1999) (the latter group did not include thought withdrawal or beliefs about being followed). To determine whether subjects experienced threat/control-override symptoms, the client files were reviewed to determine if the afore-mentioned symptoms were present. Each of the variables was scored as either present or absent. The dichotomizing of each symptom of the threat/control-
override constellation was to allow for an evaluation of whether any of the specific symptoms are related to increased severity of violence in early-start as opposed to late-start offenders.

**Command Hallucinations.** To evaluate the relationship between command hallucinations and violence, command hallucinations were measured across two dimensions: *violent content of command hallucinations and familiarity of hallucinated voice*. With regard to content of command hallucinations, the program files were reviewed for evidence of the presence of violent command hallucinations (i.e. command hallucinations to hurt others). With regard to familiarity, files were reviewed for evidence that subjects endorsed any command hallucination and were able to identify the hallucinated voice. (Command hallucinations are auditory perceptual disturbances subjectively experienced as a voice or as voices that instruct the subject experiencing the hallucination to perform an act). Both variables (violent command hallucinations and familiar voice) were scored as present or absent. During the initial intake assessment into the program, a brief mental status examination is routinely undertaken. Individuals endorsing the presence of hallucinations are asked to describe the voice(s) and what the voices said.

**Medication Non-compliance**

*Medication non-compliance* is a variable that was used as a measure of treatment adherence. Subjects whose clinical file indicated that they were not taking psychotropic medications prescribed to them at the time of the index offense (or at the time of their initial assessment if information about treatment compliance at the time of the index offense was not recorded) were affirmatively coded as medication non-compliant.
Conversely, subjects who were adherent with their medication regimen and subjects who were not prescribed any medication were coded as not medication non-compliant. Finally, subjects who were prescribed medication but whose compliance with the medication regimen was unclear were coded as “medication non-compliance unknown”.

**Earliest Contact with Mental Health Professional**

*Earliest contact with a mental health professional* served as a proxy measure for onset of major mental disorder. In order to control for the possibility of an onset of major mental disorder in adolescence which may result in criminal arrest prior to the age of 18, the age of subjects’ first contact with a mental health professional was recorded. Such professionals may include psychiatrists, psychologists, or mental health case managers. *Earliest contact with a mental health professional* may include age of first psychiatric hospitalization or age at first mental health apprehension.

This variable is at best a weak indicator of age of onset of mental disorder and has the potential to be confounded with early-start offending as some portion of youths will have contact with a mental health professional not because of a suspected mental illness but because of a court-ordered assessment to identify level of risk and criminogenic needs related to violent offending. Unfortunately, no other measure of the onset of mental illness is consistently captured within the data source. Caution is required interpreting effects related to the variable given the inherent limitations of its measurement in the current study.

**Behavioural Setting Variables**

Proxy measures were used to examine the extent to which violence severity is impacted by behavioural settings which tempt, provoke or potentially deter serious violent
offenses. The motive for violence was used as an indicator of whether the setting provided opportunity for criminal activity or created friction leading to violence. In addition, the presence and involvement of third parties was used as a measure of the setting’s capacity to monitor and, thus, deter more serious acts of violence.

**Motive of Violence.** Motive for violence was measured with three dichotomous variables: *motive known* (1 = yes; 0 = no), *instrumental motive present* (1 = yes; 0 = no); and, *expressive motive present* (1 = yes; 0 = no). Classification of motive was based on a detailed review of arrest records as well as forensic psychiatric reports where the latter were available. Motives were classified as unknown if raters were unable to discern whether the criminal violence had instrumental or expressive motives. Violence was classified as instrumental if a clearly identifiable purpose other than responding to provocation was present. In contrast, violence was classified as expressive if the violence was a reaction to a dispute or interpersonal conflict. If the violent offense involved both instrumental and expressive elements, it was classified as having both an instrumental and an expressive motive. Previous research used a similar operationalization of instrumental and expressive violence (Cornell et al., 1996; Miethe & Drass, 1999; Murrie, 2002).

**Monitoring.** Monitoring refers to the likelihood of detection and intervention if people act unlawfully. Settings vary in the level of risk of intervention and sanctions posed to persons who violate the law. At least two related factors may affect monitoring capacity within a setting: the presence of a witness and the willingness of third parties to intervene. In the context of this study, monitoring was measured with three dichotomous indicator variables: *third party present* (1 = yes; 0 = no); *third party known by victim* (1 = yes; 0 = no) and *third party intervened* (1 = yes; 0 = no). *Third party present* refers to any person
present during the incident that is not the primary victim or a co-accused. *Third party known by victim* refers the nature of the relationship between the victim and third party. Family and friends/acquaintances were coded as known by the victim whereas strangers were coded as not known by the victim. *Third party intervened* refers to any attempt by a third party to mediate, reconcile or otherwise prevent the violent occurrence. These situational elements may be conceived of as a crude gradient of the degree of monitoring extant within a situation. The mere presence of a third party may be understood to increase the probability of apprehension. The presence of an ally of the victim further increases the risk of detection as third parties known to the victim have greater social investment in cooperating with police in identifying offenders than would strangers. Finally, third parties that attempt to intervene in an emerging violent situation are likely to increase attention to a situation (thereby increasing the risk of detection) and may diminish the degree of violence in a situation as an offender may be concerned about identification, detention or retaliation by the third party and victim.

**Proximal Contextual Variables**

Several situational features of the behavioural setting within which violence occurred were also examined: *target of violence, weapon use, substance use at the time of the index charge(s), and time and location of the violent offense*. These proximal contextual variables were derived from earlier studies on the situational precursors of violence among persons with mental disorder (see Langström, Grann, Tengström, Lindholm, Woodhouse, & Kullgren, 1999; Monahan et al., 2001; Steadman & Silver 2000).

**Target of violence.** The target of violence was also discerned from the arrest record. Target of violence was measured by three variables: *number of victims, gender of victim*
and offender-victim relationship. The variable number of victims was coded as the numeric count of the number of victims of violence during the index offense. The variable, gender of victim (0 = female; 1 = male) was used to record the gender of the primary victim.

Primary victim was defined as the individual who experienced the most serious violence. Seriousness of violence was discerned through application of the Cormier-Lang System for Quantifying Criminal History. Where more than one victim experienced the same level of violence, the first victim in the sequence of violent events was designated as the primary victim. The variable offender-victim relationship was also applied to the primary victim and was measured through a nominal variable composed of the following categories: spouse/partner/ (ex) intimate, other family, friend/acquaintance, stranger and peace officer. The approach of characterizing cases according to the most serious incident and/or the first act reported for each subject has precedent in the empirical literature (Monahan et al., 2001). In a one-year panel study of approximately 1000 patients discharged from hospital, Monahan and colleagues collected information on the predictors of violence using both individual incidents of violence (i.e. each individual act) and individual patients as the units of analysis and then compared findings across these two units of analysis. They found that limiting each case to just one incident (whether the most serious one or the first one) does not change the profile of the types of acts, targets and locations.

**Weapons Use.** The use of a weapon during a violent act was measured by three variables which were drawn from the arrest record: weapon use at offense, most serious violent index offense a weapon threat and composite seriousness of index weapon threats. Weapon use at offense is a dichotomous variable used to indicate whether a weapon (real or imitation) was used in the commission of a violent act or threats of violence were made
with a weapon in hand at the time of the violent incident. A weapon was operationalized as any object used by the offender to cause injury or threaten injury to the victim. *Most serious violent index offense a weapon threat* is a dichotomous variable used to determine whether the most serious violent index offense is a weapon threat. A weapon threat was defined as a threat of bodily harm or death made with a weapon (real or imitation) in hand at the time of the violent incident. For an incident to be coded as a weapon threat, the subject had to be charged with Threatening Bodily Harm or Threatening Death and had to have a weapon in hand at the time of the threat of injury or death. The modified Cormier-Classification System was used to determine whether the weapon threat was the most serious violent event at index offense. *Composite seriousness of index weapon threats* is a composite score of all weapon threats occurring during the violent index offense. The Cormier Lang system was used to calculate this score. Specifically, the total number of weapon threats were summed and then multiplied by the weight accorded to weapons threats in the Cormier Lang system (i.e. 3). The two latter variables relating to weapons threats were not used in analyses to answer the research questions posed in Chapter 3. Rather they were added to ascertain and describe the extent to which the violent index offense(s) included acts involving physical assaults or homicide as opposed to serious threats of physical violence. These two variables were added to the data extraction instrument toward the end of the data collection phase when the definition of violent index offense was expanded to include threats made with a weapon in addition to physical acts of violence. The inclusion of weapons threats in the definition of violent index offense is consistent with the operationalization of violence in previous research on violence (Monahan et al., 2001; Steadman et al., 1998) and permitted expansion of the sample size.
Substance Use Prior to Violent Offense. Substance consumption at the time of the violent incident was measured with two dichotomous indicator variables: alcohol consumption before offense and drug consumption before offense. A reliable direct measure of intoxication (or amount of consumption of substances) is not available within the data source. Consequently, endorsement of alcohol or drug consumption prior to the index offense was to serve as a crude proxy measure of intoxication.

Time of Violent Offense and Location of Violent Offense. The approximate time of day that the violent incident occurred was measured by the variable time of violent offense, where 1 = offense occurring between 12:00am and 5:59am, 2 = offense occurring between 6:00am and 11:59am, 3 = offense occurring between 12pm and 5:59pm, and 4 = offense occurring between 6:00pm and 11:59pm. The location of the violent event was recorded according to the arrest record. The location was coded as offender’s home, other residence, street/outdoor, hospital/ mental health clinic, and other location.

Current Life Circumstances

The current life circumstances of subjects were measured across two dimensions: economic deprivation and social support/control.

Economic Deprivation. Two dichotomous variables were used as a measure of current economic deprivation—meagre income and homelessness. Meagre income was coded affirmatively for individuals who were receiving general welfare assistance or who had no income at the time of the index offense(s). Homelessness applied to individuals who had no fixed address at the time of the index offense(s).

Formal Social Support. Presence of formal social support was measured with a dichotomous indicator variable: use of mental health services. This measure was coded in
the affirmative if the individual was in the care of a mental health professional (i.e. psychiatrist, psychologist, mental health case manager) at the time the index offense occurred.

**Formal Social Control.** Formal social control was measured by the proxy dichotomous variable *on bail/probation*, which refers to individuals who have a recognizance (other than a peacebond) or have a probation or conditional sentence order at the time of the index offense(s).

**Neighbourhood Structural Characteristics**

Data from the 2001 Canada Census was used to infer the degree of social disorganization of neighbourhoods. The selection of data elements from the 2001 Canada Census to measure the structural conditions underlying the process of social disorganization was guided by previous research and theory examining the social ecology of crime and violence (Miethe & Meier, 1994; Sampson & Groves, 1989; Silver, 1999; Silver, 2000a). The following four structural conditions have been identified as criminogenic in theories of community social disorganization: low social economic level, population mobility, ethnic heterogeneity and family disruption.

**Low Socio-Economic Level.** Low socio-economic conditions are thought to be associated with increased crime rates because communities lacking economic resources are unable to generate effective systems of institutional controls embodied in formal and voluntary organizations which serve to promote local community solidarity. Measures of *neighbourhood poverty, neighbourhood wealth* and *neighbourhood employment* were utilized to appraise socio-economic conditions conducive to social disorganization.
Neighbourhood Poverty: The following measures of neighbourhood poverty were extracted from the 2001 Canada Census data file:

1) **Percentage of economic families below Statistics Canada’s Low Income Cut-off (LICO).** The LICOs define a set of income cut-offs below which people are said to live in straitened circumstances. Specifically, LICOs represent income levels at which families or unattached individuals spend 20% more than average on food, shelter and clothing (Statistics Canada, 2003). An economic family refers to two or more persons who live in the same dwelling and are related to one another by blood, marriage, common-law or adoption (Statistics Canada, 2003).

2) **Percentage of unattached individuals 15 years of age and over below Statistics Canada’s LICO standard.**

3) **Percentage of private households below Statistics Canada LICO standard.** A private household refers to a person or group of individuals (other than foreign residents) who occupy a private dwelling and do not have a usual place of residence elsewhere in Canada. The number of private households is equal to the number of private dwellings. It includes family households (economic families and census families) and non-family households, of two or more families sharing a dwelling, of a group of unrelated persons, or of one person living alone.

4) **Percentage of persons whose major source of income is governmental transfer payment.** Government income includes social assistance payments received by persons in need, such as mothers with dependent children, persons temporarily or permanently unable to work, elderly individuals, and persons with disabilities. It also includes payments received from training programs, veterans’ pensions, war
veterans’ allowance, workers’ compensation, Old Age Security pension, Guaranteed Income Supplement, the Canada Pension Plan benefits, Employment Insurance benefits, and the Canada Child Tax benefit.

Neighbourhood Wealth. Five measures of neighbourhood wealth were drawn from the census data: 1) median income of private households; 2) median income of unattached persons; 3) percentage of unattached persons with income greater than $60 000/annum; 4) Percentage of census families with income greater than $100 000/annum; and 5) Percentage of private households with income greater than $100 000/annum. Median income was reported as the dollar amount that marks the midpoint of a distribution of private households and a distribution of individuals 15 years of age and over with income, excluding institutional residents. Statistics Canada defines census families as a married couple (with or without children), a couple living common-law (with or without children) or a lone parent of any marital status, with at least one child living in the same dwelling. By comparison, a private household is a person or group of persons occupying the same dwelling. The occupants may or may not be related to one another by blood, marriage, common-law or adoption. It is a broader category of social grouping that includes, but is not limited to, census families.

Neighbourhood Employment. Neighbourhood employment was measured by two indicators: percentage of unemployed persons 15 years of age or older in the labour force and percentage of persons employed in senior management positions. Unemployed persons were defined as persons who, during the week prior to Census Day (May 15, 2001), were without paid work, were available for work, and actively looked for paid work within the previous four weeks. Also included in the “Unemployed category” were
persons who had been laid off from a job to which they expected to return and persons who did not work during the week prior to enumeration but had arrangements to start a new job in four weeks or less. *Percentage of persons employed in senior management* was obtained from occupational data Statistics Canada collects for persons aged 15 and over. It represents the proportion of individuals who identify their occupation as a senior manager or specialist manager. The 2001 occupation data are classified according to the 2001 National Occupational Classification for Statistics (Statistics Canada, 2001). This classification is composed of 10 broad occupational categories containing 47 major groups that are further subdivided into 140 minor groups. Senior manager is a subgrouping of the occupational category of Management and includes senior government managers, senior managers of financial, communications and other business services, senior managers of health, education, social and community services and membership organizations, senior managers of trade, broadcasting and other services, and senior managers within the field of goods production, utilities, transportation and construction. Specialist managers is another subgrouping of the occupational category of Management and includes administrative services managers (e.g. financial managers, human resource managers), managers in engineering, architecture, science and information systems, sales, marketing and advertising managers and facility operation and maintenance.

*Population Mobility.* Population mobility (also referred to as residential instability) is also widely viewed as a correlate of neighbourhood crime. Neighbourhood residential mobility operates as a barrier to friendship networks, kinship bonds, and local
associational ties (Sampson & Groves, 1989). Population mobility is posited to increase crime rates in geographical areas by reducing community cohesion and integration, decreasing the communal supervision over members of the community and weakening bonds to conventional society (Miethe & Meier, 1994). Community residents are less able to recognize strangers and less apt to engage in guardianship behaviour of community members (Sampson & Groves, 1989).

The measure of population mobility used in the study was the percentage of non-movers (i.e. the percentage of the population in a census tract who at the time of the 2001 Census were living at the same address as the one at which they resided five years earlier). Statistics Canada refers to the relationship between a person’s usual place of residence on Census Day and his or her usual place of residence five years earlier as a person’s Mobility Status. Persons are classified as a non-movers if, on Census Day, they were living at the same address as the one at which they resided five years earlier. In contrast, persons are classified as movers if, on Census Day, they were living at a different address than the one at which they resided five years earlier. Data on Mobility Status is reported for persons 5 years of age and over residing in Canada, excluding institutional residents and Canadians in households outside Canada (i.e. military and government personnel).

**Ethnic Heterogeneity.** Ethnic heterogeneity is also assumed to increase neighbourhood crime because it is believed to impede communication and patterns of interaction among community members, reduce community cohesion and integration and decrease collective guardianship behaviour. Community cohesion and integration
supports the development of formal and informal networks. When community cohesion is high, the ability to control delinquency is increased because the deviant behaviour of a community resident is potentially subject to the reaction of all members of the network. Conversely, the less that a community is able to form dense social networks, the less able it is to constrain deviant behaviour of residents within the community (Sampson & Groves, 1989).

Three measures of ethnic heterogeneity were drawn from the census data. Similar measures were utilized by Silver (1999; 2000a) to measure population heterogeneity. However, these measures may more accurately be said to be indicators of racial/ethnic composition rather than heterogeneity as they capture the total percentage of newcomers and visible minorities rather than relative size and balance of racial and ethnic groups in the population. Sampson and Lauritsen (1994) note that while racial and ethnic heterogeneity have always been accorded a central role in the social disorganization perspective, most research on violence has examined racial composition-usually percent black-rather than racial heterogeneity per se (e.g. extent to which a neighbourhood is composed of 50% white residents and 50% black residents). To facilitate comparisons with prior research of the effect of population heterogeneity on violence among persons with serious mental illness, measures comparable to those used by Silver (1999; 2000a) are used herein.

1) **Percentage of foreign born residents.** Statistics Canada collects information about the place of birth of residents. Individuals are classified as non-immigrant residents, immigrant residents and non-permanent residents. Non-immigrant
residents are people who are Canadian citizens by birth. Immigrant residents are people who are or who have at any point been a landed immigrant. The immigrant classification includes residents who are Canadian citizens by naturalization. Non-permanent residents are persons from another country who had an employment authorization, a student authorization, or a Minister’s permit, or who were refugee claimants at the time of the census. The percentage of foreign born residents in a census tract is calculated as the proportion of immigrant (permanent) and non-permanent residents to the total population (immigrant, non-immigrant and non-permanent residents) within the census tract.

2) **Percentage of new immigrant residents.** Statistics Canada collects information about when an individual immigrated to Canada. Percentage of new immigrant residents is the proportion of individuals who immigrated to Canada in the period 1996 to 2001.

3) **Percentage of visible minority residents.** Visible minorities are “persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour” (Statistics Canada, 2003:143). Response categories for visible minority status include Chinese, South Asian, Black, Filipino, Latin American, Southeast Asian, Arab, East Asian, Japanese, Korean, Visible minority not included elsewhere, Multiple visible minority, and Not a visible minority. Percentage of visible minority residents is the proportion of census tract residents who identified as belonging to one of visible minority groups.
Family Disruption. Family disruption refers to marital and family breakup. Family disruption is said to increase crime because it is believed to decrease informal social controls at the community level. Two-parent households are thought to provide greater supervision and guardianship of their own children and household property but also of the general activities in the community. By comparison, the single-parent household gives the community only one parent to know and thus decreases the potential linkages which can be invoked for informal social control. Examples of informal social control include neighbours’ minding one another’s property, keeping track of or questioning strangers, undertaking supervision of general youth activities, and intervening in local disturbances (Sampson, 1987).

The measure of family disruption used is the percentage of single-parent households. Statistics Canada collects information on family structure, classifying census families into couple-families (which include both married and common-law couples both with and without children) and lone-parent families (which refer to a mother or a father, with no spouse or common-law partner present, living in a dwelling with one or more children). Sons and daughters who are living with their spouse or common-law partner, or with one or more of their own children, are not considered to be members of the census family of their parent(s), even if they are living in the same dwelling.

Defining Violence Severity at Index Offense: The Criterion Variables

The vast majority of studies on violence among persons with mental illness have operationalized violence as a dichotomous outcome to examine the prevalence of violence or have operationalized violence as a count of the number of violent acts occurring within a
reference period to examine the incidence of violence. This operationalization of violence is consistent with one of the main purposes of the research on violence, which has been to identify risk factors likely to lead to one or more violent acts. This study explores a third dimension of violence, violence severity. Although specific risk factors have been shown to be associated with increases in the prevalence of violence and the incidence of violence, little is known about whether and, if so, how these risk factors relate to the severity of violent behaviour. It is reasonable to expect that mental health clinicians concerned with assessing and managing violence would be especially concerned with predicting and managing more serious forms of violence. Thus, this study approaches violence as a phenomenon occurring along a continuum and accords greater weight to more serious acts of violence (i.e. acts causing more serious bodily harm). However, clinicians concerned with assessing and managing violence risk may be concerned not only with factors associated with the most serious violent act perpetrated but also with the aggregate seriousness of the total incidence of violence occurring at one time. As such both operationalizes of violence severity are used within this study.

**Most Serious Violent Index Offense.** A violence severity score for the most violent offense identified in the index charge set (i.e. set of criminal offenses which are contemporaneous) was computed using the Cormier-Lang system for quantifying criminal history (Quinsey et al., 1998). However, in the interest of maintaining consistency in the coding of violence across variable domains within this study (i.e. between criminal history and current offense), all charges of robbery were classified as violent acts and the specific weight given within each category of robbery, armed robbery and sexual assault offenses were altered in accordance with the scoring protocol followed
for such offenses outlined above for the variable *cumulative seriousness of prior violent offenses* (i.e. all robbery offenses were scored as 5, all armed robbery offenses were scored as 6, and all sexual assault offenses were scored as 8). Moreover, one additional modification relating to threatening with a weapon was made to the classification system to score the seriousness of the most violent index offense. Quinsey and colleagues classify making threats with a weapon as a non-violent offense. However for the purpose of this study this offense type was re-classified as a violent offense. This re-classification occurred for two reasons. First, on nearing the completion of data collection it was recognized that the actual number of subjects was substantially smaller than anticipated. In order to have an adequate sample size to undertake the statistical analyses planned (discussed below), the definition of violent offense was expanded to include threats made with a weapon. Second, the inclusion of threats made with a weapon in the definition of violent index offense is consistent with the operational definition of violence used in the MacArthur Violence Risk Assessment study (Monahan et al., 2001) and, consequently, enables comparison of the current study’s results with those of other research studies (i.e. studies using data from the MacArthur study) which utilized a broader definition of violence.

**Composite Seriousness of Violent Index Offenses.** A composite violence severity score for all violent index offenses which takes into account the number and seriousness of violent index offenses was calculated using the Cormier-Lang system. Robbery, armed robbery, sexual assault and threatening with a weapon were classified and enumerated according to the scoring protocol noted above for most violent index offense.
Table 4.2 below provides a summary of the coding categories for each variable included in the study.

**Table 4.2 Variable Coding Scheme**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Selection Criteria</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1 = Yes; 0 = No</td>
</tr>
<tr>
<td>18 years of age or older</td>
<td>1 = Yes; 0 = No</td>
</tr>
<tr>
<td>Charged with a Violent Offense</td>
<td>1 = Yes; 0 = No</td>
</tr>
<tr>
<td>Diagnosed with Major Mental Illness</td>
<td>1 = Yes; 0 = No</td>
</tr>
<tr>
<td><strong>Demographics</strong></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>Number of years between birth and admission to program</td>
</tr>
<tr>
<td>Race</td>
<td>1 = African American; 2 = East Asian/Other; 3 = South Asian; 4 = White</td>
</tr>
<tr>
<td><strong>Criminal History</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Quantification of Criminal History</strong></td>
<td></td>
</tr>
<tr>
<td>Total Sentencing Events</td>
<td>Number of sentencing events on criminal record</td>
</tr>
<tr>
<td>Total Prior Offenses</td>
<td>Number of all offenses on criminal record</td>
</tr>
<tr>
<td>Total Prior Violent Offenses</td>
<td>Number of violent offenses on criminal record</td>
</tr>
<tr>
<td>Cumulative Seriousness of Prior Violent Offenses</td>
<td>Composite score of all prior violent offenses on criminal record based on modified Cormier-Lang System for Quantifying Criminal History</td>
</tr>
<tr>
<td>Early Onset Persistent Criminal Behaviour</td>
<td></td>
</tr>
<tr>
<td>Number of Arrests as Youth</td>
<td>Number of arrest prior to age 18</td>
</tr>
<tr>
<td>Early-Start Offender</td>
<td>1 = Yes; 0 = No</td>
</tr>
<tr>
<td>Late-Start Offender</td>
<td>1 = Yes; 0 = No</td>
</tr>
<tr>
<td>Clinical Factors</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Primary Diagnosis</td>
<td>1 = Schizophrenia; 2 = Schizoaffective disorder; 3 = Delusional disorder; 4 = Other psychotic disorder (includes major affective disorders with psychotic features, organic brain syndrome such as dementia, psychotic disorder not otherwise specified); 5 = Bipolar affective disorder (types I and II) 6 = Major depressive disorder</td>
</tr>
<tr>
<td>Comorbid Clinical Issues</td>
<td></td>
</tr>
<tr>
<td>ASPD (Anti-social personality disorder)</td>
<td>1 = Present; 0 = Absent</td>
</tr>
<tr>
<td>Other PD (Personality disorder other than ASPD)</td>
<td>1 = Present; 0 = Absent</td>
</tr>
<tr>
<td>Substance Abuse Problem</td>
<td></td>
</tr>
<tr>
<td>Alcohol Use Problem</td>
<td>1 = Present; 0 = Absent; 8 = Unknown</td>
</tr>
<tr>
<td>Drug Use Problem</td>
<td>1 = Present; 0 = Absent; 8 = Unknown</td>
</tr>
<tr>
<td>Alcohol and Drug Use Problem</td>
<td>1 = Present; 0 = Absent; 8 = Unknown</td>
</tr>
<tr>
<td>Psychotic Symptoms</td>
<td></td>
</tr>
<tr>
<td>Threat/Control-Override</td>
<td>1 = Present; 0 = Absent</td>
</tr>
<tr>
<td>Persecutory Ideation—Followed</td>
<td>1 = Present; 0 = Absent</td>
</tr>
<tr>
<td>Persecutory Ideation—Harm</td>
<td>1 = Present; 0 = Absent</td>
</tr>
<tr>
<td>Delusion of Control</td>
<td>1 = Present; 0 = Absent</td>
</tr>
<tr>
<td>Thought Insertion/Thought Withdrawal</td>
<td>1 = Present; 0 = Absent</td>
</tr>
<tr>
<td>Command Hallucinations</td>
<td>1 = Present; 0 = Absent</td>
</tr>
<tr>
<td>Violent Commands</td>
<td>1 = Present; 0 = Absent</td>
</tr>
<tr>
<td>Familiar Hallucinated Voice</td>
<td>1 = Present; 0 = Absent</td>
</tr>
<tr>
<td>Medication Non-compliance</td>
<td>1 = Non-compliant; 0 = Compliant; 8 = Unknown</td>
</tr>
<tr>
<td>Earliest Contact with Mental Health Professional</td>
<td>Age at first contact with mental health professional</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Behavioural Setting</th>
<th>Proximal Contextual Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Motive of Violence</strong></td>
<td><strong>Target of Violence</strong></td>
</tr>
<tr>
<td>Motive Known</td>
<td>Number of Victims</td>
</tr>
<tr>
<td>Instrumental Motive Present</td>
<td>Gender</td>
</tr>
<tr>
<td>Expressive Motive Present</td>
<td>Offender-Victim Relationship</td>
</tr>
<tr>
<td><strong>Monitoring</strong></td>
<td><strong>Weapons Use</strong></td>
</tr>
<tr>
<td>Third Party Present</td>
<td>Weapon Use at Offense</td>
</tr>
<tr>
<td>Third Party Known by Victim</td>
<td>Most Serious Violent Index Offense a Weapon Threat</td>
</tr>
<tr>
<td>Third Party Intervened</td>
<td>Composite Seriousness of Index Weapon Threats</td>
</tr>
<tr>
<td><strong>Substance Use At or Prior to Offense</strong></td>
<td><strong>Time of Violent Offense</strong></td>
</tr>
<tr>
<td>Alcohol Consumption before Offense</td>
<td>1 = Yes; 0 = No</td>
</tr>
<tr>
<td>Drug Consumption before Offense</td>
<td>1 = Yes; 0 = No</td>
</tr>
<tr>
<td><strong>Location of Offense</strong></td>
<td>1 = Yes; 0 = No</td>
</tr>
</tbody>
</table>

1 = 12:00am to 5:59am; 2 = 6:00am to 11:59am; 3 = 12:00pm to 5:59 pm; 4 = 6:00pm to 11:59pm; 5 = Other
<table>
<thead>
<tr>
<th>Current Life Circumstances</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Deprivation</td>
<td></td>
</tr>
<tr>
<td>Meagre Income</td>
<td>1 = On General Welfare/No Income; 0 = Other;</td>
</tr>
<tr>
<td>Homeless</td>
<td>1 = Yes; 0 = No;</td>
</tr>
<tr>
<td>Formal Social Support</td>
<td></td>
</tr>
<tr>
<td>Use of Mental Health Service</td>
<td>1= Has Mental Health Professional; 0 = Does not have Mental Health Professional</td>
</tr>
<tr>
<td>Formal Social Control</td>
<td></td>
</tr>
<tr>
<td>On Bail/Probation</td>
<td>1 = On Bail/Probation; 0 = Not on Bail/Probation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Neighbourhood Structural Characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Neighbourhood Poverty</td>
<td></td>
</tr>
<tr>
<td>%LICO Economic Families</td>
<td>Percentage of all economic families with incomes below Statistics Canada’s Low Income Cut Off (LICO)</td>
</tr>
<tr>
<td>% LICO Single Persons</td>
<td>Percentage of unattached individuals with incomes below Statistics Canada’s Low Income Cut Off</td>
</tr>
<tr>
<td>% LICO Private Households</td>
<td>Percentage of private households with incomes below Statistics Canada’s Low Income Cut off</td>
</tr>
<tr>
<td>% Persons whose Major Income Source</td>
<td>Percentage unattached persons 15 years or older whose major income source is government assistance</td>
</tr>
<tr>
<td>Government Assistance</td>
<td></td>
</tr>
<tr>
<td>Neighbourhood Wealth</td>
<td></td>
</tr>
<tr>
<td>Median Income Private Households</td>
<td>Median income of households</td>
</tr>
<tr>
<td>Median Income Unattached Persons</td>
<td>Median income of individuals</td>
</tr>
<tr>
<td>% Persons Income over $60 000</td>
<td>Percentage of unattached persons 15 years of age or older with income over $60 000/annum</td>
</tr>
<tr>
<td>% Census Families Income over $100000</td>
<td>Percentage of families with income over $100 000</td>
</tr>
<tr>
<td>% Private Households Income Over $100000</td>
<td>Percentage households with income over $100 000</td>
</tr>
<tr>
<td>Neighbourhood Employment</td>
<td></td>
</tr>
<tr>
<td>% Unemployed</td>
<td>Percentage of unemployed persons 15 years of age or older</td>
</tr>
<tr>
<td>% Senior Managers</td>
<td>Percentage of employed persons in senior managerial positions</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>Population Mobility</td>
<td>Percentage of population who resided at same residence for 5 or more years</td>
</tr>
<tr>
<td>Ethnic Heterogeneity</td>
<td></td>
</tr>
<tr>
<td>% Foreign Born Residents</td>
<td>Percentage of census tract residents who are foreign born (includes non-permanent residents, permanent residents, naturalized Canadian citizens)</td>
</tr>
<tr>
<td>% Recent Immigrant</td>
<td>Percentage of census tract residents who immigrated within last 5 years</td>
</tr>
<tr>
<td>% Visible Minority</td>
<td>Percentage of census tract residents who belong to a visible minority group</td>
</tr>
<tr>
<td>Family Disruption</td>
<td>Percentage of single-parent households</td>
</tr>
<tr>
<td>Violence at Index</td>
<td></td>
</tr>
<tr>
<td>Severity of Most Serious Violent Offense</td>
<td>Score of most serious violent index offense on modified Cormier-Lang System for Quantifying Criminal History;</td>
</tr>
<tr>
<td>Composite Seriousness of Violent Index Offenses</td>
<td>Composite score of all violent index offenses on Modified Cormier-Lang System for Quantifying Criminal History;</td>
</tr>
</tbody>
</table>

**Data Analysis**

A number of statistical procedures were utilized for this study. The data were summarized using descriptive statistics to describe the characteristics of the study’s sample. Principal components factor analysis with oblique rotation was utilized to reduce the number of neighbourhood measures to a smaller number of underlying components to address the issue of multicollinearity which is a problem often encountered when using census tract data as measures of neighbourhood structural characteristics (Land, McCall, & Cohen, 1990; Sampson, Raudenbush, & Earls, 1997; Silver, 1999). Hypotheses 1 and 2
were tested through standard multiple regression to determine how much unique variance for each measure of violence severity (i.e. most serious violent index offense and composite seriousness of violent index offenses) was explained by the demographic, historical, clinical, and situational variables outlined above and by the components underlying neighbourhood indicators of social disorganization obtained through a factor analysis of census tract measures. Hypothesis 3 was tested using hierarchical regression to determine the relative contribution of contextual- and individual-level variables in accounting for the amount of variation observed in severity of violence. Hypothesis 4 was tested through a bifurcation of the sample into an early-start offender subsample and a late-start offender subsample and the application of standard regression procedures to each subsample to determine whether different variables predicted violence severity for each of the two groups of offenders. Finally, to test Hypothesis 5, comparisons were made between early-start and late-start offenders on predictor variables included in the study. Fisher’s Exact test was used to assess differences between the two groups on dichotomous variables and t-tests and Mann-Whitney’s U were used to test for difference on continuous variables. Holm’s sequential Bonferroni method was used to adjust for the multiple statistical tests. The Holm’s procedure was used because it is less conservative and has greater power than the Bonferroni method (Green & Salkind, 2003).

All data analyses reported were conducted using the Statistical Package for the Social Sciences (SPSS), Version 16.0 for Windows.
Chapter 5: Instrumentation Development and Pilot Study

The previous chapter described the data sources for the study, outlined the research design, summarized the variables for which data was collected and described the statistical analyses to be undertaken to address the research hypotheses. This chapter describes in detail the steps undertaken to develop and pilot a data extraction instrument and protocols to extract data from the clinical charts of the court support program.

Development of Chart Review Instrument and Protocols

The retrospective design of this research requires the collection of demographic, criminal history, clinical and situational variables from the clinical charts of a mental health court support program. Effective and systematic extraction of data from historical files requires the development of an instrument that reliably collects the investigated variables. In accordance with the recommendations of the methodological literature concerning extraction of data in file-based research (Gearing, Mian, Barber, & Ickowicz, 2006; Langström & Grann, 1999), a multi-step process was used to extract data from the clinical charts of the court support program.

First, a variable inventory was developed. A review of the empirical and theoretical literature was undertaken to identify variables associated with the occurrence of criminal and violent behaviour among persons with mental disorder. In parallel with the literature review, ten randomly selected files from the mental health court support program were reviewed and variables that appeared regularly in the charts were identified. These ten charts were not included in the final sample of charts for analysis. Once potential study variables were identified the literature was reviewed to determine how these variables have been operationalized in other investigations. This “dialectic process” of merging the
research-based and the record-based variable lists yielded an integrated inventory of 62 variables. Most variables included features that could simply be rated “present” or “not present”. Because the information to be retrieved from the charts was not initially collected for research purposes, dichotomies were often employed.

Second, a pen-and-paper data extraction instrument was developed along with a coding manual with clear protocols and guidelines instructing reviewers where and how to extract the data. See Appendix A for the data extraction protocol and detailed operationalization of variables.

Third, an iterative piloting of the data extraction instrument was undertaken. Three reviewers using the pen-and-paper data extraction instrument and the accompanying coding manual administered the instrument on five randomly selected files. The raters then met with the researcher to resolve any inconsistencies in their rating and further refine the operationalization of individual items in the variable inventory. This iterative procedure led to the establishment of “consensus cases” which the raters used as a reference for subsequent coding of a pilot sample. The data extraction instrument and accompanying coding manual were amended to reflect refinements in the operationalization of variables.

Finally, a Microsoft Access data extraction software package was developed based on the finalized pen-and-paper data extraction instrument. The software package was used for data input, quality control and management of the data.

The Pilot Study: Chart Review Data Extraction Instrument

Prior to data extraction, the data extraction instrument was first piloted on a subsample of charts. Two independent raters external to the court support programs (one
had clinical experience in the area of mental health while the other did not) separately
reviewed each chart in a subsample of charts to evaluate the inter-rater reliability of
variables outlined in the Data Extraction Protocol. The reviewers inputted data directly
into the Microsoft Access data extraction software package. Data from the database was
imported from the Microsoft Access database into Microsoft Excel to organize the data
and was then imported from Excel into SPSS for analysis. To assess inter-rater reliability,
Cohen’s Kappa was utilized for categorical variables and intra-class correlation
coefficients were used for continuous variables. A minimum of 80% reliability was
required and variables with reliability below 80% were re-operationalized or excluded.

**Pilot Study Sample**

Two sampling strategies were used to pilot the data extraction instrument. Initially
systematic sampling was utilized. At the time of the piloting, it was not known how many
charts would ultimately meet the selection criteria for the study as there was no list of
program clients available which could serve as a sampling frame. However, based on
extrapolations of data on the number of clients served during the fiscal year 2005 (April 1
2005 to March 31, 2006) derived from a database used by the court support program, it
was anticipated that there would be 420 files that would meet the selection criteria of the
study. Convention dictates that a chart review data extraction instrument be piloted on a
subsample of at least ten percent of the total sample of charts (Gearing et al., 2006). To
ensure an adequate sample size for the pilot study, a systematic sampling strategy was
used until at least 60 cases were selected which appeared on their face to meet the
selection criteria of the study. The clinical files from which the pilot sample was drawn
were stored alphabetically in three large file cabinets. Starting from a randomly selected
file (75th), every 25th file with an admission date between January 1, 1999 and December 31, 2005 was selected for inclusion in the pilot study by one of the reviewers. In total, five passes through all the files were undertaken and 431 files were pulled, of which 62 met the inclusion criteria for the study. Subsequently, convenience sampling was used to test the reliability of items which were added to the protocol toward the end of the completion of data collection when it was learned that the total number of charts meeting criteria for inclusion in the study (N = 245) fell below the anticipated number (N = 421). To address the shortfall, the period of review was expanded to include charts from 1998 to 2006. In addition, the operational definition of violent index offense was expanded to include cases involving threats made with a weapon. A weapon threat was operationalized as a threat of bodily harm or death made with a weapon (real or imitation) in hand. For the incident to be coded as a weapon threat, the subject had to be charged with Threatening Bodily Harm or Threatening Death. In addition, the subject had to have a weapon in hand at the time the threat was made. A weapon included any object capable of inflicting injury (e.g. bruising, cuts, broken bones) or death. The inclusion of threats made with a weapon in the definition of violent index offense is consistent with the operational definition of violence used in the MacArthur Violence Risk Assessment study (Monahan et al., 2001). Two additional variables were also added: most serious violent index offense a weapon threat (dichotomously rated as yes or no) and composite seriousness of index weapon threats [operationalized as the cumulative score for all weapon threats occurring in the index offense, using the Cormier-Lang classification system to accord a weight to the weapon threat(s)]. To assess the inter-rater reliability of items relating to the expansion of violent index offense to include threats made with a
weapon, all cases with an admission date between 1998 and 2006 involving a charge of Threaten Death and Threaten Bodily Harm in the index offense but no other violent index offense were selected (n = 81). These 81 cases were used to examine the inter-rater reliability of the variables most serious violent index offense a weapon threat and composite seriousness of index weapon threats which were added to the protocol after data collection had started. In addition, because the definition of violent index offense was broadened to include cases involving threats made with a weapon, these 81 cases were added to the previous pilot sample (N = 431) to re-calculate the kappa for index charge includes violent offense, a variable used as a study selection criterion along with age, gender and diagnosis.

Pilot Study Results

Results of the final inter-rater reliability analyses of the protocol items are summarized in Table 5.1. As noted above, the piloting occurred in two phases. In the first phase 46 variables were tested for inter-rater reliability on a sample of 431 charts (retrieval of census tract measures were not included in pilot study). After a preliminary inter-reliability analysis was undertaken, variables with reliability coefficients below .80 were reviewed. Cases of divergence among these variables were identified and reviewers checked the charts to rule out data entry errors. Cases were then identified where disagreement occurred which was not the product of data entry errors and the operational definitions of these variables were discussed and, where possible, refined to enhance clarity. If further refinement of definitions to enhance clarity was not possible, variables were excluded. As a result of this process, eight variables were re-operationalized slightly
<table>
<thead>
<tr>
<th>Variable</th>
<th>Sample (n)</th>
<th>Kappa</th>
<th>ICC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual is male</td>
<td>431</td>
<td>.941</td>
<td></td>
</tr>
<tr>
<td>Individual is 18 years of age or older</td>
<td>431</td>
<td>.922</td>
<td></td>
</tr>
<tr>
<td>Index Charge includes Violent Offense</td>
<td>431</td>
<td>.838</td>
<td></td>
</tr>
<tr>
<td>Individual Meets Diagnostic Criteria for Study</td>
<td>512</td>
<td>.847</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>62</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td>62</td>
<td>.869</td>
<td></td>
</tr>
<tr>
<td>Primary Diagnosis</td>
<td>62</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Anti-Social Personality Disorder/Traits Present</td>
<td>62</td>
<td>0.88</td>
<td></td>
</tr>
<tr>
<td>Other Personality Disorder Present</td>
<td>62</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Alcohol Use Problem Present</td>
<td>58</td>
<td>.954</td>
<td></td>
</tr>
<tr>
<td>Unknown if Alcohol Problem</td>
<td>62</td>
<td>.849</td>
<td></td>
</tr>
<tr>
<td>Drug Use Problem Present</td>
<td>59</td>
<td>.949</td>
<td></td>
</tr>
<tr>
<td>Unknown if Drug Problem</td>
<td>62</td>
<td>.849</td>
<td></td>
</tr>
<tr>
<td>Persecutory Ideation—Followed</td>
<td>50</td>
<td>.852</td>
<td></td>
</tr>
<tr>
<td>Persecutory Ideation—Harm</td>
<td>50</td>
<td>.929</td>
<td></td>
</tr>
<tr>
<td>Delusions of Control</td>
<td>50</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Thought Insertion/Withdrawal</td>
<td>50</td>
<td>.898</td>
<td></td>
</tr>
<tr>
<td>Violent Command Hallucinations</td>
<td>50</td>
<td>.847</td>
<td></td>
</tr>
<tr>
<td>Medication Non-Compliance</td>
<td>62</td>
<td>.351</td>
<td></td>
</tr>
<tr>
<td>Medication Non-Compliance Unknown</td>
<td>62</td>
<td>.086*</td>
<td></td>
</tr>
<tr>
<td>Age Earliest Contact w/ MH Professional</td>
<td>48</td>
<td>.987</td>
<td></td>
</tr>
<tr>
<td>Earliest Contact Unknown</td>
<td>62</td>
<td>.806**</td>
<td></td>
</tr>
<tr>
<td>Total Previous Sentencing Events</td>
<td>58</td>
<td>.990</td>
<td></td>
</tr>
<tr>
<td>Total Prior Offenses</td>
<td>59</td>
<td>.991</td>
<td></td>
</tr>
<tr>
<td>Total Prior Violent Offenses</td>
<td>59</td>
<td>.993</td>
<td></td>
</tr>
<tr>
<td>Cumulative Seriousness of Prior Violent Offenses</td>
<td>59</td>
<td>.952</td>
<td></td>
</tr>
<tr>
<td>Number of Arrests as Youth</td>
<td>58</td>
<td>.876</td>
<td></td>
</tr>
<tr>
<td>Severity Score Most Serious Violent Index Offense</td>
<td>62</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Most Serious Violent Index Offense: Weapon Threat</td>
<td>81</td>
<td>.875</td>
<td></td>
</tr>
<tr>
<td>Composite Seriousness of Violent Index Offenses</td>
<td>62</td>
<td>.997</td>
<td></td>
</tr>
<tr>
<td>Composite Seriousness of Index Weapon Threats</td>
<td>81</td>
<td>.878</td>
<td></td>
</tr>
<tr>
<td>Number of Victims of Violence</td>
<td>62</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Gender of Victim of Violence</td>
<td>62</td>
<td>.937</td>
<td></td>
</tr>
</tbody>
</table>
Table 5.1 continued

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sample (n)</th>
<th>Kappa</th>
<th>ICC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offender-Victim Relationship</td>
<td>62</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Third Party Present During Index Violent Offense</td>
<td>62</td>
<td>.877</td>
<td></td>
</tr>
<tr>
<td>Third Party Known to Victim</td>
<td>62</td>
<td>.887</td>
<td></td>
</tr>
<tr>
<td>Third Party Intervened during Violent Offense</td>
<td>62</td>
<td>.897</td>
<td></td>
</tr>
<tr>
<td>Weapon Use at Index Offense</td>
<td>62</td>
<td>.891</td>
<td></td>
</tr>
<tr>
<td>Motive for Current Violent Offense Known</td>
<td>62</td>
<td>.932</td>
<td></td>
</tr>
<tr>
<td>Expressive Motive for Violence</td>
<td>62</td>
<td>.827</td>
<td></td>
</tr>
<tr>
<td>Instrumental Motive for Violence Known</td>
<td>62</td>
<td>.859</td>
<td></td>
</tr>
<tr>
<td>Use of Alcohol at time of Violent Index Offense</td>
<td>62</td>
<td>.883</td>
<td></td>
</tr>
<tr>
<td>Location of Offense</td>
<td>62</td>
<td>.931</td>
<td></td>
</tr>
<tr>
<td>Time of Violent Offense</td>
<td>62</td>
<td>.864</td>
<td></td>
</tr>
<tr>
<td>Meagre Income</td>
<td>62</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Homeless</td>
<td>62</td>
<td>.900</td>
<td></td>
</tr>
<tr>
<td>Use of Mental Health Services</td>
<td>62</td>
<td>.357</td>
<td></td>
</tr>
<tr>
<td>On Bail/Probation</td>
<td>62</td>
<td>.833</td>
<td></td>
</tr>
</tbody>
</table>

*Coefficient not calculable as one reviewer did not identify any cases with symptom present
** p>.10. All other items have p<.001

to enhance clarity of their operational definitions: (1) individual meets diagnostic criteria for inclusion in the study; (2) primary diagnosis; (3) drug use problem present; (4) persecutory ideation—harm; (5) offender-victim relationship; (6) third party present during index offense; (7) location of offense; and, (8) meagre income. The nature of definitional changes made to these eight variables is discussed in the section below.

Four variables were excluded from the protocol: two had inter-rater reliability coefficients substantially below .80 (*medication non-compliance* and *use of mental health services*) and two variables were excluded because the data extractors did not believe the charts had sufficient information to endorse the absence or presence of the variables (*illicit drug use at time of offense* and *familiar hallucinated voice*). Three categorical
variables were dichotomized prior to testing inter-rater reliability: *alcohol use problem*, *drug use problem* and *medication noncompliant*. All three variables initially included an “Unknown” category in addition to a “present” and “absent” response. The “Unknown” category was removed from these three variables and three new dichotomous variables with “yes” and “no” responses were added: *unknown if alcohol problem*, *unknown if drug problem* and *unknown if medication noncompliant*.

The refinements to the protocol were utilized to recode variables where previous disagreement occurred. After re-coding, inter-rater reliability for all eight variables increased to meet the threshold for inclusion in the study (80% reliability).

In the second phase of the piloting, inter-rater reliability analyses of items relating to weapon threats which were added or re-operationalized during late data collection phase of the study were undertaken. Inter-rater reliability of two variables added to the protocol (*most serious violent index offense a weapon threat* and *composite seriousness of index weapon threats*) were tested on the population of cases with a charge of Threaten Death and Threaten Bodily Harm in the index offense but no other violent index offense (n= 81). Because the definition of violent index offense was broadened to include cases where threats of harm were made with a weapon, these 81 cases were added to the previous pilot sample and the inter-rater reliability coefficient for the variable *index charge includes violent offense* was re-calculated. The two weapons threat variables added to the protocol and the re-operationalized definition of violent index offense all yielded inter-rater reliability coefficients above the .80 threshold. In order to ensure consistency in scoring on previously entered cases, cases previously entered which included a weapon at the time of the offense (i.e. cases coded as having *weapon use at*
offense present) were checked to see if a weapon threat also occurred. Six cases were identified which involved other acts of violence in addition to weapons threats. The scores of these six cases for the variables most serious violent index offense and composite seriousness of violent index offense(s) were recalculated to take into account the addition of weapon threat offenses in the definition of violent index offense.

Discussion

The data extraction protocol was developed through an iterative process. A review of the literature led to the development of a data extraction protocol with 44 variables (not including census tract measures). The protocol was tested by three reviewers on five cases which served as consensus cases for further extraction.

A total of 522 cases (431 selected through systematic sampling and 81 selected through convenience sampling) were reviewed over the course of two phases of the pilot study by two reviewers external to the court support program. Of the 48 variables that were to be derived from the clinical charts of the court support program, four were excluded due to low inter-rater reliability coefficients or insufficient data within the charts and eight required further refinement to enhance clarity.

Two of the eight variables refined related to diagnostic information. The operational definition of individual meets diagnostic criteria for inclusion in the study was modified to provide direction in instances when multiple sources within the chart provided conflicting information on diagnosis. A hierarchy of informational sources was established with medical reports receiving precedence over verbal correspondence with a medical or mental health professional which in turn were given precedence over client self-report or report of a collateral informant (other than a mental health professional). In
the latter instances, cases were only included in the study if the diagnosis provided corresponded with the reported pharmacological treatment received for the reported diagnosis. The operational definition of primary diagnosis was also modified to provide greater clarity on how to record diagnosis when more than one medical report existed. The protocol had specified a hierarchy of information sources for primary diagnosis which directed that reviewers should use the diagnosis provided in a medical report that involved the longest duration of hospitalization/assessment. However, the reviewers encountered situations in which two medical reports involving relatively equal periods of assessment provided conflicting information on primary diagnosis. To address this situation, the protocol was modified to direct that if multiple reports exist with relatively equal assessment periods, the diagnosis provided in an assessment of criminal responsibility or a pre-sentence report should receive precedence over a diagnosis provided by a medical practitioner from a local schedule I facility (i.e. general hospital). Preference was given to these reports because they are apt to be produced by forensic psychiatrists who, by virtue of their training and the context within which they work, are attuned to the possibility of impression management (i.e. malingering) by accused/offenders before the courts.

One of the variables modified within the protocol related to substance abuse. The definition of drug use problem present was refined to note that a diagnosis of a substance-induced psychotic disorder or mood disorder should not, in and of itself, be used to establish the presence of a drug use problem. These diagnoses were not taken as instances of substance abuse because circumstances could exist where subjects did not knowingly consume the substance which induced symptoms or may have had very
limited use of the substance which caused symptoms of a psychiatric disorder. Moreover, individuals with a diagnosis of a substance-induced psychiatric disorder who did have a substance use problem were likely to be captured as having a substance use problem on the basis of other criteria that the protocol provided. These criteria included notation within the chart of the presence of a drug use problem or notation of (required or recommended) participation in substance abuse counselling or endorsement by the subject of two or more CAGE items, a questionnaire used by clinicians to screen for the presence of a substance use problem.

One of the modified definitions involved symptomatology relating to thought content. The definition of the variable persecutory ideation—harm was modified to specify that paranoid thought content relating to fear of harm refers to fear of being physically hurt as opposed to fear of being financially or psychologically harmed by another person.

Three additional items revised within the protocol dealt with characteristics of the violent offense. Modification was made to the definition of the variable offender–victim relationship to include peace officers as a category of victim. The definition of third party present during index offense was modified to note that a third party is a person who has the capacity to witness and recall the offense and/or to intervene. As such an infant present during the violent offense would not be considered a third party for the purpose of this study. The third offense variable that was modified was location of offense. The definition of the category “Street/Outdoors” was expanded to include public parking garages and subway stations.
The final variable definition that was modified was for *meagre income present*. The definition was changed to clarify that meagre income was not present if the subject had no stated income but lived with relatives.

After modifying the protocol for these eight variables, the protocol was re-tested using the pilot study sample. All eight variables yielded acceptable inter-rater reliability coefficients. The pilot study cases were included in the study sample as the same revised protocol was applied to the pilot sample as to the full sample. Moreover, availability of subjects which met the study criteria was limited and inclusion of the pilot study cases served to increase the overall study sample size.

**Conclusion**

In total, the final data extraction protocol included 44 variables. The high reliability coefficients for items within the modified protocol suggest that the instructions in the data protocol are clear and the specific items readily retrievable from the charts of the court support program. Thus the instrument could appropriately be used to extract data on demographic, clinical, criminal history and situational variables related to the research questions posed in Chapter 3.
Chapter 6: Descriptive Results

This chapter is organized into four sections. The first section summarizes the number of cases that were obtained from the chart review of the files of the court support program and outlines the methods used to handle missing data. The second section uses census tract measures from the 2001 Canada Census to compare the neighbourhood living environment of study participants with that of the general public. It also describes the results of a factor analysis of the census tract measures used to identify underlying dimensions which characterize the neighbourhoods within which study participants’ resided at the time they were arrested for a violent criminal offense. The third section describes the individual- and situational-level predictor variables drawn from the charts of the court support program. The final section describes the dependent variables that will be used in the subsequent chapter to address the key research questions of this study.

Missing Data

In total, the charts of 1806 clients of the program were reviewed. This figure represents the total number of individuals having contact with the court support program between the years 1998 and 2006. Of these, 1385 individuals met the inclusion criterion of male gender, representing 76.7% of the clients accessing service from the court support program during the reference period. Of these, 1254 or 69.4% of the program’s clients met the criteria of being male and being 18 years of age or older at the time of the index offense. Of these remaining individuals, 652 or 36.1% also met the inclusion criteria of being charged with a violent criminal offense, and 302 representing 16.7% of the total number of individuals receiving service from the program also met the fourth and final selection criteria of diagnosis of a major mental illness.
Before proceeding with the data analysis, all variables were screened for missing values. One hundred and ten cases (36.4%) across 60 variables were found to have missing values (44 variables derived from the clinical charts and 16 variables derived from census tract records). While this represents a substantial number, more important than the amount of missing data in a data set is the pattern of the missing values (Tabachnick & Fidell, 2001). The paramount question concerning the issue of missing data is whether the missing values are a function of a random or a systematic process. That is, the problem with missing values is not so much a reduced sample size as it is the possibility that the remaining data set is biased. Nonrandomly missing values affect the generalizability of results. As a general rule, variables containing missing data on five percent or fewer of the cases can be ignored (Tabachnick & Fidell, 2001). Using this standard, seven variables required inspection of the pattern of missing values present: persecutory ideation—followed, persecutory ideation—harm, delusions of control, thought insertion/withdrawal, violent command hallucinations, age of earliest contact with a mental health professional; time of violent offense.

To test for patterns in the missing data, a two-step procedure recommended by Tabachnick and Fidell (2001) was undertaken. First, dummy variables were created for each of the seven variables with two groups, cases with missing values and cases with nonmissing values. Next, tests of mean difference were run on all continuous variables in the study, using each of the seven dummy variables as grouping variables, with \( \alpha = .05 \). T tests were used for normally distributed continuous variables and Mann-Whitney tests were used for variables that did not have a normal sample distribution. Statistically significant differences were found between each of the dummy variables and one or more continuous
variables in the study suggesting each of these seven variables had a systematic rather than a random pattern of missingness. Consequently, these seven variables were removed from further analyses. Mean substitution was used to replace missing values on continuous variables with less than five percent of data missing. Listwise deletion was used to remove cases with missing values on categorical variables with less than five percent of data missing. In total, 36 cases representing 11.9% of the sample were deleted because of missing values. Table 6.1 summarizes the number of missing values present for each variable and the method used to deal with the missing data.

Further review of the data occurred in three stages. First, neighbourhood characteristics were described and then screened for outliers and for possible statistical assumption violations prior to being factor analyzed. Then, the individual- and situational-level predictor variables were described. Finally, the two dependent variables were examined.

**Neighbourhood Variables**

The following section describes the census tract measures used to explore the structural characteristics of the neighbourhoods within which subjects resided. For each tract, 16 measures were taken from Statistics Canada Census for 2001 to represent the structural characteristics of neighbourhoods. Table 6.2 summarizes the distribution of subjects across census tracts. The 266 subjects resided in 130 census tracts. Seventy (53.8%) of these tracts had two or more subjects residing within their boundaries.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Missing Values</th>
<th>Method Used to Address Missing Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race</td>
<td>8 2.6</td>
<td>Listwise Deletion</td>
</tr>
<tr>
<td>Alcohol Use Problem</td>
<td>8 2.6</td>
<td>Listwise Deletion</td>
</tr>
<tr>
<td>Drug Use Problem</td>
<td>8 2.6</td>
<td>Listwise Deletion</td>
</tr>
<tr>
<td>Persecutory Ideation—Followed</td>
<td>38 12.6</td>
<td>Variable Deletion</td>
</tr>
<tr>
<td>Persecutory Ideation—Harm</td>
<td>38 12.6</td>
<td>Variable Deletion</td>
</tr>
<tr>
<td>Delusions of Control</td>
<td>38 12.6</td>
<td>Variable Deletion</td>
</tr>
<tr>
<td>Thought Insertion/Withdrawal</td>
<td>38 12.6</td>
<td>Variable Deletion</td>
</tr>
<tr>
<td>Violent Command Hallucination</td>
<td>38 12.6</td>
<td>Variable Deletion</td>
</tr>
<tr>
<td>Age First Contact with MH Professional</td>
<td>58 19.2</td>
<td>Variable Deletion</td>
</tr>
<tr>
<td>Cumulative Seriousness of Prior Violence</td>
<td>1 .3</td>
<td>Mean Insertion</td>
</tr>
<tr>
<td>Early Start Offending</td>
<td>6 2.0</td>
<td>Listwise Deletion</td>
</tr>
<tr>
<td>Gender of Victim</td>
<td>10 3.3</td>
<td>Listwise Deletion</td>
</tr>
<tr>
<td>Offense Location</td>
<td>1 .3</td>
<td>Listwise Deletion</td>
</tr>
<tr>
<td>Time of Violent Offense</td>
<td>26 8.6</td>
<td>Variable Deletion</td>
</tr>
<tr>
<td>% Single Parent Families</td>
<td>6 2.0</td>
<td>Mean Insertion</td>
</tr>
<tr>
<td>% Nonmovers</td>
<td>6 2.0</td>
<td>Mean Insertion</td>
</tr>
<tr>
<td>% Foreign Born</td>
<td>6 2.0</td>
<td>Mean Insertion</td>
</tr>
<tr>
<td>% Recent Immigrant</td>
<td>6 2.0</td>
<td>Mean Insertion</td>
</tr>
<tr>
<td>% Visible Minority</td>
<td>6 2.0</td>
<td>Mean Insertion</td>
</tr>
<tr>
<td>% Social Assistance</td>
<td>6 2.0</td>
<td>Mean Insertion</td>
</tr>
<tr>
<td>% Unemployed</td>
<td>6 2.0</td>
<td>Mean Insertion</td>
</tr>
<tr>
<td>% LICO Economic Families</td>
<td>6 2.0</td>
<td>Mean Insertion</td>
</tr>
<tr>
<td>% LICO Unattached Person</td>
<td>6 2.0</td>
<td>Mean Insertion</td>
</tr>
<tr>
<td>% LICO Private Households</td>
<td>6 2.0</td>
<td>Mean Insertion</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>6 2.0</td>
<td>Mean Insertion</td>
</tr>
<tr>
<td>Median Income Unattached Persons</td>
<td>6 2.0</td>
<td>Mean Insertion</td>
</tr>
<tr>
<td>% Senior Managers</td>
<td>6 2.0</td>
<td>Mean Insertion</td>
</tr>
<tr>
<td>% Persons with Income over $60K</td>
<td>6 2.0</td>
<td>Mean Insertion</td>
</tr>
<tr>
<td>% Census Families Income over $100K</td>
<td>6 2.0</td>
<td>Mean Insertion</td>
</tr>
<tr>
<td>% Private Households Income over $100K</td>
<td>6 2.0</td>
<td>Mean Insertion</td>
</tr>
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</table>
Table 6.2 Distribution of Subjects Across Census Tracts

<table>
<thead>
<tr>
<th>Census Tracts</th>
<th>N</th>
<th>%</th>
<th>Cumulative % of Subjects per Tract</th>
</tr>
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<td>60</td>
<td>1</td>
<td>22.6</td>
<td>22.6</td>
</tr>
<tr>
<td>35</td>
<td>2</td>
<td>26.3</td>
<td>48.9</td>
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<tr>
<td>19</td>
<td>3</td>
<td>21.4</td>
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</tr>
<tr>
<td>7</td>
<td>4</td>
<td>10.5</td>
<td>80.8</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>9.4</td>
<td>90.2</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>6.8</td>
<td>97.0</td>
</tr>
<tr>
<td>1</td>
<td>8</td>
<td>3.0</td>
<td>100</td>
</tr>
<tr>
<td>130</td>
<td>266</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

To better understand how the neighbourhood contexts of the subjects compare to those of the general population, neighbourhood measures of the census tracts that subjects resided within were compared to those of all census tracts within the City of Toronto. Table 6.3 provides a comparison of the neighbourhood measures, using t tests for normally distributed variables and Mann-Whitney’s U for variables that do not have a normal distribution.

Table 6.3 indicates that the individuals in this study tend to live in more ethnically diverse neighbourhoods, with a higher proportion living in neighbourhoods with more recent immigrants, foreign-born persons, and persons of colour. Study subjects also tended to reside in neighbourhoods that were more economically disadvantaged. For example, compared to the general population in the City of Toronto, subjects tended to reside in neighbourhoods which had lower median incomes, greater unemployment and a greater proportion of residents relying on social assistance and living below the poverty line. Subjects also tended to reside in neighbourhoods which had more turnover of residents and more single parent families.
Table 6.3 Comparison of Neighbourhood Characteristics of Subjects (N =266) and General Population (N = 4,682,897)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Subject Tracts (n=130)</th>
<th>All Other Tracts (n=805)</th>
<th>T</th>
<th>Mann-Whitney</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Single Parent Families</td>
<td>20.73</td>
<td>15.88</td>
<td>-----</td>
<td>29874.0**</td>
<td></td>
</tr>
<tr>
<td>% NonMovers Over 5 Years</td>
<td>54.00</td>
<td>56.09</td>
<td>-----</td>
<td>46434.0*</td>
<td></td>
</tr>
<tr>
<td>% Foreign Born Residents</td>
<td>53.22</td>
<td>42.52</td>
<td>7.93**</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td>% Recent Immigrant</td>
<td>11.65</td>
<td>7.97</td>
<td>-----</td>
<td>33281.5**</td>
<td></td>
</tr>
<tr>
<td>% Visible Minority</td>
<td>53.63</td>
<td>32.09</td>
<td>10.06**</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td>% Social Assistance</td>
<td>12.17</td>
<td>8.80</td>
<td>7.58**</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td>Median Household Income</td>
<td>$52.9K</td>
<td>$65.4K</td>
<td>27461.0**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployment rate</td>
<td>7.52</td>
<td>5.73</td>
<td>-----</td>
<td>30364.5**</td>
<td></td>
</tr>
<tr>
<td>% Economic Families LICO</td>
<td>20.59</td>
<td>13.22</td>
<td>7.73**</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td>% Individuals LICO</td>
<td>41.20</td>
<td>31.97</td>
<td>6.50**</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td>% Private Household LICO</td>
<td>23.42</td>
<td>15.31</td>
<td>8.06**</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td>Median Income Unattached Persons</td>
<td>$22.9K</td>
<td>$27.6K</td>
<td>29720.5**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Executive/Sr. Managers Jobs</td>
<td>1.16</td>
<td>1.99</td>
<td>-----</td>
<td>35189.0**</td>
<td></td>
</tr>
<tr>
<td>% Individuals Income Over $60 000</td>
<td>9.11</td>
<td>14.93</td>
<td>28705.5**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Census Families Income Over $100 000</td>
<td>16.08</td>
<td>26.47</td>
<td>30266.0**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Private Household Income Over $100 000</td>
<td>16.87</td>
<td>25.38</td>
<td>32934.5**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.05; **p<.001
Power = .86, assuming d=.2, p≤.05; 2-tailed test
The relationship between neighbourhood characteristics and mental illness observed for this sample of subjects is consistent with a number of previous studies. For example, Silver and colleagues (2000a; 2002) found that relative to the general population, individuals with a mental illness were more likely to reside in economically disadvantaged neighbourhoods that had more residential mobility. Moreover, Faris and Dunahm (1939) and Silver (1999) also found that persons with mental illness were more likely to reside in more racially and ethnically diverse neighbourhoods.

**Factor Analysis of Neighbourhood Variables**

A considerable degree of inter-correlation was found among these 16 neighbourhood measures for the census tracts within which subjects resided. These inter-correlations are provided in Table 6.4. Out of a total of 120 bivariate correlations, 117 were statistically significant and 21 showed bivariate correlations above .75. Meyers and colleagues (2006) suggest bivariate correlations of greater than .75 may be indicative of collinearity.

Regression procedures were utilized to check collinearity diagnostics for these 16 neighbourhood measures. Meyers and colleagues (2006) indicate a tolerance value approaching .1 or variance inflation factor (VIF) values greater than 10 suggest multicollinearity. Nine measures had tolerance values less than .1 and variance inflation factor (VIF) values greater than 10: percentage foreign born, percentage visible minority, median household income, median income of unattached persons, percentage LICO economic families, percentage LICO private households, percentage individuals making more than $60 000, percentage of census families with incomes greater than $100000 and
Table 6.4 Bivariate Correlations Among Neighbourhood Measures

<table>
<thead>
<tr>
<th>Variables</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>
</tr>
</thead>
<tbody>
<tr>
<td>1. % Single Parent Families</td>
<td>1.00</td>
<td>-12*</td>
<td>.19**</td>
<td>.27***</td>
<td>.30***</td>
<td>.62***</td>
<td>-69***</td>
<td>.61***</td>
<td>.71***</td>
<td>.55***</td>
<td>.69***</td>
<td>-.59***</td>
<td>-.40***</td>
<td>-.57***</td>
<td>-.60***</td>
<td>-.64***</td>
</tr>
<tr>
<td>2. % Non-movers</td>
<td>---</td>
<td>1.00</td>
<td>-.34***</td>
<td>-.61***</td>
<td>-.29***</td>
<td>-.10</td>
<td>-.36***</td>
<td>-.41***</td>
<td>-.49***</td>
<td>-.14*</td>
<td>-.56***</td>
<td>.17**</td>
<td>.03</td>
<td>.04</td>
<td>.24***</td>
<td>.34***</td>
</tr>
<tr>
<td>3. % Foreign Born</td>
<td>---</td>
<td>---</td>
<td>1.00</td>
<td>.74***</td>
<td>.91***</td>
<td>.38***</td>
<td>-.41***</td>
<td>.50***</td>
<td>.55***</td>
<td>.46***</td>
<td>.50***</td>
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<td>-.43***</td>
<td>-.61***</td>
<td>-.58***</td>
<td>-.42***</td>
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<tr>
<td>4. % Recent Immigrants</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1.00</td>
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<td>.48***</td>
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<td>.65***</td>
<td>.74***</td>
<td>.38***</td>
<td>.70***</td>
<td>-.63***</td>
<td>-.35***</td>
<td>-.52***</td>
<td>-.58***</td>
<td>-.59***</td>
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<td>5. % Visible Minority</td>
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<td>---</td>
<td>---</td>
<td>1.00</td>
<td>.17***</td>
<td>-.33***</td>
<td>.49***</td>
<td>.54***</td>
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<td>6. Social Assistance</td>
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<td>.56***</td>
<td>.69***</td>
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<td>-.51***</td>
<td>-.73***</td>
<td>-.75***</td>
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<td>7. Median Income</td>
<td>---</td>
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<td>---</td>
<td>1.00</td>
<td>-.64***</td>
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<td>-.80***</td>
<td>.62***</td>
<td>.72***</td>
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<td>Private households</td>
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</tr>
<tr>
<td>8. % Unemployed</td>
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<td>-.51***</td>
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<td>---</td>
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<td>-.33***</td>
<td>-.52***</td>
<td>-.62***</td>
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<td></td>
</tr>
<tr>
<td>13. % Senior Management</td>
<td>---</td>
<td>---</td>
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<td>1.00</td>
<td>.87***</td>
<td>.82***</td>
<td>.69***</td>
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</tr>
<tr>
<td>14. % Individuals Income over $60 000</td>
<td>---</td>
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<td>---</td>
<td>1.00</td>
<td>.93***</td>
<td>.81***</td>
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<tr>
<td>15. % Census Families Income over $100 000</td>
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<td>---</td>
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<td>---</td>
<td>---</td>
<td>1.00</td>
<td>.92***</td>
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<tr>
<td>16. % Private Households Income over $100 000</td>
<td>---</td>
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<td>1.00</td>
<td></td>
</tr>
</tbody>
</table>

*p<.05; **p<.01; ***p<.001
Both collinearity (when two predictors correlate very strongly) and multicollinearity (when more than two predictors correlate very strongly) are problematic in regression analyses. Values of regression coefficients of highly correlated independent variables become distorted. Often they are low and may fail to achieve statistical significance. The standard errors of the regression weights of collinear predictors tend to be inflated, thereby increasing confidence intervals which can undermine the ability to determine if increases in the predictors are associated with increases or decreases in the criterion variable (Meyers, Gamst & Guarino, 2006).

To avoid the problem of multicollinearity that would result from analyzing these neighbourhood measures simultaneously in a linear regression analysis, these 16 measures were factor analyzed. Land and colleagues (1990) and Silver and colleagues (2002) recommend this approach to address the problem of multicollinearity among measures of neighbourhood structural characteristics. Given the smaller than anticipated sample size in this study which impacts on the number of variables that may be entered into a regression analysis, this approach has the added benefit of reducing the number of measures to a smaller number of underlying factors. An exploratory factor analysis using a principal component extraction method and an oblique rotation of the 16 measures was conducted. Prior to running the analysis with SPSS, the data were screened for possible univariate and multivariate assumption violations. From this initial assessment, 20 univariate outliers were detected: percentage single parents (1 case), percentage non-movers (2 cases), percentage recent immigrants (1 case), median income private households (1 case), median income unattached individuals (3 cases), percentage senior
manager (3 cases), percentage individuals income over $60 000 (4 cases), percentage
census families income over $100 000 (3 cases), percentage private households income
over $100 000 (2 cases). In addition, seven variables had elevated values for skewness or
ekurtosis. Consequently, transformations of these variables were undertaken using square,
base-10 logarithm, or inverse transformations. Table 6.5 provides the pre-transformation
skewness and kurtosis values of measures with non-normal distributions, the
transformations applied and the post-transformation skewness and kurtosis values.
Following these transformation, two variables had marginally elevated kurtosis values.
However Tabachnick and Fidell (2001) note that as long as principal components
analysis is used descriptively as a convenient way to summarize the relationship among a
large set of variables, assumptions regarding the distributions of variables may be
relaxed. To the extent that normality fails, the solution is weakened but not invalidated.
Moreover, they note the impact of positive kurtosis (i.e. kurtosis value greater than 1.0)
disappears with samples of 100 or more cases. Following transformations, six measures
continued to have univariate outliers: percentage single parent families (1 case),
percentage recent immigrants (1 case), median income private household (3 cases),
percentage of individuals with income greater than $60 000 (1 case), census families with
income greater than $100 000 (1 case), and private households with income greater than
$100 000 (1 case). An examination of multivariate outliers was undertaken before
remedying the issue of these univariate outliers in order to assess the full scope of the
problem of outlying cases.

Multivariate outliers were screened by computing Mahalanobis distance for each
case on the 16 measures. An iterative process of reviewing Mahalanobis distance scores
and deleting outlier cases resulted in the identification and removal of 18 multivariate outliers. Three univariate outliers remained present for median income of unattached persons (1 case) and percentage of individuals falling below the low income cut off (2 cases). These three univariate outliers were deleted.

Pairwise linearity was examined using bivariate scatterplots and was satisfactory.

Though the sample size was reduced with the removal of multivariate outliers, it was of adequate size for a factor analysis. Meyers and colleagues (2006) recommend a sample size of 250 cases for 25 variables. The Kaiser-Meyer-Olkin measure of sampling adequacy was .85, indicating that the present data were suitable for principal components analysis. Bartlett’s test of sphericity was significant (p < .001), indicating sufficient correlation between the variables to proceed with the analysis.

A two-factor solution provided the clearest extraction. These two factors accounted for 73.9% of the total variance. A third factor accounting for 7.58% of variance was initially identified but was too weak to interpret substantively with an eigenvalue of 1.21 and the following loadings: percentage senior management = -.84, percentage of individuals with income over $60 000 = .559 and percentage of census families with income over $100 000 = .438 The latter two variables have a similar or greater loading on the first factor, -.524 and -.668 respectively. Meyer and colleagues (2006) recommend that four or five items per factor is generally as small a count as one factor should have for inclusion in the factor solution. As such, and because two variables within the third factor have a comparable or greater loading on another factor, the factor solution was limited to two factors. A two factor solution provided the best solution because of its conceptual clarity and ease of interpretability.
Table 6.5 Data Transformations of Neighbourhood Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Pre-Transformation</th>
<th>Transformation</th>
<th>Post-Transformation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Skewness</td>
<td>Kurtosis</td>
<td></td>
</tr>
<tr>
<td>% Non Movers</td>
<td>-1.11</td>
<td>1.85</td>
<td>Squared</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>1.98</td>
<td>10.76</td>
<td>Logarithm base-10</td>
</tr>
<tr>
<td>Median Income Unattached Persons</td>
<td>2.72</td>
<td>8.31</td>
<td>Inverse</td>
</tr>
<tr>
<td>% Sr Managers</td>
<td>5.21</td>
<td>35.33</td>
<td>Inverse + constant</td>
</tr>
<tr>
<td>% Individuals Income over $60 000</td>
<td>3.09</td>
<td>13.23</td>
<td>Logarithm base-10</td>
</tr>
<tr>
<td>% Census Families Income over $100 000</td>
<td>2.61</td>
<td>10.21</td>
<td>Logarithm base-10</td>
</tr>
<tr>
<td>% Private Households Income over $100 000</td>
<td>1.84</td>
<td>5.02</td>
<td>Logarithm base-10</td>
</tr>
</tbody>
</table>
Table 6.6 provides the factor loadings for each variable in the two factor solution based on pattern coefficients derived from the pattern matrix. The first factor had an eigenvalue of 10.0 that accounted for 62.5% of the variance and was dominated by poverty-related variables with high loadings for median household income, percentage private households with income over $100 000, percentage individuals whose major source of income was social assistance, and percentage single parent households. The predominant interpretation of this factor is as a measure of neighbourhood economic disadvantage. The second factor depicted in Table 6.6 had an eigenvalue of 1.84 and accounted for 11.5% of the variance. This second factor was dominated by percentage foreign born and percentage visible minority suggesting an interpretation of this factor as a measure of population heterogeneity. The Pearson correlation between the two factors was moderate at .483. The regression approach to estimating factor scores available in SPSS was used to generate scores for all cases on each factor.

The results in Table 6.6 are comparable to findings by Silver (1999) in a similar analysis. Using census data from the city of Pittsburgh, Silver undertook a factor analysis of neighbourhood variables in predicting post-discharge violence among 270 patients recently discharged from hospital. Similar to the above analysis, Silver found loadings on two factors which accounted for 73% of the variance within the sample used: neighbourhood disadvantage (percentage of households that have public assistance incomes = .92; female-head households = .91, percentage of all persons in household with income below the federal poverty level = .87; adult employment rate = .87; percentage black = .81; percentage of families with income greater than $50 000 per annum = -.80, percentage of
<table>
<thead>
<tr>
<th>Variable</th>
<th>Factor Loadings</th>
<th>Population Heterogeneity</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Single Parent Families</td>
<td>.92</td>
<td>-.29</td>
</tr>
<tr>
<td>% Non-Movers</td>
<td>-.42</td>
<td>-.51</td>
</tr>
<tr>
<td>% Foreign Born Residents</td>
<td>-.05</td>
<td>.99</td>
</tr>
<tr>
<td>% Recent Immigrants</td>
<td>.30</td>
<td>.68</td>
</tr>
<tr>
<td>% Visible Minority</td>
<td>-.08</td>
<td>.97</td>
</tr>
<tr>
<td>% Social Assistance</td>
<td>.92</td>
<td>-.16</td>
</tr>
<tr>
<td>% Unemployed</td>
<td>.67</td>
<td>.23</td>
</tr>
<tr>
<td>Median Incomes Households</td>
<td>-.99</td>
<td>.07</td>
</tr>
<tr>
<td>Median Income Unattached Person</td>
<td>.66</td>
<td>.40</td>
</tr>
<tr>
<td>% LICO Economic Families</td>
<td>.81</td>
<td>.23</td>
</tr>
<tr>
<td>% LICO Unattached Persons</td>
<td>.49</td>
<td>.19</td>
</tr>
<tr>
<td>% LICO Private Household</td>
<td>.87</td>
<td>.15</td>
</tr>
<tr>
<td>% Senior Management Positions</td>
<td>.20</td>
<td>.40</td>
</tr>
<tr>
<td>% Persons Income &gt;$60K</td>
<td>-.64</td>
<td>-.31</td>
</tr>
<tr>
<td>% Census Family Income &gt;$100K</td>
<td>-.78</td>
<td>-.20</td>
</tr>
<tr>
<td>% Private Household Income &gt;$100K</td>
<td>-.94</td>
<td>.02</td>
</tr>
</tbody>
</table>
housing units that are vacant = .76; percentage of employed persons with executive or managerial positions = -.75; and mean household wage = -.73) and residential mobility (percentage of residents who lived in the same housing unit five years earlier = -.90; percentage foreign born = .86). Unlike the above analysis, the second factor in Silver’s analysis loaded more heavily on residential mobility than on ethnic heterogeneity. The divergence in the findings of the two analyses likely relate to the variables used in each analysis. Wherein Silver used percentage black and percentage foreign born as possible indicators of ethnic heterogeneity, this study utilized percentage visible minority, percentage recent immigrant and percentage foreign born. As such the measures of population heterogeneity are broader in scope in the current analysis as compared to the analysis undertaken by Silver. Moreover, in both analyses, residential mobility and foreign born loaded within the same factor, suggesting the differences in results are not substantial.

The results within this study are also congruous with a social disorganization theoretical framework which posits that economic disadvantage and ethnic heterogeneity are unique dimensions. However, the factor structure differs from the theory of social disorganization in which residential mobility is conceptualized as distinct from but related to population heterogeneity. That residential mobility did not emerge as an underlying component within the analysis above may be a result of the use of only one measure of this dimension. Moreover, its loading on the population heterogeneity factor is consistent with a social disorganization perspective which posits that new economically disadvantaged immigrants and migrants may initially move to marginalized neighbourhoods because of more affordable housing and subsequently move to less disadvantaged neighbourhoods.
after increasing their income, to be replaced by newer immigrants and migrants (Silver, 1999).

**Individual- and Situational-Level Measures**

As described in the previous chapter, a number of measures reflecting individual, situational and offense characteristics were collected from the charts of clients of a court support program. Descriptive statistics for the study subjects are provided in Table 6.7. Of the 245 subjects, more than half were persons of colour, though Caucasian was the largest racial grouping. The mean age was 34.1 years of age. Less than half (45.3%) had prior involvement with the criminal justice system and fewer still had any prior violent offense (30.2%). However, there was variability in the incidence of past offending in the sample. For example, the number of prior sentencing events (i.e. number of times individuals were sentenced for one or more offenses) ranged between one and 33 events. By comparison, the number of prior offenses ranged between one and 61 offenses while the number of prior violent offenses ranged between one and eleven offenses. There was also variability in the cumulative seriousness for prior violent offenses as scores on the Cormier-Lang scale of offense severity ranged between two and 35. However, most violence was not serious as evidenced by a mode of two for this measure, suggesting that a single charge of simple assault was the most common prior violent offense. A small minority of the sample were early start offenders incurring convictions prior to the age of 18. In terms of clinical factors, most had a psychotic disorder (71.4%) with schizophrenia being the most common diagnosis. A small minority (11.0%) had a comorbid personality disorder or subclinical antisocial personality traits. A large minority had a substance abuse problem with an alcohol use problem being slightly more common than a drug use problem, followed by a
Table 6.7 Sample Characteristics (N = 245)

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>(%)</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographic</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>60</td>
<td>(24.5)</td>
<td></td>
</tr>
<tr>
<td>East Asian/Aboriginal</td>
<td>11</td>
<td>(4.5)</td>
<td></td>
</tr>
<tr>
<td>South Asian</td>
<td>70</td>
<td>(28.6)</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>104</td>
<td>(42.4)</td>
<td></td>
</tr>
<tr>
<td>Age (in years)</td>
<td></td>
<td></td>
<td>34.1 (11.96)</td>
</tr>
<tr>
<td><strong>Criminal History</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous Sentencing Event</td>
<td>1.8</td>
<td>(3.72)</td>
<td></td>
</tr>
<tr>
<td>Prior Offenses</td>
<td>3.1</td>
<td>(6.64)</td>
<td></td>
</tr>
<tr>
<td>Prior Violent Offense</td>
<td>.7</td>
<td>(1.74)</td>
<td></td>
</tr>
<tr>
<td>Cumulative Seriousness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prior Violent Offenses</td>
<td>2.1</td>
<td>(5.24)</td>
<td></td>
</tr>
<tr>
<td>Number of Arrests as Youth</td>
<td>.4</td>
<td>(1.31)</td>
<td></td>
</tr>
<tr>
<td>Early Start Offending</td>
<td>29</td>
<td>(11.8)</td>
<td></td>
</tr>
<tr>
<td>Late Start Offending</td>
<td>216</td>
<td>(88.2)</td>
<td></td>
</tr>
<tr>
<td><strong>Clinical</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary Diagnosis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schizophrenia</td>
<td>134</td>
<td>(54.7)</td>
<td></td>
</tr>
<tr>
<td>Schizoaffective Disorder</td>
<td>11</td>
<td>(4.5)</td>
<td></td>
</tr>
<tr>
<td>Delusional Disorder</td>
<td>5</td>
<td>(2.0)</td>
<td></td>
</tr>
<tr>
<td>Other Psychotic Disorder</td>
<td>25</td>
<td>(10.2)</td>
<td></td>
</tr>
<tr>
<td>Bipolar Affective</td>
<td>29</td>
<td>(11.8)</td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>41</td>
<td>(16.7)</td>
<td></td>
</tr>
<tr>
<td>Secondary Diagnosis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASPD</td>
<td>19</td>
<td>(7.8)</td>
<td></td>
</tr>
<tr>
<td>Other PD</td>
<td>12</td>
<td>(4.9)</td>
<td></td>
</tr>
<tr>
<td>Substance Abuse</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any Substance Abuse</td>
<td>109</td>
<td>(45.5)</td>
<td></td>
</tr>
<tr>
<td>Alcohol Abuse</td>
<td>69</td>
<td>(28.2)</td>
<td></td>
</tr>
<tr>
<td>Drug Abuse</td>
<td>65</td>
<td>(26.5)</td>
<td></td>
</tr>
<tr>
<td>Alcohol &amp; Drug Abuse</td>
<td>28</td>
<td>(11.4)</td>
<td></td>
</tr>
<tr>
<td><strong>Current Life Circumstances</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meagre Income</td>
<td>62</td>
<td>(25.3)</td>
<td></td>
</tr>
<tr>
<td>Homeless</td>
<td>26</td>
<td>(10.6)</td>
<td></td>
</tr>
<tr>
<td>On Bail/Probation</td>
<td>75</td>
<td>(30.6)</td>
<td></td>
</tr>
</tbody>
</table>
co-occurring alcohol and drug use problem. With respect to current life circumstances, a sizeable minority were receiving basic social assistance (i.e. general welfare as opposed to disability assistance) and/or were on a bail or a probation order, while a small minority were homeless at the time of the violent index offense.

Characteristics of the violent offense are provided in Table 6.8. The violent index offense(s) usually involved one victim (80.4%), and in most instances the victim was female (58.8%) and was known to the subject (61.2%) in the context of a (prior) intimate relationship, family relationship or friendship. In addition, the violence most often occurred within the home of the subject and most often occurred in the presence of a third party. A weapon was less frequently used during the violent occurrence. In the vast majority of situations a motive was discernible from a review of the police synopsis, with an expressive motive of violence being more common than an instrumental motive of violence.

**Criterion Variables: The Operationalization of Violence Severity**

As noted above, violence severity is operationalized in two ways: as a continuous outcome measure indicating violence severity for the most violent offense identified in the index charge set (most serious violent index offense) and as a continuous outcome measure indicating the composite violence severity score for all violent index offenses which weighs both the number and seriousness of violent offenses in the index charge set (*composite seriousness of violent index offenses*). Both outcome measures were computed using the modified Cormier-Lang System for Quantifying Criminal History (Quinsey et al., 1998). Based on the range of scores (i.e. 2 to 28), the *most serious violent index offense* ranged from simple assault to homicide. However, the most common type of violence was
<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>(%)</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Motive</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motive for Violent Offense Known</td>
<td>202</td>
<td>(82.4)</td>
<td></td>
</tr>
<tr>
<td>Expressive Motive</td>
<td>142</td>
<td>(58.0)</td>
<td></td>
</tr>
<tr>
<td>Instrumental Motive</td>
<td>68</td>
<td>(27.8)</td>
<td></td>
</tr>
<tr>
<td><strong>Witness to Offense</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third Party Present at Offense</td>
<td>140</td>
<td>(57.1)</td>
<td></td>
</tr>
<tr>
<td>Third Party Known to Victim</td>
<td>37</td>
<td>(15.1)</td>
<td></td>
</tr>
<tr>
<td>Third Party Intervened</td>
<td>98</td>
<td>(40.0)</td>
<td></td>
</tr>
<tr>
<td><strong>Target of Violence</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Victims</td>
<td>1.2</td>
<td>(.58)</td>
<td></td>
</tr>
<tr>
<td>Gender of Victim</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>144</td>
<td>(58.8)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>101</td>
<td>(41.2)</td>
<td></td>
</tr>
<tr>
<td>Offender-Victim Relationship</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner/Ex-partner</td>
<td>47</td>
<td>(19.2)</td>
<td></td>
</tr>
<tr>
<td>Other Family</td>
<td>67</td>
<td>(27.3)</td>
<td></td>
</tr>
<tr>
<td>Acquaintance</td>
<td>36</td>
<td>(14.7)</td>
<td></td>
</tr>
<tr>
<td>Stranger</td>
<td>64</td>
<td>(26.1)</td>
<td></td>
</tr>
<tr>
<td>Peace Officer</td>
<td>31</td>
<td>(12.7)</td>
<td></td>
</tr>
<tr>
<td><strong>Weapons Used</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weapon Used at Offense</td>
<td>91</td>
<td>(37.1)</td>
<td></td>
</tr>
<tr>
<td>Weapon Threats</td>
<td>12</td>
<td>(4.9)</td>
<td></td>
</tr>
<tr>
<td>Composite Seriousness of Index Weapon Threats</td>
<td>0.2</td>
<td>(.80)</td>
<td></td>
</tr>
<tr>
<td><strong>Location of Offense</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In Home</td>
<td>102</td>
<td>(41.6)</td>
<td></td>
</tr>
<tr>
<td>Other Residence</td>
<td>27</td>
<td>(11.0)</td>
<td></td>
</tr>
<tr>
<td>Street/Outdoors</td>
<td>70</td>
<td>(28.6)</td>
<td></td>
</tr>
<tr>
<td>Hospital/Clinic</td>
<td>7</td>
<td>(2.9)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>39</td>
<td>(15.9)</td>
<td></td>
</tr>
</tbody>
</table>
simple assault with 44.5% of the sample having this charge as their most serious violent
offense in the index charge set. Just over half (53.5%) of the sample had two or more
violent offenses occurring within the index charge set. Composite seriousness of violence
scores had a range from 2 to 28 and a mode of four suggesting that the composite
seriousness of violence ranged from a single act of assault to a single act of homicide with
most violence involving two counts of simple assault.

Conclusion

The analyses provided in this chapter highlight three key findings. First, the
subjects within this study tended to reside in more economically disadvantaged and
ethnically diverse neighbourhood settings relative to members of the general population.
This finding is consistent with results of previous research exploring the neighbourhood
contexts of persons with serious mental illness. Second, consistent with prior theory and
research in the area of social disorganization, economic disadvantage and population
heterogeneity surfaced as key components characterizing the neighbourhood contexts of
the sample. These dimensions match two out of three of the structural indices of social
disorganization as conceptualized by Shaw and McKay (1942). Third, subjects within the
sample tended have relatively minor violent offenses. From a statistical standpoint, this
restricted variation in violence severity renders the association between predictors of
violence and violence severity more difficult to achieve. It might be anticipated that with
larger variance in violence severity, the association between predictor variables and
violence severity might be stronger. Given the restricted variance in violence severity, the
findings here could be interpreted as a conservative estimate of the association between the
individual and contextual predictors of violence and violence severity.
The next chapter will examine multivariate models that address the specific research questions raised in Chapter 3. These analyses will focus on assessing the importance of demographic, clinical, and contextual variables in predicting violence severity. It will also explore the relative influence of individual-specific and context-specific variables associated with violence severity and draw comparisons between early start and late start offenders. Finally, the generalizability of the results is examined through a review of the differences between individuals included in the study and those excluded due to missing data or outlying values on measures.
Chapter 7: Multivariate and Univariate Results

In the previous chapter, the neighbourhood settings of the study subjects were compared to neighbourhood settings of the general population. In addition, two neighbourhood-level factors were derived—Neighbourhood Economic Disadvantage and Neighbourhood Population Heterogeneity—from a factor analysis of the measures of the structural characteristics of study subjects’ neighbourhoods. Sample and offense characteristics were described and the two criterion variables operationalizing violence severity were examined.

In this chapter, each of the research questions posed in Chapter 3 is addressed. These questions include: 1) What factors related to clinical presentation, crime-scene setting, current life circumstances, neighbourhood residence and criminal history are associated with increased severity of violence among persons with major mental disorder?; 2) What is the relative importance of contextual- and individual-level characteristics in terms of the amount of variation in severity of violence by persons with mental disorder?; 3) Are there different individual- and contextual-level predictors of severity of violence for early-start as opposed to late-start offenders with major mental disorder?; and 4) How do early-start and late-start offenders with major mental disorder compare with regard to clinical presentation, crime-scene behaviour, current life circumstances, neighbourhood background and criminal history? In the sections that follow, analyses addressing each research question are presented. Within each section, each of the two operationalizations of violence severity (i.e. most serious violent index offense and composite seriousness of violent index) is analyzed. Finally analyses are undertaken to examine how individuals included in the study as subjects differed from individuals excluded from the study due to
missing data or outlier scores on measures. These latter analyses provide indication of the
generalizability of the results. Standard regression, hierarchical regression, chi-square and
comparison of means are used to address the above research questions. In addition, chi-
square and means comparison analyses are also used to examine differences among cases
included in the study to those excluded from the study.

Data Preparation

Prior to undertaking the analyses to address the four research questions, all variables
were screened for statistical assumption violations as well as for outliers with SPSS
Frequencies, Descriptives and Regression procedures. Because of extreme skewness
and/or kurtosis, eight variables were transformed or dichotomized: most serious index
offense, composite seriousness of violent index offenses, prior sentencing events, prior
offenses, prior violent offenses, cumulative severity prior violent offenses, number of
arrests as youth, and number of victims at index offense. Table 7.1 provides the pre-
transformation skewness and kurtosis values of measures with non-normal distributions,
the transformations applied and the post-transformation skewness and kurtosis values.
Following these transformations, skewness and kurtosis values were substantially reduced;
however, prior offenses continued to have higher than normal kurtosis and prior violent
offenses and number of victims of violence continued to have marginally elevated
skewness values.

Next, scatterplots were reviewed to assess linearity. Pairwise linearity did not reveal
nonlinear relationships among variables.
Table 7.1 Data Transformations of Individual- and Situational-Level Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Pre-Transformation</th>
<th>Transformation</th>
<th>Post-Transformation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Skewness</td>
<td>Kurtosis</td>
<td></td>
</tr>
<tr>
<td>Most Serious Violent Index Offense</td>
<td>4.57</td>
<td>32.61</td>
<td>Negative reciprocal root</td>
</tr>
<tr>
<td>Composite Seriousness of Violent Index Offenses</td>
<td>2.22</td>
<td>6.08</td>
<td>Logarithm base-10</td>
</tr>
<tr>
<td>Previous Sentencing Event</td>
<td>3.78</td>
<td>21.67</td>
<td>Negative reciprocal root + constant</td>
</tr>
<tr>
<td>Prior Offenses</td>
<td>4.17</td>
<td>26.07</td>
<td>Inverse + constant</td>
</tr>
<tr>
<td>Prior Violent Offense</td>
<td>3.46</td>
<td>13.12</td>
<td>Inverse + constant</td>
</tr>
<tr>
<td>Cumulative Seriousness of Prior Violent Offenses</td>
<td>3.58</td>
<td>14.07</td>
<td>Inverse + constant</td>
</tr>
<tr>
<td>Number of Arrests as Youth</td>
<td>5.09</td>
<td>28.99</td>
<td>Dichotomized</td>
</tr>
<tr>
<td>Number of Victims at Index Offense</td>
<td>3.54</td>
<td>19.68</td>
<td>Inverse</td>
</tr>
</tbody>
</table>
Variables were also screened for outliers. Two univariate outliers were found among dichotomous variables. Tabachnick and Fidell (2001) recommend that dichotomous variables with splits greater than or equal to 90%-10% be deleted as cases in the minority category in variables with such extreme splits are likely outliers. Anti-social personality disorder had a 92%-8% split while other personality disorder had a 95%-5% split. However, rather than delete both variables, the two variables were merged into a new dichotomous variable, *any personality disorder*, which had an 89%-11% split. Among continuous variables, age and the inverse transformation of number of victims each had one outlier (\(z=3.84\) and \(z =3.38\) respectively, where \(z > 3.29\) is indicative of an outlier value).

Tabachnick and Fidell (2001) suggest one of three strategies to reduce the influence of outlying cases within continuous variables: elimination of the variable with outlying cases, transformation of the variable distribution or alteration of the extreme scores(s). *Number of victims* was deleted from the analysis because it continued to have a non-normal distribution despite transformation of its distribution and because it was not a central variable in the theoretical model depicted in chapter 3. By comparison, score alteration was used to reduce the impact of the outlying case within the variable *age*. The outlying score was reduced from age 80 to 72. Seventy-two is two units (i.e. years) higher than then next most extreme score (age = 70) in the sample distribution. A review of standardized scores (i.e. z scores) on the adjusted variable *age* indicate this score alteration reduced the influence of the outlying case (from \(z = 3.83\) to \(z=3.12\), where \(z > 3.29\) is indicative of an outlying score). Score adjustment rather than transformation was undertaken because the variable *age* had skewness and kurtosis values that did not depart significantly from normality.
Prior to screening for multivariate outliers and multicollinearity, the case-to-independent variable ratio was recalculated to determine the number of predictors the regression models could accommodate. Because the sample size was smaller than anticipated, the number of predictors that could be included in the analysis had to be reduced. Using the case-to-IV guidelines specified by Tabachnick and Fidell (2001) \( (i.e. \ N \geq 50 + 8m, \) where \( m \) is number of IVs), the current sample of 245 enabled testing a standard or hierarchical regression model with up to 24 predictors.

To reduce the number of predictors for inclusion into the regression model, three strategies were employed. First, nominal variables with more than two categories (e.g. diagnosis) had the number of categories reduced before dummy coding. Second, predictor variables were screened for (multi)collinearity and redundant variables were removed. If two or more continuous variables measured the same underlying construct, then variables whose distribution most closely approximated normality were given preference for inclusion in the regression model. In addition, preference for inclusion was given to variables identified within previous research as related to violence and to variables measuring key constructs depicted in the theoretical model posited in Chapter 3.

Using the above strategies, four variables had the number of categories they contained reduced before dummy coding. The number of categories within the variable \( race \) was reduced from four (Black, south Asian, East Asian/Aboriginal, White) to two (Person of Colour, White). Similarly, the number of categories within \( offender-victim \) relationship were reduced from five (spouse/partner/ex-partner, other family, friend/acquaintance, stranger, police officer) to two (spouse/family, other). Spouse/intimate and other family were included in the same category because prior research has suggested that close family are more likely to
be victims of violence by persons with mental illness (Steadman et al., 1998; Steadman & Silver, 2000). Offense location was also reduced from 5 categories (home, other residence, outdoors, mental health clinic, other) to two (home/other residence, public location). Home and other residence were combined to explore whether violence severity differed within private spaces relative to public spaces. Such a distinction enabled examination of whether locations relatively open to public view served to mitigate severity of violence. The number of categories within severe mental illness diagnosis was reduced from six categories (schizophrenia, schizoaffective disorder, delusional disorder other psychotic disorder, bipolar affective disorder, depression) to 3 categories (psychotic disorder, bipolar affective disorder and depression). Two dummy variables were then created, bipolar affective disorder and depression. Psychotic disorder served as the reference group because it was the category that comprised the largest proportion of the sample (71.4%). Meyers and colleagues (2006) recommend that the reference group in a dummy coding process should be one that has a relatively large sample size in order to have as small a standard error as possible in regression analyses.

Variables were also screened for (multi)collinearity using SPSS Collinearity Diagnostics and bivariate correlations. Expressive motive for violence, a dichotomous variable, was excluded from the regression analysis because of multicollinearity. Meyers and colleague (2006) caution that tolerance parameters in the range of .1 suggest predictor variables that are too highly inter-correlated. Three variables met this criterion: motive for current violent offense known (.174), instrumental motive for violence (.164), and expressive motive for violence (.128). The latter variable was excluded because it had the lowest tolerance value among the three variables. With the removal of expressive motive for
violence, the tolerance values of motive for current violent offense known and instrumental motive increased appreciably to .821 and .745 respectively.

Three continuous variables measuring aspects of criminal history were also not included in the regression analyses: previous sentencing event, prior offense and prior violent offenses. These three variables and cumulative severity of prior violent offenses were highly correlated, with Pearson produce-moment correlation values ranging from .77 to .97, suggesting that the four variables are measuring the same construct. Inter-correlations among the four variables are presented in Table 7.2. Meyers and colleagues (2006) recommend that two variables correlated in the middle .70s or higher should not be used together in a regression analysis because the values of the regression coefficients for the highly correlated predictors can become distorted and fail to achieve statistical significance. Prior offenses and prior violent offenses were not included within the analysis as they both had skewness and kurtosis values suggestive of a non-normal distribution (values greater than +1.0 or less than -1.0) following transformation. Cumulative seriousness of prior violent offenses was given preference over prior sentencing events as previous research suggests that prior violence is indicative of future violence. Moreover, inclusion of cumulative seriousness of prior violent offenses would facilitate exploration of whether the relative severity of previous violence was predictive of current severity of violence.

| Table 7.2 Bivariate Correlations Among Variables with Collinearity |
|---------------------------------|---|---|---|---|
| Variable                        | 1  | 2  | 3  | 4  |
| 1. Previous Sentencing Event    | ---| .97*| .77*| .77*|
| 2. Prior Offenses               | ---| ---| .78*| .78*|
| 3. Prior Violent Offenses       | ---| ---| ---| .99*|
| 4. Cumulative Seriousness       | ---| ---| ---| ---|

*p≤.01,(2-tailed)
In order to test key elements of the theoretical framework proposed above, the following predictors were included in the regression model: (1) race, (2) age, (3) cumulative seriousness of prior violent offenses, (4) early-start offender, (5) bipolar affective disorder diagnosis, (6) depression diagnosis, (7) personality disorder diagnosis, (8) alcohol use problem, (9) drug use problem, (10) alcohol and drug problem, (11) motive for violent offense known, (12) instrumental motive, (13) third party present, (14) third party intervened, (15) offense location residential, (16) victim male, (17) victim family member, (18) weapon used at offense, (19) meagre income, (20) homeless, (21) on bail/probation, (22) neighbourhood economic disadvantage, (23) neighbourhood population heterogeneity. As discussed above, each of these variables has been identified or posited to be a predictor of violence among persons with serious mental illness.

No multivariate outliers among cases were found using a p<.001 criterion for Mahalanobis distance. Moreover, no residual outliers were found using the SPSS casewise diagnostics through regression procedures.

The following sections address each research question in turn.

1) What factors related to clinical presentation, crime-scene setting, current life circumstances, neighbourhood residence and criminal history are associated with increased severity of violence among persons with major mental disorder?

To address this question with reference to both operationalizations of violence severity (i.e. most serious violent index offense and composite seriousness of violent index offense), standard multiple regression was used. In Chapter 3, two hypotheses were posited in relation to the above question. First, it was hypothesized that early start offending, psychotic symptoms, antisocial personality disorder, and substance abuse would be associated with
increased severity in criminal violence. In addition, it was also hypothesized that violence severity would be positively associated with expressive/reactive motives for violence related to friction, and with low-monitoring behavioural settings and with neighbourhood social disorganization. However, because variables related to symptom presentation could not be included in the analysis due to missing data and because the variable antisocial personality disorder was combined with the variable other personality disorders to redress the issue of univariate outliers within dichotomous variables, the first hypothesis noted above was re-formulated prior to running the regression analysis. Specifically it was predicted that early start offending and the presence of a psychotic disorder, any personality disorder and a substance abuse problem would be associated with increased severity of violence. Similarly, because the variable expressive motive for violence was excluded due to collinearity with the variables discernible motive present and instrumental motive and because the variable formal supports was excluded due to missing data, the second hypothesis was also re-formulated a priori. Namely, it was predicted that violence severity would be negatively associated with instrumental motive and being on bail or probation and positively associated with neighbourhood economic disadvantage and neighbourhood population heterogeneity. The following subsections describe the results in terms of each of the two operationalizations of violence severity.

Predictors of Violence Severity: Most Serious Index Offense Results

Regression results are summarized in Table 7.3. Included within the table are the bivariate (zero-order) correlations and associated significance level for each predictor variable in relation to most serious violent index offense prior to partializing out the relative effects of all other predictor variables. With respect to the bivariate relationship between violence severity
and individual-level predictors, violence severity was positively correlated with early start offending, with the presence of a personality disorder and with an alcohol use problem; it was negatively associated with a diagnosis of depression, relative to a diagnosis of a psychotic disorder. These results are consistent with outcomes of previous research which has found violence related to early involvement with the criminal justice system (Hodgins & Janson, 2002; Tengström et al., 2001) to the presence of a personality disorder (Rice, Harris et al., 1990, Stuart & Arbóleda-Florez, 2001) and to a substance use disorder (Monahan et al., 2001; Swanson et al., 1990). However, the results diverge from the results of previous research in relation to the influence of previous violence, which has been identified as one of the best predictors of future violence (Bonta et al., 1998; Steadman et al., 2000, Swanson, 1993). Previous research however has focused on whether past violence is predictive of violence in general rather than on whether it is predictive of violence severity. The findings of the current study suggest that the severity of previous violence does not predict severity of future violence.

Violence severity also had a significant bivariate correlation with a number of contextual/behavioural setting predictors. With respect to offense characteristics, violence severity was positively correlated with an instrumental motive for violence and with the use of a weapon in the commission of the violent act. It was negatively correlated with a discernible motive for the violent act and with male victim and familial victim, suggesting that increased violence is more likely to occur when the victim is female and not related to the perpetrator. The findings related to target of violence are incongruous with previous research. In a community sample of persons with severe mental illness Steadman and colleagues (1998; 2000) found that the victims of violence were mostly likely to be related to the offender. Their
research however focused on general violence, dichotomously operationalized, and did not explore the association between victim relationship to offender and severity of violence. Violence severity was also correlated to current life circumstances, namely to homelessness and to residing in neighbourhoods with high population heterogeneity. The latter being a possible indicator of socially disorganized neighbourhoods.

An examination of the multivariate relationships to violence severity revealed that the predictors entered in the regression model moderately correlated to most serious violent index offense, $r = .55$. Multiple $R$ for the regression model was statistically significant, $F(23,221) = 3.79$, $p<.001$, $R^2_{adj} = .23$. A review of partial correlations showed only five of the independent variables significantly contributed to the prediction of most serious violent index offense when other predictors variables were statistically controlled: victim female gender ($pr = .17$), victim related to offender ($pr^2 = -.16$), weapon used during index offense ($pr = .34$), motive for violence was discernible ($pr^2 = -.15$), instrumental motive for violence ($pr = .26$), and homelessness ($pr = .17$). A number of variables that had significant bivariate correlations with violence severity were only marginally significant (i.e. $p < .10$) predictors within the regression model: depression ($p = .054$), any personality disorder ($p = .07$), alcohol use problem ($p = .06$), and neighbourhood population heterogeneity ($p = .07$). Early start offending however was not a statistically significant predictor of violence severity ($p = .30$).

These findings do not support either of the hypotheses outlined above. Contrary to predictions, instrumental violence was positively related to violence severity while being on bail or probation was not related to the criterion variable. Moreover, although the zero-order correlations presented indicated partial support for the hypotheses in that psychotic disorder (in relation to depression), personality disorder, alcohol abuse, and population heterogeneity
Table 7.3 Multiple regression statistics for predictors of Most Serious Violent Index Offense (N = 245)

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficient</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
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<td></td>
<td>B</td>
<td>SEB</td>
<td>B</td>
</tr>
<tr>
<td>Constant</td>
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<tr>
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<tr>
<td>2. Race</td>
<td>.02</td>
<td>.02</td>
<td>.06</td>
</tr>
<tr>
<td>3. Inverse Cumulative Prior Violence</td>
<td>-.01</td>
<td>.02</td>
<td>-.04</td>
</tr>
<tr>
<td>4. Early Start</td>
<td>.03</td>
<td>.03</td>
<td>.07</td>
</tr>
<tr>
<td>5. Bipolar</td>
<td>.01</td>
<td>.03</td>
<td>.02</td>
</tr>
<tr>
<td>6. Depression</td>
<td>-.04</td>
<td>.02</td>
<td>-.12</td>
</tr>
<tr>
<td>7. Any PD</td>
<td>.05</td>
<td>.03</td>
<td>.12</td>
</tr>
<tr>
<td>8. Alcohol Abuse</td>
<td>.04</td>
<td>.02</td>
<td>.14</td>
</tr>
<tr>
<td>9. Drug Abuse</td>
<td>-.02</td>
<td>.02</td>
<td>-.05</td>
</tr>
<tr>
<td>10. Alcohol &amp; Drug</td>
<td>-.04</td>
<td>.04</td>
<td>-.10</td>
</tr>
<tr>
<td>11. Motive Known</td>
<td>-.05</td>
<td>.02</td>
<td>-.14</td>
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<td>12. Instrumental Motive</td>
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<td>.26</td>
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<td>.02</td>
<td>.03</td>
</tr>
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<td>14. Third Party Intervened</td>
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<td>.02</td>
<td>-.09</td>
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<td>15. Residential Location</td>
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<td>.02</td>
<td>.13</td>
</tr>
<tr>
<td>16. Weapon Used</td>
<td>.10</td>
<td>.02</td>
<td>.34</td>
</tr>
<tr>
<td>17. Male Victim</td>
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<td>.02</td>
<td>-.16</td>
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<tr>
<td>18. Victim Spouse/Relative</td>
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<td>.02</td>
<td>-.21</td>
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<tr>
<td>19. Meagre Income</td>
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<td>.02</td>
<td>-.08</td>
</tr>
<tr>
<td>20. Homeless</td>
<td>.08</td>
<td>.03</td>
<td>.17</td>
</tr>
<tr>
<td>21. On Bail/Probation</td>
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<td>.02</td>
<td>-.10</td>
</tr>
<tr>
<td>22. Neighbourhood Disadvantage</td>
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<td>-.06</td>
</tr>
<tr>
<td>23. Population Heterogeneity</td>
<td>.02</td>
<td>.01</td>
<td>.13</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001
were predictive of violence severity; none of these predictors were significantly related to violence severity after controlling for the effects of other predictors. However, it is noteworthy that these four predictor variables approached statistical significance. The marginal significance of these variables could be related to an insufficiently large sample size. Alternatively, the marginal significance could be indicative of the absence of any relationship with violence severity.

**Predictors of Violence Severity: Composite Seriousness of Violent Index Offense Results**

Table 7.4 displays the regression coefficients and correlations between the predictor variables and *composite seriousness of violent index offense(s)*. Like most serious violent index offense, *composite seriousness of violent index offense(s)* was positively correlated with early start offending, existence of a personality disorder or an alcohol abuse problem, presence of an instrumental motive for violence, use of a weapon during the violent index event, homelessness and neighbourhood population heterogeneity and it was negatively correlated with a diagnosis of depression, presence of a discernible motive for violence, and with the victim being male or a family member.

As was the case with *most serious violent index offense*, the linear composite of predictors was also moderately correlated to the criterion variable *composite seriousness of violent index offense(s)*, $r = .54$, and explained a similar proportion of the variance of violence severity, $R^2 = .29$, adjusted $R^2 = .22$, $F (23, 221) = 3.95$, $p< .001$. Moreover, as with *most serious violent index offense*, a number of the relationships between the above predictors and *composite seriousness of violent index offense(s)* were no longer significant after partialling out the effects of other predictors. An examination of the partial correlations showed six
Table 7.4 Multiple regression statistics for predictors of Composite Seriousness Violent Index Offenses (N = 245)

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficient</th>
<th>Correlations</th>
</tr>
</thead>
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<td>3. Inverse Cumulative Prior Violence</td>
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<td>4. Early Start</td>
<td>.08</td>
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<td>5. Bipolar</td>
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<tr>
<td>6. Depression</td>
<td>-.07</td>
<td>.05</td>
<td>-.08</td>
</tr>
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<td>7. Any PD</td>
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<td>8. Alcohol Abuse</td>
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<td>9. Drug Abuse</td>
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</tr>
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<td>10. Alcohol &amp; Drug</td>
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<td>11. Motive Known</td>
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<td>16. Weapon Used</td>
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<tr>
<td>23. Population Heterogeneity</td>
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<td>.02</td>
<td>.17</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001
statistically significant predictors of composite violence severity: alcohol abuse, homelessness, neighbourhood population heterogeneity, an unknown motive, an instrumental motive for violence, use of a weapon, and female victim. Two predictors were marginally significant: meagre income (p = .08) and a non-familial relationship to the victim (p = .052).

These results provide only partial support for the posited hypotheses. Though composite seriousness of violence was predicted by the presence of a substance abuse problem and by neighbourhood population heterogeneity, it was not predicted by the presence of a psychotic disorder or a personality disorder or by the absence of formal monitoring in the form of bail or probation supervision or informal monitoring in the form of witnesses present at the time of the offense. In addition, contrary to expectations, instrumental violence was positively related to violence severity.

Summary

Taken together, the findings for most serious violent index offense and composite seriousness of violence index offense(s) underscore the importance of offense characteristics in predicting severity of violence. There was significant overlap in the amount of variation explained by motive, victim gender, use of a weapon and homeless in both operationalizations of violence severity. These results suggest that the circumstances surrounding the offense and the life circumstances of the perpetrator are similar for both types of violence severity. However, though there was commonality in the influence of offense characteristics in predicting both types of violence severity, the results for most serious violent index offense and composite seriousness of violent index offenses(s) did diverge somewhat, suggesting different predictors influence violence severity depending on whether severity of violence is operationalized as the most serious single act of violence or the cumulative seriousness of one
or more violent acts occurring at the same time. Whereas alcohol use and neighbourhood heterogeneity were not significant predictors of the most serious violent act, they were significant predictors of composite seriousness of one or more acts of violence. Moreover, while a non-familial/non-intimate relationship to the victim was a significant predictor of most serious violent act, it was not a significant predictor of the composite seriousness of violent acts occurring at the same time. It is also noteworthy that each type of violence severity had different marginally significant predictors of violence. Personality disorder, psychotic disorder (relative to depression), alcohol abuse and population heterogeneity were nearly significant predictors of most serious violent index offense while non-familial victim and meagre income were marginally significant predictors of composite seriousness of violent index offense(s).

2) What is the relative importance of contextual and individual level characteristics in terms of the amount of variation in severity of violence by persons with mental disorder?

Based on the findings of prior research (Silver, 1999; 2000a), it was hypothesized that individual-level characteristics would account for the majority of explained variation in violence severity. To address this question, a series of hierarchical linear regression analyses were conducted to determine the relative influence of individual-level and contextual factors on violence severity. The variables were entered in blocks. Demographic variables, criminal history variables and clinical variables were entered as one block and behavioural setting/proximal contextual variables, life circumstances variables and neighbourhood variables were entered as a separate block. In order to calculate the variance uniquely
attributable to individual-level variables and contextual variables, two separate hierarchical regression analyses were undertaken. First, individual level variables were entered as a block in the regression analysis followed by the contextual variables (i.e. Model 1 included all individual-level variables and Model 3 included individuals and contextual variables). Then, in a separate analysis, contextual variables were entered in the regression analysis first followed by individual level variables (i.e. Model 2 included only contextual variables and Model 3 included both contextual and individual level predictors). In this way the unique variance attributable to each set of predictors (i.e. individual-level variables and contextual variables) was determined. The sum of the unique variance of each set of predictors was subtracted from the total variance explained by the final regression model (which combined individual-level and contextual variables) to calculate the shared variance between the individual and contextual variables. Separate regression analyses were conducted for each of the outcome variables (i.e. most serious violent index offense and composite seriousness of violent index offense).

**Relative Importance of Variables Predicting Most Serious Violent Index Offense**

Table 7.5 presents the coefficients and adjusted $R^2$ for individual-level and contextual predictors of the most serious violent index offense both before and after partializing out the effects of one another. Individual-level variables accounted for five percent of the variance in violence severity, prior to controlling for contextual variables. By comparison, contextual variables accounted for 21% of the variation in violence severity, prior to controlling for individual-level variables. To ascertain the unique variance of individual-level variables a hierarchical regression analysis was run entering contextual variables in one model and then individual level predictors in the second. After controlling for contextual variables, individual
### Table 7.5 Hierarchical regression statistics for predictors of Most Serious Violent Index Offense (N = 245)

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>Model 1</th>
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*p<.05; **p<.01; ***p<.001; Model 1, adjusted R² =.05, F (10, 234)=2.23, p=.017; Model 2, adjusted R² =.21, F (13, 231) =6.03, p<.001; Model 3, adjusted R² =.23, F=(23, 221) =4.13, p<.001
level predictors accounted for two percent of the variation in violence severity. Next, to ascertain the amount of variation uniquely attributable to contextual-level predictors, a separate hierarchical regression analysis was undertaken and these contextual-level variables were added to the analysis after controlling for individual-level predictors. After controlling for individual-level variables, the unique contribution of the contextual variables was 13%. This leaves 8% \([=23\% - (2\% + 13\%)]\) as shared variation.

As noted above, it had been predicted that individual-level variables would account for the majority of explained variation. The above results, however, discount the hypothesized influence of individual-level variables relative to contextual variables in predicting violence severity, operationalized as the most violent act committed during a violent incident.

**Relative Importance of Variables Predicting Composite Seriousness of Violence**

A summary of the hierarchical regression analysis for *composite seriousness of violent index offense(s)* is presented in Table 7.6. Prior to controlling for contextual variables, individual–level variables accounted for 5% of the variation in the composite seriousness of violence score. By comparison, the contextual variables accounted for 20% of the variance prior to partialling out the effects of individual-level variables. When the effects of contextual variables were controlled for, the unique contribution of the individual-level predictors was 2%, whereas the unique contribution of contextual variables, after the effects of individual-level variables were controlled was 17%. The remaining shared variance accounted for 3% \([=22\%- (2\%+17\%)]\).

As was the case with *most serious violent index offense* scores, it had been predicted that *composite seriousness of violent index offense(s)* scores would be influenced more greatly by
Table 7.6 Hierarchical regression statistics for predictors of Composite Seriousness of Violent Index  (N = 245)

<table>
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<tr>
<th>Predictor Variables</th>
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*p<.05; **p<.01; ***p<.001; Model 1, R²=.05, F=(10, 234)=2.19, p=.019; Model 2, adjusted R²=.20, F (13, 231)=5.07, p <.001
Model 3, adjusted R²=.22, F(23,221)= 3.95, p<.001

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individual-level variables than contextual variables. This hypothesis was not supported by the above findings.

Summary

Contrary to predictions, the effects of contextual variables accounted for far more of the explained variation in both types of violence severity than individual-level predictors. The relative robustness of contextual variables over individual-level variables for both operationalizations of violence severity appears to relate to the inclusion of offense characteristics. Compared to other variables such as diagnosis, comorbidity, violence history and neighbourhood residence, the offense scene variables (e.g. motive, use of weapon, relationship to victim) are more proximal to the violent offense. The present study was unable to include proximal dynamic individual-level predictors such as symptomatology, medication adherence and intoxication. It is reasonable to expect that with a more theoretically exhaustive set of proximal individual-level factors, the amount of variation in violence severity accounted for by individual-level variables relative to contextual variables might increase. Future research is required to test this prediction.

The above results also showed a notable amount of the explained variation in severity of violence (between 3% and 8% out of a total adjusted $R^2$ of 22% and 23%) is shared by both individual-level and contextual variables. Taken together these findings suggest that studies of violence which do not specify contextual variables, especially contextual variables which are proximal to the violent event, are at risk of overstating the explanatory power of individual-level and distal predictors of violence.
3) Are there different individual- and contextual-level predictors of severity of violence for early-start as opposed to late-start offenders with major mental disorder?

In Chapter 3, it was hypothesized that early- and late-start offenders have different predictors of violence severity. This hypothesis hinged on a finding of a differential pattern of violence for early-start and late-start offenders; however, as noted above, offender type was not predictive of violence severity. As a result, the above question is rendered moot by the absence of such a relationship. Moreover, were there a relationship between type of offender (i.e. early-start versus late-start) and violence severity, the small size of the early-start subsample would preclude a regression analysis. Consequently, no analysis was undertaken in relation to this research question.

4) How do early-start and late-start offenders with major mental disorder compare with regard to clinical presentation, crime-scene behaviour, current life circumstances, neighbourhood background and criminal history?

It was hypothesized that early- and late-start offenders would differ with regard to clinical presentation, crime-scene behaviour, current life circumstances, neighbourhood background and criminal history. To address this question, comparisons were drawn between early-start and late-start offenders on variables included in the regression models above. Table 7.7 provides percentage counts of categorical variables and the means of numeric variables for each group and examines differences between the two groups using the Fisher’s exact, Student $t$-, or Mann Whitney $U$ tests as appropriate. Holm-Bonferroni’s adjusted $\alpha$ levels (shown as $\alpha$ in the table) were used to control for Type I error across the multiple pairwise comparison. Mean and percentage comparisons were rank-ordered based on their $p$ values.
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<th>Late-Start (n=216) (%)</th>
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<th>M-W $U^b$</th>
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<tr>
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<td>62.1</td>
<td>56.9</td>
<td></td>
<td></td>
<td>.6910</td>
<td>.0083</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential Location</td>
<td>48.3</td>
<td>53.2</td>
<td></td>
<td></td>
<td>.6936</td>
<td>.0100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expressive Motive</td>
<td>55.2</td>
<td>58.3</td>
<td></td>
<td></td>
<td>.8418</td>
<td>.0125</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third Party Intervened</td>
<td>52.4</td>
<td>73.1</td>
<td></td>
<td></td>
<td>.8432</td>
<td>.0167</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instrumental Motive</td>
<td>27.6</td>
<td>27.8</td>
<td></td>
<td></td>
<td>1.0000</td>
<td>.0250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychotic Disorder</td>
<td>72.4</td>
<td>71.3</td>
<td></td>
<td></td>
<td>1.0000</td>
<td>.0500</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Student’s $t$ test was used to compare means for variables with normal distributions; the $t$ value was reported for these comparisons. Comparisons were made on non-transformed variables.

b. Mann-Whitney $U$ test was used to compare means for variables with non-normal distributions; the mean rank value was reported for these comparisons. Comparisons were made on non-transformed variables.

c. Bonferroni-Holm adjusted $\alpha$ levels

d. P-value of Fisher’s Exact Test
(denoted $p$ in Table 7.7) from smallest to largest and were evaluated against alpha levels that were computed for each mean and percentage comparison using the Holm-Bonferroni method. Using this approach, the smallest $p$-value in a series of comparisons is evaluated against the alpha level calculated from the formula $\alpha' = \alpha/k$ (where $\alpha = .05$ and $k =$ number of comparisons to be drawn, which was 26 in the current analysis). Where $p<\alpha/k$, the corresponding null hypothesis is rejected and the next smallest $p$-value is compared to $\alpha/(k-1)$. If this latter $p$-value is less than $\alpha/(k-1)$, then the next smallest $p$-value is compared to $\alpha/(k-2)$. This sequential evaluation of $p$-values continues until the largest $p$-value is compared to $\alpha/1 = \alpha$ or until the comparison of the smallest $p$-value cannot be rejected because its value is greater than the corresponding adjusted $\alpha$ level, at which point testing stops and all the remaining null hypotheses are not rejected.

Using the Holm-Bonferroni procedure, three differences between early-start and late-start offenders are statistically significant. The smallest $p$ value is for the comparison of mean age between early- and late-start offenders, and its $p$ value of $<.0001$ is less than $\alpha=.05/26=.0018$ and thus, the difference between the means for these two groups of offenders is significant. The next smallest $p$ value is for the comparison of mean ratings of the cumulative seriousness of previous violent offenses between the two groups, and its $p$ value of $<.00012$ is less than $\alpha=.05/25=.002$ and, thus, this comparison is also significant. The third smallest $p$ value is for the comparison of percentage differences between groups on drug abuse. This comparison and its $p$ value of $.0005$ is less than $\alpha=.05/24=.0021$ and is thus significant. However, the $p$ value of the next comparison for bail/probation supervision ($p=.0044$) is greater than $\alpha=.05/23=.0022$ and thus the difference between groups on this comparison is not significant and, as a result, none of the remaining differences between the two groups are significant.
These results provide partial support for the hypothesis that there are differences between early-start and late-start offenders in clinical presentation, criminal history, crime scene behaviour, life circumstances and neighbourhood residence. The results reported above indicate that early-start offenders were, on average, younger than late-start offenders, relatively more likely to have a more serious violent criminal history and were more likely to have a drug abuse problem. However, the hypothesis was also not supported in relation to a number of risk dimensions. The difference between early-start and late-start offenders on diagnosis, current life circumstances, crime scene behaviours and neighbourhood residence was not significant. It is noteworthy however that some differences in clinical presentation (i.e. increased likelihood of a personality disorder and a combined alcohol and drug use problem among early-starters), life circumstances (i.e. increased likelihood of homelessness, meagre income and being under legal supervision among early-starters) and violence severity at index (i.e. increased composite seriousness of violent index offenses among early-starters) approached significance under the Holm-Bonferroni procedure. As documented in Tables 7.3 and 7.4, two of these marginally significant variables were correlated with increased violence severity: personality disorder and homelessness. The use of a lower threshold for significance (i.e. higher p-value) would have accorded these variables statistical significance. This is further discussed in the next chapter where the above results are compared to the extant empirical literature.

**Comparison of Excluded and Included Cases**

In total, 57 cases (18.9%) were excluded from the study. Thirty-six cases (11.9%) were excluded because of missing data and 21 cases (7.0%) were excluded because of outlier values on neighbourhood measures. Analyses were undertaken to examine how individuals
included in the study as subjects differed from individuals excluded from the study due to missing data or outlier scores. These analyses serve to inform the generalizability of the results beyond the sample. Fisher’s Exact test was used to compare differences between included and excluded cases on dichotomous categorical variables and Mann-Whitney and t-tests were used to examine differences between groups on numeric variables.

Table 7.8 reports the differences between cases excluded and cases included in the multivariate analyses for dichotomous variables. Statistically significant differences between these two groups were found for five variables: alcohol problem present, alcohol and drug problem present, residential (as opposed to public) offense location, meagre income and homelessness. Individuals excluded from the above analyses were more likely to have an alcohol or drug and alcohol problem, more likely to be homeless and to have meagre or no income as compared to individuals included in the study. In addition, the location of their offense was less likely to be a residential setting.

Table 7.9 shows the differences between the included and excluded groups for continuous variables. Compared to individuals included in the analysis, individuals excluded from the study tended to reside within neighbourhoods that had a lower percentage of single parent families, foreign born residents, and visible minorities; conversely, they tended to live within neighbourhoods that had a higher percentage of persons employed as senior managers and a higher percentage of persons with income over $60 000/annum. Individuals in the excluded group also had lower violence severity scores.
Table 7.8 Comparison of differences on dichotomous variables between cases excluded from analyses due to missing or outlier values and cases included within analyses (N=302)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Excluded Cases (n=57)</th>
<th>Included Cases (n=245)</th>
<th>P⁣&lt;sup&gt;d&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person of Colour</td>
<td>291</td>
<td>41.3</td>
<td>56.3</td>
</tr>
<tr>
<td>Early Start Offender</td>
<td>296</td>
<td>11.8</td>
<td>12.2</td>
</tr>
<tr>
<td>Psychotic Disorder</td>
<td>302</td>
<td>59.6</td>
<td>71.4</td>
</tr>
<tr>
<td>Bipolar</td>
<td>302</td>
<td>14.0</td>
<td>12.2</td>
</tr>
<tr>
<td>Depression</td>
<td>302</td>
<td>24.6</td>
<td>16.3</td>
</tr>
<tr>
<td>Any PD Present</td>
<td>302</td>
<td>15.8</td>
<td>11.4</td>
</tr>
<tr>
<td>Alcohol Abuse Present</td>
<td>294</td>
<td>49.0</td>
<td>27.3</td>
</tr>
<tr>
<td>Drug Abuse Present</td>
<td>294</td>
<td>36.7</td>
<td>36.5</td>
</tr>
<tr>
<td>Alcohol &amp; Drug Present</td>
<td>294</td>
<td>24.5</td>
<td>11.0</td>
</tr>
<tr>
<td>Motive Known</td>
<td>302</td>
<td>91.2</td>
<td>82.4</td>
</tr>
<tr>
<td>Expressive Motive</td>
<td>302</td>
<td>56.1</td>
<td>58.4</td>
</tr>
<tr>
<td>Instrumental Motive</td>
<td>302</td>
<td>38.6</td>
<td>27.3</td>
</tr>
<tr>
<td>Third Party Present</td>
<td>301</td>
<td>66.1</td>
<td>57.1</td>
</tr>
<tr>
<td>Third Party Intervened</td>
<td>301</td>
<td>41.1</td>
<td>40.4</td>
</tr>
<tr>
<td>Residential Location</td>
<td>301</td>
<td>35.7</td>
<td>53.1</td>
</tr>
<tr>
<td>Weapon Used</td>
<td>302</td>
<td>24.6</td>
<td>36.7</td>
</tr>
<tr>
<td>Male Victim</td>
<td>292</td>
<td>54.2</td>
<td>41.4</td>
</tr>
<tr>
<td>Victim Spouse/Relative</td>
<td>302</td>
<td>35.1</td>
<td>46.9</td>
</tr>
<tr>
<td>Meagre Income</td>
<td>301</td>
<td>41.1</td>
<td>24.9</td>
</tr>
<tr>
<td>Homeless</td>
<td>302</td>
<td>22.8</td>
<td>10.6</td>
</tr>
<tr>
<td>On Bail/Probation</td>
<td>301</td>
<td>39.3</td>
<td>30.6</td>
</tr>
</tbody>
</table>

a. Represents number of cases for which data was available to draw comparisons between the included and excluded groups.

b. Percentage within excluded cases

c. Percentage within included cases

d. p-value for Fisher’s Exact test, α=.05
Table 7.9 Comparison of cases included in analyses and cases excluded from analyses due to missing and outlier values on continuous variables (N=302)

<table>
<thead>
<tr>
<th>Variable</th>
<th>n^</th>
<th>mean</th>
<th>^</th>
<th>mean^</th>
<th>M-W U</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>302</td>
<td>33.5</td>
<td>34.02</td>
<td>-0.304</td>
<td>0.761</td>
<td></td>
</tr>
<tr>
<td>Cumulative Serious Prior Violent Offense</td>
<td>295</td>
<td>4.18</td>
<td>2.03</td>
<td>5393.0</td>
<td>0.104</td>
<td></td>
</tr>
<tr>
<td>Most Serious Violent Index Offense</td>
<td>302</td>
<td>2.89</td>
<td>3.82</td>
<td>5600.5</td>
<td>0.013</td>
<td></td>
</tr>
<tr>
<td>Composite Seriousness of Violent Index</td>
<td>302</td>
<td>4.07</td>
<td>5.43</td>
<td>5475.5</td>
<td>0.009</td>
<td></td>
</tr>
<tr>
<td>% Single Parent Families</td>
<td>296</td>
<td>20.7</td>
<td>22.7</td>
<td>-2.008</td>
<td>0.046</td>
<td></td>
</tr>
<tr>
<td>% Nonmovers</td>
<td>296</td>
<td>52.4</td>
<td>55.2</td>
<td>5697.0</td>
<td>0.888</td>
<td></td>
</tr>
<tr>
<td>% Foreign Born</td>
<td>296</td>
<td>50.1</td>
<td>54.8</td>
<td>-2.353</td>
<td>0.019</td>
<td></td>
</tr>
<tr>
<td>% Recent Immigrants</td>
<td>296</td>
<td>11.7</td>
<td>12.6</td>
<td>-0.778</td>
<td>0.437</td>
<td></td>
</tr>
<tr>
<td>% Visible Minority</td>
<td>296</td>
<td>48.9</td>
<td>57.2</td>
<td>-2.607</td>
<td>0.010</td>
<td></td>
</tr>
<tr>
<td>% Social Assistance</td>
<td>296</td>
<td>12.3</td>
<td>13.3</td>
<td>-1.139</td>
<td>0.259</td>
<td></td>
</tr>
<tr>
<td>% Unemployed</td>
<td>296</td>
<td>7.9</td>
<td>8.1</td>
<td>-0.435</td>
<td>0.664</td>
<td></td>
</tr>
<tr>
<td>% LICO Economic Households</td>
<td>296</td>
<td>22.1</td>
<td>22.7</td>
<td>-0.341</td>
<td>0.734</td>
<td></td>
</tr>
<tr>
<td>% LICO Unattached Persons</td>
<td>296</td>
<td>40.6</td>
<td>44.7</td>
<td>-1.553</td>
<td>0.126</td>
<td></td>
</tr>
<tr>
<td>% LICO Private Households</td>
<td>296</td>
<td>25.6</td>
<td>25.4</td>
<td>0.098</td>
<td>0.922</td>
<td></td>
</tr>
<tr>
<td>Median Income Private Households</td>
<td>296</td>
<td>52029</td>
<td>48682</td>
<td>6169.5</td>
<td>0.888</td>
<td></td>
</tr>
<tr>
<td>Median Income Unattached Persons</td>
<td>296</td>
<td>21438</td>
<td>23970</td>
<td>5357.6</td>
<td>0.109</td>
<td></td>
</tr>
<tr>
<td>% Senior Managers</td>
<td>296</td>
<td>1.6</td>
<td>.9</td>
<td>4498.0</td>
<td>0.002</td>
<td></td>
</tr>
<tr>
<td>% Persons Income &gt;$60 000</td>
<td>296</td>
<td>10.3</td>
<td>7.33</td>
<td>5142.0</td>
<td>0.047</td>
<td></td>
</tr>
<tr>
<td>% Census Families Income &gt; $100 000</td>
<td>296</td>
<td>17.3</td>
<td>13.2</td>
<td>5189.0</td>
<td>0.057</td>
<td></td>
</tr>
<tr>
<td>% Private Households Income &gt; $100 000</td>
<td>296</td>
<td>16.9</td>
<td>14.5</td>
<td>5787.5</td>
<td>0.408</td>
<td></td>
</tr>
</tbody>
</table>

a. Represents number of cases for which data was available to draw comparisons between the included and excluded groups.
b. Mean score within excluded cases
c. Mean score within included cases
The results of this comparison of the differences between the excluded and included groups call into question the generalizability of findings discussed above to individuals with serious mental illness who have a substance abuse problem, are homeless or live within neighbourhoods that are relatively less ethnically/racially heterogeneous or more economically advantaged. These variables were found to be related to increased violence in the regression analyses above. However the excluded group which tended to have a higher percentage of homelessness and substance abuse also had lower violence severity scores. Consequently, the association between alcohol abuse, homelessness and violence severity found may be a methodological artefact related to the exclusion of cases with missing or outlying variables. Further research is needed to explore the potential association of substance abuse, homeless and population heterogeneity with violence severity. It is noteworthy however that the most robust predictors of violence severity which related to characteristics of the offense did not differ between the included and excluded groups.

**Summary of Findings**

The results of the multivariate analyses above indicate that offense characteristics were the most robust predictors of violence severity. Moreover, in relation to the sample, homeless was a predictor of both measures of violence severity. Differences did emerge in the relative influence of other predictors of violence severity depending on whether severity of violence was operationalized as the single most violent offense occurring at arrest or as the composite measure of a series of violent acts occurring at the same time. Specifically, alcohol abuse and neighbourhood population heterogeneity were found to be significant predictors of the composite seriousness of violence but not of the single most violent act. Contrary to expectations, contextual variables accounted for the lion’s share of explained variation in both
measures of violence severity. Finally, though early- and late-start offenders did not differ in relation to violence severity, the two groups did differ in relation to age, seriousness of prior violence and substance abuse. Early-start offenders were younger, had more serious past violence and were more likely to be abusing drugs than were late-start offenders.

Results of the missing and outlier values analyses call into question the effect of alcohol abuse and drug and alcohol abuse, homelessness and neighbourhood population heterogeneity on violence severity. Statistically significant differences were found for these variables between individuals who were included and individuals who were excluded from the study due to missing or outlier values.

In the concluding chapter of this dissertation, the implications of the above findings for research, policy and clinical practice are discussed.
Chapter 8: Discussion and Conclusion

Overview

Over the course of the last two decades a voluminous literature has accrued on the predictors of violence among persons with serious mental illness. Yet, despite considerable progress in our knowledge about the factors related to violence among persons with mental illness, significant inconsistencies in the extant research literature remain. Part of the reason for the lack of consistency among studies may relate to a pre-occupation with the clinical correlates of violence coupled with a relative inattention to how contextual factors contribute to violence and interact with the clinical predictors of violence. The inconsistency in findings may also relate to the conceptualization and operationalization of violence as a homogenous phenomenon, with relatively little attempt to discern among different types and degrees of violence. Finally, the inconsistency may also relate to lumping together distinct subgroups with different aetiologies of violence. Failure to control for these factors could lead to an overestimation of the effects of clinical variables in predicting violence and a concomitant concealment of difference among predictors across types of violence and subgroups of offenders.

Building on previous research aimed at addressing some the confounding influences of the aforementioned concerns, this study utilizes a multi-level analysis of historical, clinical, situational and neighbourhood factors to predict violence severity among persons with major mental illness and draws on the typology of offenders proposed by Hodgins to examine if differences exist across these domains between categories of offenders. In so doing, it aims to contribute to our understanding of violence among persons with serious mental illness and thereby address the pervasive stigma associated with mental illness.
The previous chapter presented results addressing each of the research questions posed within this study. Specifically, analyses were undertaken to examine the importance of demographic, historical, clinical, and contextual variables in predicting violence severity among persons with serious mental illness and to compare the relative influence of individual-specific versus context-specific variables in explaining variance in the severity of violence. In addition, comparisons between early-start and late-start offenders were drawn to explore differences with respect to criminal history, primary diagnosis and comorbid clinical conditions, offense behaviour, current life circumstances and neighbourhood residence. The chapter also examined differences between individuals included in the study and those excluded due to missing or outlying data. A summary of findings is presented in Table 8.1.

In this chapter, the results of the analyses within the previous chapter are discussed. Discussion of the findings is organized into four sections: 1) predictors of violence severity; 2) relative importance of contextual- and individual-level variables predicting violence severity; 3) predictors of violence severity among early- versus late-start offenders; and, 4) comparison of characteristics of early- versus late-start offenders. The implications of the study findings are also considered. Finally, the limitations of the study are reviewed and directions for future research are identified.

**Predictors of Violence Severity**

The following section examines the findings related to the multivariate correlates of violence severity among persons with serious mental disorder. These findings are organized into four sections that are associated with four categories of variables identified as salient predictors of violence within the empirical literature: demographic, historical, clinical and contextual.
<table>
<thead>
<tr>
<th>Research Questions</th>
<th>Hypotheses</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>What factors related to clinical presentation, crime-scene setting, current life circumstances, neighbourhood residence and criminal history are associated with increased severity of violence among persons with major mental disorder?</td>
<td>Psychotic disorder, personality disorder, substance abuse problem, neighbourhood economic disadvantage and population heterogeneity will be positively associated with violence severity. Instrumental motive for violence and being on bail/probation will be negatively associated with violence severity.</td>
<td><strong>Most Serious Violent Offense</strong>: Positively associated with instrumental violence, weapon use, and homelessness; negatively associated with known motive, male victim and spouse/family victim; psychotic disorder, personality disorder and alcohol abuse only marginally significant association. <strong>Composite Seriousness of Violent Offenses</strong>: Positively associated with alcohol abuse, instrumental violence, weapon use, homelessness and population heterogeneity; negatively associated with known motive and male victim.</td>
</tr>
<tr>
<td>What is the relative importance of contextual- and individual-level characteristics in terms of the amount of variation in severity of violence by persons with mental disorder?</td>
<td>Individual level characteristics will account for a greater amount of the explained variance in the severity of criminal violence among persons with mental disorder than contextual characteristics.</td>
<td>Context-specific variables accounted for a greater portion of variance of violence severity (13-17%) relative to individual-specific variables (2%).</td>
</tr>
<tr>
<td>Are there different individual- and contextual-level predictors of severity of violence for early-start as opposed to late-start offenders with major mental disorder?</td>
<td>Early- and late-start offenders will have different predictors of severe violence.</td>
<td>Offender type was not a predictor of violence severity; insufficient size of sample of early-start offenders precluded testing of hypothesis.</td>
</tr>
<tr>
<td>How do early-start and late-start offenders with major mental disorder compare with regard to clinical presentation, crime-scene behaviour, current life circumstances, neighbourhood background and criminal history?</td>
<td>Early- and late-start offenders will differ with regard to clinical presentation, crime-scene behaviour, current life circumstances, neighbourhood background and criminal history.</td>
<td>Only three factors differentiated offender groups (when the Holm-Bonferroni approach is used to control for Type I errors): younger age, more serious history of violent offenses, and drug abuse were more prevalent among early-start offenders.</td>
</tr>
</tbody>
</table>
Demographic Variables

The demographic variables included within the multivariate analysis of predictors of violence severity were age and race. No significant difference in violence severity emerged related to age. As noted previously, prior research on the effect of age on violence has found an inverse relationship (Bonta et al., 1998; Swanson et al., 1990). The absence of such a finding in the current study may relate to a differential influence of age in predicting violence in general versus predicting violence severity. Previous research has not explored the effect of age on violence when violence is operationalized along a continuum of severity. That is, though age may be predictive of the likelihood of violence it may not be predictive of the degree of seriousness of violence. Unlike age, race was modestly related to most serious violent index offense in bivariate analyses; however, it was not predictive of violence severity for either measure of violence seriousness when other individual-specific and contextual variables were controlled. Similarly, Silver and colleagues (1999) found that the relationship between race (specifically African-American) and violence disappeared when neighbourhood context was controlled. Rossi and colleagues (1986) also found no differences between racial groups after controlling for diagnosis. Collectively these finding highlight the importance of controlling for individual-specific and contextual variables when examining the influence of race so as to not inaccurately depict its effect on violence.

Historical Variables

Two variables related to criminal history were included in the analysis: cumulative seriousness of prior violence and early-start offending. Earlier research has identified prior history of violence as one of the most important factors predictive of future violent behaviour (e.g. Monahan et al., 2001). However, whatever the relationship between prior violence and
the likelihood of future violence, it cannot be assumed the same relationship exists between prior violence and violence severity. The results of the current study provide no evidence of a relationship between the aggregate seriousness of past violence and the seriousness of the current violent index offense. It is possible that prior history of violence is indicative of an individual’s propensity to violence in general whereas the severity of violence is, in part, situationally determined—the result of the confluence of an individual with a violent propensity and volatile circumstances that lead to serious violence. Volatile circumstances may occur because of the interactional dynamics between an offender and victim. For example, aggressive actions by the victim in altercations with the offender or non-compliance or resistance by the victim in opportunistic crimes may result in the offender using more force toward the victim (Felson & Steadman, 1983). In addition, the relationship between cumulative history of violence and violence severity may be moderated by more proximal individual-specific factors such as the acuity of psychotic symptoms or intoxication which may appreciably compromise moral judgment and self control among persons already predisposed to using violence to resolve conflict or achieve secondary goals and lead to more serious forms of violence. Alternatively, it is also possible that the absence of any relationship between the aggregate seriousness of previous violent offenses and the seriousness of the violent index offense is a product of selection bias. High scores on cumulative seriousness of previous violence suggest either a history of numerous prior violent offenses or a very serious prior violent offense. However, individuals with a long history of violence offenses are not as likely to be referred to the program unless competency to stand trial or criminal responsibility due to mental disorder are raised as these individuals have little likelihood of obtaining bail or mental health diversion because of their considerable prior
criminal justice involvement. It is plausible that individuals with a substantial history of violence, including very serious violence, were more likely to engage in more extreme forms of violence and were not included in this sample. Future research is required to explore these possibilities.

Similar to previous history of violence, early-start offending was also not found to be associated with violence severity among persons with serious mental illness. A number of studies have found early-start offending as predictive of violent recidivism (Hodgins & Janson, 2002; Rice et al., 1990; Tengström et al., 2001). However, as with cumulative seriousness of previous violence, early-start offending may be predictive of future violence but violence seriousness may be moderated by situational factors or by the presence of proximal individual-specific factors such as particular symptoms or intoxication.

An alternative possibility is that there was some misspecification of early-start offenders as late start offenders. As noted above, a youth’s criminal record is expunged after varying lengths of time, depending upon the seriousness of his or her offense(s). It is possible that some early-start offenders were misclassified as late-start offenders because their youth records were expunged prior to incurring offenses as an adult. This potential misspecification of individuals as late-start offenders could result in systematic measurement error which could attenuate any possible relationship between early- or late-start offending and violence severity.

It is also possible that no relationship was found because of conceptual limitations of the offender typology utilized. In recent studies on early- versus late-start mentally disordered offenders, offenders arrested before their 18th birthday have been classified as early-start offenders and those arrested after their 18th birthday have been classified as late-start
offenders (Hodgins & Janson 2002; Laajasalo & Hääkänen 2005; Tengström et al., 2001). However, this operationalization of early-start offending does not readily permit a discernment of a discrete group of offenders heretofore unclassified by proponents of the early-start, late-start typology: early-start offenders with an early onset of major mental illness. Recall that early-start offending was posited to be the product of a burgeoning anti-social personality and predicted to be persistent in its trajectory while late-start offending was hypothesized to be related to the onset of symptoms of a major mental illness and predicted to have an episodic pattern. This supposition however is predicated on an assumption that symptoms of a serious mental illness will begin in adulthood. It is common for the more serious mental illnesses to manifest themselves in early adulthood; however, some portion of the sample may actually have had an early onset of serious mental illness which preceded and subsequently influenced their involvement in the criminal justice system. Though not contemplated by Hodgins’ typology, this third group may more closely resemble the late-start offenders in the aetiology and pattern of their offending. However, because early-start offenders were conceptualized and operationalized as individuals who begin offending prior to the age of 18 and who continue offending in adulthood, this group of early-onset, early-start offenders would be classified as simply early-start offenders, though conceptually distinct from early-start offenders with a typical onset of major mental illness. Inclusion of this subgroup of offenders in the early-start group may diminish any possible relationship between early start offenders who begin offending as a result of a maladjusted personality and late-start offenders who begin offending in response to the symptoms of a major mental illness. Future research could explore discerning between early-start offenders with an early onset of major mental illness and early-start offenders with a typical onset of major mental illness.
illness. Future research might also explore the extent to which this early-start, early-onset group resemble the low-level chronic offenders identified as a third group within Moffitt’s typology of offenders.

**Clinical Variables**

In addition to criminal history, the influence of three clinical factors on violence severity was also explored in this study: diagnosis, presence of a comorbid personality disorder, and presence of a substance abuse problem. With respect to primary diagnosis, no relationship was found between presence of a psychotic disorder and violence severity when all other variables were controlled. However, individuals with psychotic disorders had more serious violent index offenses relative to persons with major depression in bivariate correlations for both measures of violence seriousness (i.e. most serious violent index offense and composite seriousness of violent index offenses) and psychotic disorder was a marginally significant predictor of most serious violent index offense ($p = .054$) relative to depression. This near-significant relationship could be indicative of the influence of psychotic symptoms on violence severity. However, in the absence of any measure of the presence of psychotic symptoms at the time of the offense, no conclusion may be drawn and future research is required.

Like primary diagnosis, presence of a comorbid personality disorder was found to be related to violence severity in bivariate analyses and the relationship to most serious violent index offense approached significance when co-variates were controlled. As with prior history of violence, the presence of a personality disorder may increase the likelihood of violence while contextual factors may influence the severity of violence. Certainly the diminished effect of personality disorders on violence severity with the introduction of
contextual variables in hierarchical analyses in Tables 7.5 and 7.6 provides support for this supposition. Another possibility is that individuals with ASPD are at increased risk of committing serious violent offenses while individuals with other personality disorders may not be. Putkonen and colleagues (2004) found ASPD was present in 47% of offenders with major mental illness while other personality disorders accounted for 4% of offenders in a nationally representative sample of homicide offenders in Finland. Combining ASPD and other personality disorders into the same measure may have attenuated any potential effect of ASPD on violence severity. However, given the small number of individuals with either ASPD or other personality disorders within the sample, it was not possible to examine the influence of either condition alone. Finally, there may be a potential dose effect, whereby individuals with more symptoms (i.e. traits) of ASPD or with higher psychopathy scores are at increased risk of committing serious violence. The absence of measures such as the PCL-R within the dataset precluded examination of this potential dose effect.

Mixed results were found regarding the association between substance abuse and violence severity. Drug abuse was clearly not related to violence severity. It is possible, however, that drug use is related to violence in general but not violence severity. Alternatively, any potential relationship between drug use and violence may be mediated by drug intoxication. It is plausible that most subjects in the sample with a drug use problem were not under the influence of illicit drugs at the time of the offense. A reliable measure of intoxication was not available within the dataset and the potential mediating role of intoxication requires future exploration. The absence of a relationship may also relate to the specific category of drug that was most commonly consumed. Mulvey and colleagues (2006) found that recent use of illicit drugs, except for marijuana, were predictive of violence.
Similarly, MacDonald and colleagues (2008) found that frequency of cocaine abuse was related to violence while frequency of cannabis abuse was not. It is possible that the most common type of drug abused within the sample was cannabis which weakened any potential effect of other categories of psychoactive substances such as stimulants (e.g. cocaine or amphetamines).

The effect of alcohol abuse and the combined effect of drug and alcohol abuse on violence severity are less clear. Alcohol abuse was a significant predictor of the composite seriousness of violent index offense(s) and a marginally significant predictor of the most seriousness violent index offense (p = .06), while combined drug and alcohol abuse was not associated with violence severity. However, because individuals excluded from the study due to missing or outlying data had a higher incidence of alcohol abuse and combined drug and alcohol abuse as well as lower violence severity, more research is needed before conclusions can be drawn about the role of alcohol abuse and combined substance abuse on violence severity. To the extent that a relationship exists, the potential mediating role of intoxication, as a disinhibiting agent which compromises the capacity for impulse control, ought to also be explored. Moreover, future research may explore whether alcohol abuse is a mere correlate of violence severity—associated statistically through the operation of some third factor such as a disposition towards impulsivity and sensation-seeking.

**Contextual Variables**

Apart from individual-level variables, the influence of three categories of contextual variables on violence severity was also explored: proximal contextual variables, life circumstances and indices of neighbourhood social disorganization. With respect to proximal contextual variables (i.e. situational variables), the results of the study indicate that
violence was most commonly directed at a family member or romantic intimate (46.5%) and most frequently occurred within the residence of the offender (41.6%). Moreover, the victim was usually female and a weapon was usually not used in the commission of the violent act. Finally, an expressive motive for violence occurred nearly twice as frequently as violence with an instrumental motive.

When the frequency of violence among the sample is considered, the study results are congruent with the findings of previous research. Among a sample of discharged psychiatric patients, Estroff and Zimmer (1994) found that the targets of violence were more likely to be female, were most frequently related to the perpetrator and most often experienced violence within the residence of the perpetrator. Specifically, mothers were the most frequent victims, and the most likely targets of repeated violence. In addition, they found that violence often occurred within the context of perceived hostility and interpersonal conflict. Violence would appear most frequently directed at individuals close to the perpetrator, often individuals who assume the major responsibility for the perpetrator’s care (Estroff & Zimmer, 1994; Solomon, Cavanaugh & Gelles, 2005). Indeed, consistently across the research, roughly half of all of targets of violence are family members, primarily parents and spouses of the perpetrator (Estroff & Zimmer, 1994; Link, Andrews & Cullen, 1992; Steadman et al., 1998; Swanson, 1993; Swanson et al., 1990).

The results of the current study however diverge from previous research when the proximal contextual factors are examined in relation to violence severity. In multivariate analyses of the predictors of violence severity, being unrelated to the offender and instrumental motive surfaced as robust predictors of the most serious violent index offense, though being unrelated to the offender was a marginally significant predictor ($p=.052$) of
composite seriousness of violent index offenses. Moreover, location of the offense was unrelated to violence severity. These findings suggest the salience of different contextual predictors of violence depending on whether violence is conceptualized as a homogeneous construct (dichotomized as present or absent) or as a heterogeneous construct occurring along a continuum of severity. Possible reasons for the emergence of specific contextual factors in predicting violence severity and their relevance are discussed in the paragraphs that follow.

A number of possible explanations may account for the robust relationship between instrumental motive and violence severity. Among these is that the behavioural setting manifested opportunities for criminal activities which served to increase temptation for a criminal venture. Alternatively, or in concert with this possibility, it is plausible that antisocial or procriminal attitudes were more common among the instrumental motive group within the sample. Antisocial and procriminal attitudes have been referred to as one of four key criminogenic risk factors for offenders in general, along with antisocial personality, criminal history and social support for crime (Andrews & Bonta, 2003). Antisocial attitudes are viewed as a dynamic risk factor which may vary over time and context (Douglas & Skeem, 2005). They may influence an individual’s moral judgement to commit a criminal offense and thereby increase the individual’s criminal propensity. It is possible that these attitudes may be present though a person does not meet the diagnostic criteria for ASPD. Another possibility is that the relationship is a methodological artefact related to sample composition. For example, it is possible that the current sample under represents homicides and that homicide may be more likely to have an expressive rather than instrumental motive. Future research using samples with a higher base rate of
homicides is required to test this possible relationship between motive and violence severity.

In related fashion, the association between female gender and violence severity could be a product of the scoring procedures of the Cormier Lang quantification system for criminal offenses. Females may be more apt to be the victims of sexual aggression which is scored relatively highly on the Cormier-Lang system. Future research may examine whether different predictors of violence severity operate for sexual as opposed to non-sexual violent offenses.

In addition to instrumental motive and female gender, unknown motive and use of a weapon were also robustly related to violence severity. The reason for the relationship between unknown motive and violence severity is not clear. One possible explanation is that psychotic symptomology was present at the time of the offense which was not evident to police at the time of arrest. Alternatively, the relationship between unknown motive and violence severity may be a product of the report writing practices of some police officers who provide an account of the offense in the synopsis for a guilty plea. By comparison, the reason for the relationship between use of a weapon and violence severity would appear intuitive, though presumably the type of weapon used would influence the seriousness of harm. The dataset did not provide an indication of the type or availability of the weapon used, which may provide indication of the degree of intentionality and premeditation involved in the violent offense. Future research might consider these factors in explaining the seriousness of a violent outcome. Of additional clinical relevance is the frequency of weapons threats relative to the use of weapons in violent offenses. While 37.1% of violent offenses involved a weapon in the commission of the offense, only 4.9% of the violent
offenses involved a weapons threat suggesting that when a weapon was acquired, little verbal warning of the offender’s intentions was forthcoming. This may be indicative of the extent of intentionality involved in the violent act.

This study also considered the role of third parties in the outcome of violent events. Specifically, it examined whether settings involving monitoring had a deterrent effect on violence severity. It was posited that the risk of intervention by a third party and the associated risk of apprehension would serve to inhibit the severity of violence in a confrontation and dissuade opportunistic violence. No effect was found for the presence or intervention of third parties on violence severity suggesting that settings involving monitoring have no influence on the outcome of violence. However, the study did not include a measure of whether or not the third party actually facilitated or contributed to the violent outcome. It is possible that in some cases the presence of the third party increased the severity of the outcome by encouraging escalating actions, providing weapons or by preventing others from intervening (LaFree & Birkbeck, 1991). In a sample of 159 offenders, Felson and Steadman (1983) examined the role of third parties in offenses resulting in assault and those resulting in homicide and found that third parties’ behaviours were often antagonistic in situations resulting in violence. Similar to the results of the current study, they found that when third parties did attempt to intervene in confrontations, their efforts usually had no effect on the likelihood that the event would result in homicide. Hence, notwithstanding the possible role of third parties in escalating violence, the extant research suggests that their presence has no impact in reducing the seriousness of violent outcome.
The next level of contextual variables included in the analyses relates to individuals’ current life circumstances. Of the three life circumstance variables included in the study (i.e. meagre income, homelessness and on bail/probation), only homelessness emerged as a significant predictor of violence severity, though meagre income was a marginally significant predictor of composite seriousness of violent index offense(s). Both of these variables are indicators of marked poverty. It is possible that acute economic deprivation may increase the likelihood that individuals resort to instrumental violence as a sustenance strategy (Mears, Wang, & Hayles, 2008). Resource deprivation may serve to separate individuals from legitimate economic opportunities and engender motivation to commit crimes as individuals see limited prospects for employment or advancement through conventional means. Moreover, homelessness and lack of employment may afford opportunity structures for criminal behaviour in the individual’s environment by decreasing availability of daily structured activities and possibly increasing exposure to anti-social peers (e.g. other persons who are homeless and impoverished following re-entry in the community after a term of incarceration for criminal offenses). Proximity to antisocial companions may create allurement toward criminal behaviour through a peer socialization process which fosters procriminal attitudes and rationalizations for antisocial behaviour. Alternately, the relationship between homelessness and violence severity may be spurious: both variables may share variance with a third variable. For example, persons with a propensity for violence may have been expelled from residential accommodations because of repeated violent behaviour. However, one might anticipate that these individuals would also have high scores of cumulative seriousness of prior violence which was not borne out in the current results. Because of differences between subjects included and excluded from
the study on homelessness, inferences cannot be made about the generalizability of the apparent relationship between violence severity and homeless. Future research is needed to replicate the results which emerged in this sample. Future research could also ascertain the influence of antisocial peers in serious violent criminal offenses.

The third and final level of contextual variables examined in this study relate to neighbourhood context. Measures of neighbourhood social disorganization drawn from census tract data and corresponding to indices commonly used in the literature were employed. Due to multicollinearity, these census tract measures were factor analyzed and a two factor structure emerged: neighbourhood economic disadvantage and population heterogeneity. Notably, this factor structure differs from the theory of social disorganization originally conceptualized by Shaw and McKay (1942) in which socioeconomic deprivation, population heterogeneity and residential instability were separate dimensions of social disorganization. The factor structure that emerged also differs from more recent empirical presentations of social disorganization. Using census tract measures similar to those utilized within this study, Silver (2000a) found a two factor structure in which neighbourhood disadvantage and residential mobility emerged as key dimensions of social disorganization. This divergence may be a methodological artefact. Within the current sample, residential mobility loaded on the population heterogeneity factor along with percentage foreign born, percentage new immigrant and percentage visible minority. Only one measure of residential mobility was included in the factor analysis (i.e. percentage of individuals residing at the same address for five or more years). With a greater number of measures of residential mobility included in the factor analysis, a third factor may well have emerged. Moreover, the difference in factor structures in Silver’s analysis as compared to those of the analysis
herein appear related to the relative weight of factor loadings of census tract items on the two factors that emerged in each study. For example, in Silver’s study, residential mobility and foreign born loaded on the same factor with a heavier weight for residential mobility than percentage foreign born whereas within the current study percentage foreign born and percentage recent immigrant loaded more heavily than residential mobility on the same factor. Both factor structures would appear to support the supposition that neighbourhoods with a greater percentage of foreign-born residents have more residential mobility. It is possible that economically disadvantaged newcomers move to low income neighbourhoods when they first arrive and in time are replaced by other newcomers after increasing their income and thus their capacity to afford other accommodations.

Of the two dimensions of social disorganization that emerged within this study, only population heterogeneity was predictive of violence severity. In contrast, Silver found that neighbourhood disadvantage was predictive of violence while residential mobility (and immigrant composition) was not. The difference in results may be related to differences in the economic conditions and racial/ethnic composition of the respective locations for each study. That is, there could be greater socio-economic homogeneity across census tracts within Toronto as compared to Pittsburgh and less homogeneity across census tracts in the percentage of foreign born residents within Toronto as compared to Pittsburgh. Alternatively, the differences in results may relate to the different operationalizations of violence within each study related to the different dimensions of violence that were examined. For example, Silver examined the prevalence, incidence and imminence of violence whereas the current study focused on the severity of violent outcome.
Future research may consider utilization of indicators of income inequity to measure
eighbourhood socio-economic deprivation as a dimension of social disorganization.
Consistent with previous research (e.g. Silver, 2000a; 2000b; Silver et al., 1999;) on the
neighbourhood effects of violence among persons with serious mental illness, the current
study included various indices of the average level of material welfare such as median
income levels, unemployment rate, and poverty rates. However, a number of studies have
found that measures of within-unit income inequality such as Gini coefficients and the
Robin Hood Index of Income Inequality are stronger predictors of homicide rates than
average income, percentage below the poverty line, and unemployment (Daly, Wilson, &
Vasdev, 2001; Kennedy, Kawachi, & Prothrow-Stith, 1996) suggesting that it is the degree
to which resources are unequally distributed rather than absolute measures of material well-
being that inform community-level violence. Similarly, measures of the relative disparity
among individuals within neighbourhoods as opposed to across neighbourhoods may be a
better proxy of socioeconomic deprivation than average measures of material wealth.

The results from the current study do provide support for the supposition put forth
by social disorganization theorists that population heterogeneity and residential mobility
may reduce community guardianship. It is argued that population turnover may impede the
development of social ties among neighbourhood residents and cultural differentiation
presents competing normative systems which may increase the likelihood that residents
limit social contacts to close friends and family and retreat from public participation in the
community (Sampson & Lauritsen, 1994; Silver, 2000a). This dynamic may reduce the
willingness of local residents to intervene informally in neighbourhood activities that
promote public order and thereby increase the opportunities and decrease the costs
associated with engaging in violence. For example, residents may be less inclined to intervene when persons with mental illness shows visible signs of symptom exacerbation, thereby reducing the likelihood that persons with mental illness will acquire treatment and potentially increasing the risk that they will commit a violent act due to acuity of untreated symptoms. Limited social ties may also provide a context of anonymity that serves to decrease the chances that motivated strangers engaging in opportunistic crimes will be confronted by community members. However, caution is required in generalizing these findings beyond the sample as significant differences were found in the economic conditions and ethnic/racial composition of the neighbourhoods that subjects resided within compared to those of individuals excluded from the study because of missing and outlying data. Future research must evaluate the extent to which these findings generalize beyond this sample to other locations and time periods.

**Summary**

The most prudent conclusion supported by the analyses is that persons with psychotic disorder, personality disorder and/or alcohol abuse may be at increased risk of serious violence, but proximal contextual factors are the most salient predictors of violence severity. Demographic and clinical characteristics were not significant predictors of violence severity though psychotic disorder (relative to depression), personality disorder and alcohol abuse were marginally significant predictors of the most serious violent index offense and alcohol abuse was significantly predictive of composite seriousness of violent offenses. By comparison, situational variables proved to be the most robust predictors of violence severity. Future research is needed to examine the possible influence of individual-specific factors. Future research might also explore whether person-specific factors such as
diagnosis and comorbidity increase an individual’s propensity for violence while situational factors determine the imminence and severity of violence. The following section further considers the importance of contextual factors relative to individual-specific factors in predicting violence severity.

Relative Importance of Contextual and Individual-level Variables

Predicting Violence Severity

Results of the analyses of the predictors of violence severity described above as well as the hierarchical regression analyses undertaken in Chapter 7 clearly illustrate that the preponderance of variance in violence severity is attributable to contextual rather than individual-specific factors. Of note, individual-specific variables such as psychotic disorder (relative to depression), personality disorder and alcohol abuse which previous research has identified as associated with the risk of violence emerged as modest but significant predictors of violence severity until contextual factors were controlled. This outcome suggests that contextual factors must be considered in research related to violence prediction to increase the accuracy of these predictions. Endeavours to predict and curtail violent behaviour have historically focused on identifying individuals who are most likely to engage in future violent behaviour and have largely ignored contexts more likely to induce or influence violence. The above results however support Steadman’s recommendation (1982) that future inquiry be undertaken to identify and modify situations conducive to violence.

Research on violence among persons with serious mental illness should not of course ignore individual-specific variables. Indeed, the relative influence of contextual variables in predicting violence severity within these analyses may, in measure, be due to
the absence from the analyses of proximal and dynamic individual-specific variables such as the presence of psychotic symptoms and/or antisocial attitudes and/or the consumption of alcohol or drugs at or just prior to the violent incident. However, research on other contextual factors may further explain variance in violence severity and enhance our understanding of the dynamics of the multi-causal phenomenon of violence among persons with serious mental illness. Specifically, future research may explore the particular interpersonal interactions leading to violence and the historical context of the relationship of the perpetrator to the victim. For example, we might expect that aggressive actions by the victim (such as insults, ultimatums, threats and actual violence) in altercations with the offender and non-compliance or resistance by the victim in opportunistic crimes are more likely to result in serious harm. Similarly intoxication of the offender and victim could conceivably increase violence severity as both parties are behaviourally disinhibited. Research should also examine whether particular individuals are targets of repeated or single episodes of violence and whether they themselves have been perpetrators of violence toward the offender or have a substance abuse or mental health problem. An ongoing history of conflict could be predictive of violence and a pattern of escalation in the conflict may inform the seriousness of the violence outcome. By giving equal attention to the interpersonal and contextual processes underlying violence, a relatively neglected perspective on the prediction and prevention of violence is advanced. One that attempts to identify which individuals, in what contexts, under what interpersonal circumstances, are at increased risk of violent behaviour (Estroff and Zimmerman, 1994; Monahan, 1973; Monahan and Klassen, 1982).
Predictors of Violence Severity among Early- versus Late-Start Offenders

This study sought to examine the person-specific and context-specific variables that operated to increase risk of serious violence among early-start and late-start offenders. However, no evidence of a relationship between violence seriousness and offender type was found. As noted previously, it is possible that early-start offending is associated with increased risk of violence (a relationship borne out in prior research) but violence severity is determined by situational factors. Though early-start offending does not appear to be related to violence severity, it cannot be assumed that the same individual-specific and contextual variables that influence the seriousness of violence operate for early-start and late-start offending. Unfortunately, the subsample of early-start offenders was too small to undertake a comparative analysis. Early-start offending males accounted for a small portion of the overall sample. In order to obtain a sample of sufficient size to undertake a comparative analysis, it may be necessary to obtain data from settings that are likely to have a higher proportion of early-start offenders such as federal penitentiaries or provincial correctional facilities. Though it was not possible to examine if different individual-specific and contextual factors influenced the degree of violence seriousness among early-start as compared to late-start offenders, it was possible to examine whether the two groups differed in their criminal histories, clinical profile, life circumstances and offense behaviours.

Comparisons of these two groups are discussed in the section that follows.

Comparison of Characteristics of Early- versus Late-Start Offenders

A comparison of early- and late-start offenders indicates distinct, but overlapping, profiles in relation to historical, clinical and life circumstance variables. The pattern that emerges both confirms and diverges from the findings of previous studies. Two previous
studies undertook a comparison of these two groups of offenders. Tengström, Hodgins and Kullgren (2001) undertook a comparison of historical, clinical and life circumstance factors between early-start and late-start offenders with schizophrenia convicted of a violent offense. By comparison, Laajasalo and Häkkänen (2005) undertook a comparison of offender and offense characteristics between these groups among a sample of homicide offenders with schizophrenia. Both studies utilized a significance level of .01 to control for type I errors. (A type I error involves rejecting the null hypothesis—that there is no relationship between variables—when in fact the null hypothesis is true. Plainly speaking, it is a false positive error that occurs when we observe a statistical association between variables that in reality does not exist.) Applying a significance level of .01 to compare between-group differences within the current study, the likelihood of making at least one type I error is 23 percent when using the formula $\alpha' = 1 - (1 - \alpha) n$ (where $\alpha'$ is the percentage chance of making a type I error with a given level of significance for $n$ tests, and $n = \text{total number of conducted tests}$). Parenthetically, the likelihood of a type I error in the studies by Tengström and colleagues (2001) and Laajasalo and Häkkänen (2005) was 37 percent and 38 percent respectively. While differences emerged for only three variables (age, criminal history and drug abuse) within the current study when the Holm-Bonferroni sequential correction was used to control for type I errors (see Chapter 7) in a comparison between these two groups of offenders, seven variables emerged as distinguishing the two groups when a .01 significance threshold was employed. In concert with the findings of Tengström and colleagues (2001) and Laajasalo and Häkkänen (2005), prior age, prior violent criminal history, presence of comorbid personality disorder and substance abuse problem distinguished the two groups of offenders. Early starters had a greater number of
previous violent crimes and a history of more serious violent offenses even though they were considerably younger than the late-start group. This finding supports the early- versus late-start typology of mentally disordered offender and further suggests that misspecification of subjects into the wrong group is not a substantive methodological concern within the current study. Across all three studies, the presence of a personality disorder and a drug abuse problem was more prevalent among the early-start group.

However, the presence of an alcohol abuse problem did not differentiate the two groups within the current study, though it did differentiate the two groups in the two previous studies. Tengström and colleagues (2001) and Laajasalo and Häkkänen (2005) did not examine residential status or supervision status but within the current study homelessness and being on bail or probation at the time of the offense was also more common among early-start offenders. With respect to offense characteristics, Laajasalo and Häkkänen (2005) found no significant difference in victim gender but found that late-starters’ victims were more often related to the offender and that an argument preceded the homicide more often when the offender was an early-starter. By comparison, within the current study, no differences were found between the groups in relation to victim gender, offender-victim relationship or motive for violence. The differences in findings between this study and prior studies may relate to sample composition. For example, the previous studies only included offenders diagnosed with schizophrenia whereas the current study included individuals with a psychotic disorder or major affective disorder. Moreover, Lassjasalo and Häkkänen focused exclusively on homicides whereas the current study included a wider breadth of violent offenses but may also have under represented homicides. The difference in offense characteristics notwithstanding, great similarities in offender characteristics emerged across
the studies. These results correspond with descriptions about early- and late-start offenders with major mental disorders in the theoretical literature (Hodgins et al., 1998). The early-start offenders were more likely to have characteristics that have been identified within the empirical literature as significant predictors of violent behaviour (e.g. previous history of violence, substance abuse problem and personality disorder). These differences may be useful in the development of treatment programs and management strategies for preventing criminality and violence in this population. To ensure effectiveness, treatments must be closely matched to patient needs and characteristics (Tengström et al., 2001). Intervention strategies targeted at mitigating the risk of violence for both groups are discussed in the section below.

**Implications of the Study**

The results of the present study have implications for the elaboration of future theory, for the development of prevention strategies and possibly for the specification of intervention strategies by offender type. The implications of the research findings for each of these three areas are considered in the sections below.

**Theoretical Implications**

With respect to the theoretical implications of the results, this study supports the further development and refinement of both a social ecological perspective and a life-course typological approach to understand risk of violence severity among persons with serious mental illness. A social ecological approach to understanding violence gives consideration to the influence of contextual factors as well as their interaction with individual-specific factors in predicting behavioural outcomes. The inclusion of variables representing situational and wider environmental contexts within the analysis not only explained greater
variance in violence severity than did individual-specific variables, it also rendered most
individual-level factors identified within the empirical literature as predictive of violence
marginally significant. Utilization of a social ecological framework may serve to identify
criminogenic situations which could be targeted in similar fashion to the way in which
criminogenic needs of offenders are currently targeted by forensic mental health and
correctional professionals.

While a social ecological perspective may identify patterns of interaction between
person and context that evaluate risk, a life-course typological approach such as that
proposed by Hodgins may serve in the development of treatment and management strategies
that are tailored to the characteristics of offenders. This intervention strategy is referred to
as the responsivity principle within the criminological literature and involves matching
modes of service to the learning styles, abilities and characteristics of the offender to
increase effectiveness of the intervention (Bonta, 1995). Comparison of early- and late-start
offenders identified several individual-specific differences between the two groups. These
differences warrant exploration of whether adjusting interventions to each group increases
responsivity to the service delivery. Taxon-specific interventions are considered in the
section on offender intervention responsivity below.

The results of the study also support the utility of conceptualizing and
operationalizing violence as a heterogeneous phenomenon. Much of the existing research
has conceptualized violence dichotomously or has examined broad categories of offenses.
Moreover, it has focused on the prevalence, incidence or imminence of violence. The results
from this study suggest the inclusion of a fourth dimension—severity of violence—and
support the utility of conceptualizing violence along a continuum of severity. Consideration
of both of these research strategies may serve to increase our knowledge of the seemingly nuanced and multi-faceted character of violence among persons with serious mental illness.

**Interventions Strategies: Violence Prevention**

The results of the present study also have implications for risk prediction and violence prevention. However, the findings discussed above must be replicated by other researchers before there is a solid evidence base to support the recommendations outlined below. With this caveat, the following sections first delineate general strategies for violence prevention and then discuss the tailoring of interventions to subgroups of offenders.

The results of this study suggest that clinical and contextual factors need to be considered in order to make accurate assessments of risk. They underline the importance of obtaining accurate historical information about previous violence, about the onset of violent and delinquent behaviour and about the nature and quality of relationships with partners/spouses, relatives and friends. A detailed history by clinicians of the circumstances of each incidence of violence along with a description of the nature and degree of conflict with relatives and acquaintances would assist in the identification of dynamic interactional patterns which have the potential to lead to a violent episode. In addition, consideration of the individual’s current life circumstances and routine canvassing about the acquirement or availability of deadly weapons could serve to identify situations of potential concern.

Because nearly half of all violence was targeted at a family member, prevention strategies could involve providing programs for family members of persons with serious mental illness. Family education programs currently provide general information about the aetiology and symptomatology of serious mental illness, treatment options and available support services (including crisis intervention services). Some of these programs provide
skills training on ways in which to cope with the symptom-related behaviour of loved ones. These programs could also include information on managing conflictual situations and aggressive or volatile behaviour (Solomon, Cavanaugh & Gelles, 2005). However, victims of family violence cannot always avoid violent incidents by attempting to de-escalate conflictual situations especially when violence is related to psychotic symptomology. Consequently, information could also include how to develop an individualized safety plan which outlines steps to take when violence appears imminent or has occurred. The development of individualized safety plans is commonly used by service providers in family violence contexts to assist victims of violence plan escape strategies in advance of future violence.

In addition, 24-hour onsite support, short-term (e.g. 30 days) residential crisis bed programs (also referred to as crisis houses) could be developed to provide respite and a cooling down period when interactions between consumer/survivors and family become particularly tense. Moreover, given the apparent relationship between homelessness and serious violence within the sample, these beds could also provide short term accommodations to individuals who are homeless following recent discharge from hospital or jail. Trained mental health professionals working onsite could link residents to treatment and community supports as well as longer term housing. Short-term crisis beds are a relatively new intervention that have not been adequately researched (Johnson, 2007; Meiser-Stedman, Howard, & Cutting, 2006) but appear to hold promise as an interim and immediate option for homelessness.

An alternative housing approach is the Housing First programs which provide direct access to housing without any prerequisites such as psychiatric treatment or sobriety for
hard-to-house individuals with complex service needs. The goal of these initiatives is to re-house individuals regardless of past or current behaviours (Gulcur, Stefancic, Shinn, Tsemberis, & Fischer, 2003). The model also provides for wraparound intensive case management to tenants. Within some models, treatment and support services are provided in vivo through an Assertive Community Treatment (ACT) team consisting of mental health professionals such as psychiatrists, social workers, nurses, and vocational and substance abuse counsellors (Pearson, Locke, Montgomery, & Buron, 2007). Though research has found the Housing First programs reduce homelessness and increase participation in substance abuse treatment (Padgett, Gulvur & Tsemberis, 2006), research has not yet been undertaken to examine the effects of these programs in reducing the likelihood of violent or criminal behaviour.

Apart from connecting case management and ACT services to housing, provision of these community-based services in situ to individuals living in marginalized communities may attenuate the risk of violence among persons with serious mental illness residing in neighbourhoods with a diminished capacity for informal social control as regular contact with mental health professionals, especially if trained in violence assessment and prevention, would presumably replace the informal monitoring and support role performed by neighbourhood residents. Employment training programs may serve to provide a daily routine which could minimize contact with antisocial peers and may reduce opportunities to engage in criminal conduct and may assist with obtaining long term employment which could reduce instrumental violence used as a subsistence strategy.

The above strategies address some of the contextual factors influencing violence severity but strategies should also target individual-level factors associated with violence in
the empirical literature. To address the potential influence of psychotic symptoms, psychopharmacological interventions may be undertaken. Two studies have demonstrated reductions in aggressive behaviour among persons with psychotic disorders in the community with the use of atypical neuroleptic medications (Swanson, Swartz, & Elbogen, 2004; Swanson Swartz, Elbogen, & Van Dorn, 2004). As noted in the model outlined in Chapter 3, the influence of these symptoms on violence may be direct when an individual feels compelled to act on TCO delusions or obey violent command hallucinations or may be indirect when the symptoms affect the individual’s ability to relate to family and friends, assess situations, and resolve conflicts or indeed when they become the source of the discord. Given the potential relationship of alcohol abuse to composite seriousness of violent offenses within this sample and of substance abuse to violence in general within the literature, substance abuse should also be a treatment target. Concurrent disorder treatment modalities which integrate mental health and addictions treatment demonstrate promise within the research literature (Center for Substance Abuse Treatment, 2007; Drake, Mueser, Brunette, & McHugo, 2004; Drake, Mercer-McFadden, Mueser, McHugo, & Bond, 1998). Finally, given the relationship of instrumental violence to violence severity, anti-social attitudes should also be a treatment target. The empirical literature has demonstrated the effectiveness of cognitive-behavioural treatment programs for offenders in reducing recidivism by targeting anti-social attitudes and values (Hubbard & Pealer, 2009). Future research is required to confirm the efficacy of these programs for mentally ill offenders. The goal of these programs is to reduce cognitive distorts and procriminal attitudes and to increase problem-solving abilities and moral reasoning. Such programs however cannot be undertaken until psychotic symptoms are reduced. Consequently, pharmacological
interventions would first be required to ameliorate symptoms which may interfere with individuals’ responsivity to these programs,

**Interventions Strategies: Offender Responsivity**

To increase effectiveness, treatments must be closely matched to offender needs and characteristics. The results of the study suggest that early-start and late-start offenders do differ in their clinical presentation. Early-start offenders are more likely to have a personality disorder, drug abuse problem, criminal history of violence and are more likely to be homeless and on bail/probation at the time of their violent offense. These characteristics are consistent with the clinical profile of this offender group presented within the research literature. The early-start offenders present a challenge to traditional psychiatric services given the complexity of their clinical presentation. Hodgins and colleagues (2008) suggest that this offender group requires a high-support, long-term structured multi-component treatment program that addresses their multiple problems and accepts a double mandate of treating major mental illness and preventing offending. A potential promising intervention with this group is Forensic Assertive Community Treatment (FACT) teams. These multi-disciplinary programs resemble conventional Assertive Community Treatment teams (ACT) in composition and function (Lamberti, Weisman, & Faden, 2004). Like ACT programs, FACT programs engage high-risk individuals by utilizing around the clock, mobile services and by performing assertive outreach. Comprehensive services including mental health treatment, addictions counselling, vocational support and transportation are provided. The primary distinction between FACT and ACT programs is the extent to which the goal of preventing criminal arrest determines program structure and function (Lamberti et al., 2004). An additional distinction between these programs relates to the inclusion of a
residential component within many FACT programs. Many FACT programs have a supervised residential component in order to promote residential stability and increase the capacity for monitoring. Although ACT programs have been shown to reduce hospital use and increase community tenure (Marshall & Lockwood, 1998), most studies have shown limited effect on rates of arrest and incarceration (Mueser, Bond, Drake, & Resnick, 1998). The focus of the FACT program on preventing involvement with the criminal justice system and the inclusion of a supervised residential component however may serve to reduce the likelihood of arrest and incarceration and by extension the likelihood of violence and criminality. Research on the effectiveness of these programs is required.

In contrast to early-start offenders, late-start offenders may respond to more traditional treatments such as generic case management services or conventional assertive community treatment services, independent supportive housing and general psychiatric treatment services (Hodgins et al., 2008). Future research may explore the efficacy of utilizing highly structured and resource intensive services for the early-start group and conventional treatment and support services for the late-start group. Such a strategy is consistent with the risk principle of offender classification within the criminological literature which suggests that higher levels of service be reserved for individuals at highest risk for recidivism (Andrews, Bonta, & Hoge, 1990).

**Study Limitations**

The implications of the study are of course constrained by a number of methodological limitations. Among these is the sample composition. As noted previously, the sample did not included females because of a concern of sample bias given that in-custody female offenders were processed at another courthouse. In addition, the sample may
under represent the most serious of violent offenders. Though the sample included
individuals charged with violent offenses ranging from simple assault to murder and
included first time offenders as well as persistent repeat offenders, the sample likely under
represents offenders charged with the most serious of violent offenses as well as offenders
with lengthy criminal records, thus limiting the generalizability of findings. In addition,
though the sample may be reflective of individuals with mental disorders who become
involved in court support and diversion programs in large metropolitan areas in Canada, the
sample composition may not support the generalizability of the results to urban centres
with a relatively large population of Aboriginal offenders. Visible minorities are
disproportionately represented within correctional institutions and Aboriginal people are
particularly overrepresented in prison populations, accounting for 19% of inmates in
provincial correctional facilities, 17% of inmates in federal penitentiaries but only 3.3% of
the general population (Roberts & Melchers, 2003). By comparison, the sample within this
study had a very small number of Aboriginal as well as East Asian individuals. However,
the small number of Aboriginal persons in the sample is likely reflective of the
comparatively small proportion of Aboriginal offenders in Toronto relative to other urban
centres in Canada. LaPrarire (2002) examined data on the over-representation of Aboriginal
offenders in nine Canadian cities and found that Aboriginal persons were over-represented
among offender populations within each city but the degree of over-representation varied
considerably with Prairie cities such as Winnipeg, Saskatoon and Regina and northern
Ontario cities such as Thunderbay contributing disproportionately to over-representation,
followed by western cities such as Edmonton and Vancouver, followed by eastern cities
such as Montreal, Toronto and Halifax. Consequently, the findings from this study may not
generalize to certain cities in the Prairie provinces and northern Ontario which have a high proportion of aboriginal persons involved in the criminal justice system.

The generalizability of the finding is also compromised because of missing and outlier data. Nearly one fifth of the original sample was excluded on account of missing and outlying values. Those in the excluded group were more likely to have an alcohol or drug and alcohol problem, were more likely to be homeless and were less likely to be living in ethnically heterogeneous or economically disadvantaged neighbourhoods. Consequently, it is not certain whether the findings are generalizable to persons who have a substance abuse problem, are homeless or live within neighbourhoods with less ethnic diversity and economic disadvantage.

A second limitation of the study is its retrospective cross-sectional design and the lack of a non-violent comparison group of offenders. The cross-sectional design precludes any inference about causality. The retrospective nature of the design and reliance on a dataset which was not originally collected for research purposes resulted in an inability to code some theoretically salient variables due to the incompleteness of records. Specifically, the presence of psychotic symptoms, intoxication, treatment adherence and age of onset of illness could not be measured though inclusion of these variables may have led to more precise associations between violence outcome and clinical presentation or offender type. In addition, the design is also limited by the absence of a comparison group of offenders who did not engage in violence. Future research might include individuals charged with making threats who did not ultimately engage in violence to see how they and their context differed from individuals who did engage in violence.
A third limitation relates to data collection and instrumentation. The use of secondary data required the development and testing of a data extraction instrument. While presenting with good inter-rater reliability, most clinical and situational variables were dichotomous, resulting in a loss of specificity and an inability to control for a dose effect. Moreover, the study used diagnoses that were made for clinical rather than research purposes and no standardized diagnostic instrument was employed. Consequently, the accuracy of subject diagnoses may be affected. The accuracy of diagnosis may also be influenced by the time interval between arrest and the diagnostic interview. For example, subjects may be under the influence of drugs or alcohol in the hours or days after arrest and may present with symptoms that appear reflective of major mental disorder but whose aetiology is related to the consumption of psychoactive substances.

A fourth limitation arises from the statistical strategy utilized within the multi-level analyses. Ordinary least squares (OLS) regression techniques were used within the data analysis and data were analysed entirely at the individual level of analysis (i.e. analyses were calculated on the basis of the number of individual subjects). For example, each individual was given the factor scores for economic disadvantage and population heterogeneity for the neighbourhood (i.e. census tract) within which he resided. However, the number of individuals exceeded the number of neighbourhoods so some portion of subjects will have the same factor scores for neighbourhood measures. Unfortunately, this approach violates the assumption of independence of observations that underlies standard regression techniques. Because the number of subjects exceeds the number of neighbourhoods, the standard errors for neighbourhood level variables will be underestimated, thereby leading to spuriously high levels of statistical significance for
neighbourhood level variables. Statistical techniques such as hierarchical linear modelling which have been designed to take into account the hierarchical nature of such data were not used within the study. Hierarchical linear modelling techniques were designed for data sets that have both within group and between group variation, requiring many cases within each of many groups. As a result, the technique was not used here because while the dataset has many sample groups (i.e. census communities) it has few subjects within each group (75% of tracts had one or two subjects). If there is not a sufficient amount of within group variance among neighbourhood units, then the individual predictors will not exhibit significant relationships with the dependent variable (Beaubien, Hamman, Holt, & Boehm-Davis, 2001; Roberts, 1998). Previous research employing group sizes as low as three subjects have led to difficulties in estimating within group variance within HLM procedures (Beaubien et al., 2001). Because so many subjects within the current study are unique or nearly unique with respect to their census location, the effects of autocorrelation due to compositional similarities within neighbourhood level units is minimized. Furthermore, use of OLS techniques also enabled comparison with previous research on the affects of community level factors on violence among persons with serious mental illness. Silver (1999; 2000a) utilizes standard regression techniques for the same reason outlined above. Nevertheless, it is important to be cognizant of the likely biased effect for neighbourhood level variables within both studies due to the limitations of the analytical strategies utilized.

**Directions for Future Research**

Though the above findings offer insight about some of the predictors of violence severity, about the relative influence of contextual and individual variables in explaining variance in violence seriousness and about differences in the presentation of early- and late-
start offenders, they also give rise to more questions which await future research. Specific areas requiring further research are noted in the discussion of the findings above. In the section that follows, broad suggestions for a violence research agenda are tendered.

Foremost among these is that future research be based on theoretical frameworks which incorporate both a developmental and a social ecological perspective. The model proposed in Chapter 3 provides a modest example of a blended developmental/social ecological perspective. It was used to inform the selection of variables for this study but awaits testing of the proposed pathways to crime and violence. Application of advanced statistical procedures such as structural equation modelling would enable examination of the causal relationship between the variables of interests in the aforementioned model. A longitudinal, contextual approach to violence research could also inform the development of more ambitious conceptual frameworks which posit the continual interaction of biological, psychological, and social factors over the course of the individual’s life that influence violent behaviour. Such a framework could inform any number of research questions (Sampson & Lauritsen, 1994). For example, how do the effects of community and life circumstances vary across stages of the life cycle and are there a cumulative effect of such factors on adult violent behaviour? How do life transitions (e.g. recent unemployment, divorce) and situational-level factors (e.g. victim-offender relationship) interact with community context; how do the effects of victimization and violence interact across the lifespan and are they informed by community context, current life circumstances and individual characteristics? Such a perspective acknowledges that very different aetiologies or life-course trajectories may exist and raises the potential for different interventions targeted at different categories of offenders at different junctures across the life-course.
A parallel line of inquiry might examine the dynamic interactional factors related to violence (Felson & Steadman, 1983; Steadman, 1982). Specifically, it may explore whether certain patterns of interaction by certain individuals within certain contexts interact to influence the eventual amount of severity of violence. In so doing, it can examine the extent to which person and contextual factors are mediated by the dynamics of the interaction or exchange between antagonists (Felson & Steadman, 1983). Moreover, such research may also examine the extent to which interaction patterns may differ across groups of offenders (e.g. early-start versus late-start) (Steadman, 1982).

Future research might also utilize a developmental-ecological framework to examine individual and contextual factors related to violence among diagnostic groups. Such an approach could uncover different constellations of individual, situational and distal contextual predictors of violence and violence severity and lead to greater specification in treatment and intervention options.

In like manner, research on violence within particular interpersonal relationships may also prove fruitful. Given the prevalence of intimate partner and familial violence further research is needed to examine the underlying factors of these forms of violence among persons with serious mental illness. The research on the relationship between violence and serious mental illness has been disconnected from research on intimate partner violence (Estroff et al., 1998). There is a near absence of research focused on the perpetration of violence by individuals with serious mental illness against their intimate partners. The published studies (Bergman & Ericsson, 1996; Bland & Orn, 1986; Swanson et al., 1999) that have explored such violence do not include sufficient data to assess the prevalence or likelihood of partner violence. Moreover, they do not examine the context of
that violence, which may be key to understanding its occurrence. For example, the underlying motive for violence may be a product of psychiatric symptomatology or it may a strategy used to exert control in the relationship or it may be retaliatory in relationships characterized by mutual violence (Friedman & Foue, 2007). Similarly, very few studies have examined contextual factors influencing violence against family members (Chan, 2006; Elbogen et al., 2005; Estroff & Zimmer, 1994). Solomon and colleagues (2005) suggest that future research draw from the literature on family violence, violence and mental disorder and mental health care-giving to develop a conceptual framework which informs collection of data related to this type of violence. Such data would serve to inform future treatment interventions to address intimate partner and familial violence among persons with serious mental illness.

Identification and evaluation of interventions targeted at specific groups of offenders and specific interpersonal contexts are also needed. Currently, domestic violence intervention programs use a psycho-educational and skills training approach primarily within a group treatment modality. Existing domestic violence programs were not designed for the specific needs of individuals with serious mental illness and, consequently, these individuals are often screened out of this programming (Solomon, Cavanaugh & Gelles, 2005). Future research could inform the development of programs geared specifically for individuals with serious mental illness who engage in intimate partner violence. Future research might also examine the efficacy of specific programs such as FACT programs targeted at high risk offenders. In addition, it may confirm whether treatment interventions should be informed through utilization of an offender typology such as the distinction between early-start and late-start offenders.
Finally, future research is needed which explores violence along a continuum of severity. One of the largest barriers to such research is the relatively low base rate of serious violence. Quinsey and colleagues (1998) note that most studies of violence, even those with large samples, actually examine the predictors of robbery and relatively minor assaults. To address this problem, future research might target samples likely to have a greater prevalence of serious violence such as mentally ill offenders within federal penitentiaries or mentally ill persons detained on rehabilitation units within forensic hospitals.

Concluding Remarks

This study builds on previous research on violence among persons with serious mental illness through the utilization of a multi-level perspective which includes individual-, situational- and communal-level factors to account for variance in violence severity. It also explores the differentiation of early-start and late-start offenders. Finally, it undertakes this inquiry utilizing a quantitative measure of violence severity. On the basis of the findings of this inquiry, three overarching conclusions may be drawn.

First, the results of this study confirm the importance of contextual variables in predicting violence severity. They demonstrate that an explicit focus on individual-level variables and explanations of violence are insufficient in understanding violence by persons with serious mental illness. In particular the results show that once situational and community context variables are controlled for, clinical factors previously predictive of violence are rendered marginally significant. This finding suggests research which ignores contextual factors is at risk of over-stating the effect of individual-level factors in explaining violence by persons with major mental disorder. Within this sample, situational variables
are the most robust predictors of violence severity, suggesting that they are an important area of future research.

Second, the results of this study demonstrate the importance of differentiating predictors of violence when it is conceptualized and operationalized as a homogenous construct versus when it is conceptualized and operationalized as a heterogeneous construct that exists on a continuum of severity. As previously noted, most studies of violence among persons with mental illness dichotomize violence as present or absent; that is, a person is either violent or not. Consequently much information is lost. The results of the current study suggest parallels between predictors of violence severity should not be inferred from the predictors of general violence. Factors found to be predictive of general violence in prior research such as a history of previous violence, early-start offending, and the presence of a personality disorder were not predictive, or, in the case of personality disorder, were marginally predictive of violence severity.

Finally, the results of this study support the use of an early-start versus late-start typology of mentally ill offenders. Consistent with previous research, early-start offenders were more likely to have a history of violent offenses despite being younger on average than late-start offenders. Moreover, they were more likely to have a drug abuse problem and personality disorder. The results of this study also suggest that they are more likely to be homeless and to be on a court order such as bail or probation at the time of the violent index offense. Though no difference was found between the two groups in relation to violence severity, the distinctions between the two may, in future, facilitate tailoring interventions to meet offender need and to increase responsivity to the intervention.
It is hoped that these conclusions, while requiring replication by other researchers, will provide promising directions for future avenues of research on violence which will inform interventions ameliorating the risk of violence while also alleviating the burden of stigmatization that persons with mental illness suffer.
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*Law and Human Behavior, 15*(6), 625-637.


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Eds.), *Understanding and preventing violence: Vol. 3. Social influences* (pp. 1-114).


Appendix A Chart Review Protocol

Research Project:

Putting Criminal Violence into Context: A Multi-Level Analysis of the Correlates of Criminal Violence among Early- and Late-Start Mentally Disordered Offenders

Frank Sirotich

PROTOCOL GUIDELINES

for the

CHART REVIEW DATA SHEET
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Appendix A1: Coding Key Form..............................................................................................280
CHART REVIEW DATA SHEET

The following information will be collected from a chart review.

Date of Chart Review: ____/____/____

day month year

Name of Chart Reviewer:_________________________

Selection Criteria

Individual is Male: [ ] Y Yes [ ] N No ____________________________

If no, terminate chart review

Individual is 18 Years of Age or Older: [ ] Y Yes [ ] N No ____________________________

If no, terminate chart review

Index Charge includes Violent Offense: [ ] Y Yes [ ] N No ____________________________

If no, terminate chart review

Individual Meets Diagnostic Criteria for Study: [ ] Y Yes [ ] N No ____________________________

If no, terminate chart review

Subject Number: [ ___ ___ ] [ ___ ___ ] [ ___ ___ ] [ ___ ___ ___ ]

Pilot Study ID #: [ ___ ___ ___ ___ ]

Demographics

1) Age:______

2) Race/Skin Colour: [ ] Black [ ] Brown [ ] White [ ] Other
Clinical Factors

3) Primary Diagnosis: 
   [ ] Schizophrenia
   [ ] Schizoaffective Disorder
   [ ] Delusional Disorder
   [ ] Other Psychotic Disorder (includes major affective disorders with psychotic features, organic brain syndrome such as dementia, psychotic disorder not otherwise specified)
   [ ] Bipolar Affective Disorder (types I or II)
   [ ] Major Depressive Disorder

4) Anti-Social Personality Disorder/Traits Present: [ ] Y Yes [ ] N No

5) Other Personality Disorder Present: [ ] Y Yes [ ] N No

6) Alcohol Use Problem Present: [ ] Y Yes [ ] N No [ ] Unknown

7) Drug Use Problem: [ ] Y Yes [ ] N No [ ] Unknown

8) Persecutory ideation—followed: [ ] Y Yes [ ] N No

9) Persecutory Ideation—Harm: [ ] Y Yes [ ] N No

10) Delusion of Control: [ ] Y Yes [ ] N No

11) Thought Insertion/Though Withdrawal: [ ] Y Yes [ ] N No

12) Violent Command Hallucinations Present: [ ] Y Yes [ ] N No [ ] Unknown

13) Familiar Hallucinated Voice: [ ] Y Yes [ ] N No

14) Medication Non-compliant: [ ] Y Yes [ ] N No [ ] Unknown

15) Age at Earliest Contact with Mental Health Professional: _______ or [ ] Unknown
Criminal History

16) Total Previous Sentencing Events: _______

17) Total Prior Offenses: _______

18) Total Prior Violent Offenses: _______

19) Cumulative Seriousness of Prior Violent Offenses: _______

20) Number of Arrests as Youth: _______

Offense Characteristics

21) Severity Score of Most Serious Violent Index Offense: _______

22) Most Serious Violent Index Offense a Weapon Threat: [ ] Y Yes [ ] N No

23) Composite Seriousness of Violent Index Offenses: _______

24) Composite Seriousness of Index Weapon Threats: _______

25) Number of Victims of Violence: _______

26) Gender of Victim of Violence: [ ] M Male [ ] F Female

27) Offender-Victim Relationship:
   [ ] Spouse/partner/ex-intimate
   [ ] Other Family
   [ ] Friend/Acquaintance
   [ ] Stranger
   [ ] Peace Officer
28) Third Party Present during Index Violent Offense: [ Y ] Yes [ N ] No

If no, skip to question #31 below

29) Third Party Known to Victim: [ Y ] Yes [ N ] No

30) Third Party Intervened during Index Violent Offense: [ Y ] Yes [ N ] No

31) Weapon Use at Offense: [ Y ] Yes [ N ] No

32) Motive for Current Violent Offense Known: [ Y ] Yes [ N ] No

If no, skip to question #35 below

33) Expressive Motive for Violence: [ Y ] Yes [ N ] No

34) Instrumental Motive for Violence: [ Y ] Yes [ N ] No

35) Use of Alcohol at Time of Violent Offense: [ Y ] Yes [ N ] No

36) Use of Illicit Drugs at Time of Violent Offense: [ Y ] Yes [ N ] No

37) Time of Violent Offense:
   [ Y ] 6:00pm-11:59pm
   [ Y ] 12:00am-5:59am
   [ Y ] 6:00-11:59am
   [ Y ] 12:00-5:59pm

38) Location of Offense:
   [ Y ] In-Home of Offender
   [ Y ] Other Residence
   [ Y ] Street/Outdoors
   [ Y ] Hospital/Mental Health Clinic
   [ Y ] Other
Current Life Circumstances

39) Meagre Income: [ ] Y Yes [ ] N No

40) Homeless: [ ] Y Yes [ ] N No

41) Use of Mental Health Service: [ ] Y Yes [ ] N No

42) On Bail/Probation: [ ] Y Yes [ ] N No

Neighbourhood Characteristics

43) Postal Code: [ ___ ___ ___ ___ ___ ___ ]

44) Census Tract Code: [ ___ ___ ___ ___ ___ ___ ]
CHART REVIEW DATA SHEET
The following information will be collected from a chart review.

Date of Chart Review: ____/____/____

Name of Chart Reviewer:__________________________

Selection Criteria

Individual is Male: [Y] Yes [N] No
If no, terminate chart review

Individual is 18 Years of Age or Older: [Y] Yes [N] No
If no, terminate chart review

Index Charges include Violent Offense: [Y] Yes [N] No
If no, terminate chart review

Individual Meets Diagnostic Criteria for Study: [Y] Yes [N] No
If no, terminate chart review

Subject Number: [ ___  ___  ___  ___ ]

Pilot Study ID #: [ ___  ___  ___  ___ ]

Protocol

A) Date of Chart Review: : ____/____/____
• Write in the date (numerically) that the chart was reviewed.

B) Name of Chart Reviewer:__________________________
• Print the first and last name of the individual that reviewed the chart.
C) Individual is Male: [ ] Y Yes [ ] N No

If no, terminate chart review

• Record whether or not the individual is male. If the individual is male, check “Yes”. If the individual is not male, tick the “No” box and terminate further review of the chart.

D) Individual is 18 Years of Age or Older: [ ] Y Yes [ ] N No

If no, terminate chart review

• Record whether or not the individual was 18 years of age or older at the time of the index offense. If the individual was 18 years old or older at the time of the index offense, indicate “Yes” and continue with the chart review. If the individual was not 18 years of age or older at the time of the index offense, indicate “No” and terminate further review of the chart.

E) Index Charge includes Violent Offense: [ ] Y Yes [ ] N No

If no, terminate chart review

• Record whether or not the individual has a violent index offense(s). In order to determine whether the index charge(s) involves a violent offense, refer to the offense classification system attached to this protocol. If the individual has a violent index offense, indicate “Yes” and continue with the chart review. If the individual does not have a violent index offense, indicate “No” and terminate further review of the chart.

F) Individual Meets Diagnostic Criteria for Study: [ ] Y Yes [ ] N No

If no, terminate chart review

• Indicate whether or not the individual has a chart diagnosis that includes one or more of the following diagnoses:
  - schizophrenia,
  - schizoaffective disorder,
  - delusional disorder,
  - major affective disorder with psychotic features (i.e. major depressive disorder with psychotic features, bipolar affective disorder with psychotic features)
  - organic brain syndrome such as dementia,
  - psychotic disorder not otherwise specified,
  - bipolar affective disorder (types I or II),
  - major depressive disorder
If the individual has one or more of the above diagnoses, indicate “Yes” and continue with the chart review. If the individual does not have one or more of the above diagnoses, indicate “No” and terminate further review of the chart.

In determining whether an individual meets the diagnostic criteria for inclusion in the study, apply the following hierarchy of information sources:

1) medical report which included diagnosis
2) recorded correspondence with a medical practitioner or mental health professional who confirms a psychiatric diagnosis
3) client self-report or report of a collateral source (e.g. family member) of diagnosis if reported diagnosis provided corresponds to and is congruent with reported pharmacological treatment for the reported diagnosis

G) Subject Number: [___ ___] [ ____ ____ ] [ ___ ___ ] [ ____ ____ ____ ]

If the individual meets the gender, age, offense and diagnostic selection criteria for inclusion in the study, create a study Subject Number for the individual. In each box enter digits according to the protocol below:

- First box: Indicate the two digit month of admission of the individual to the program. (e.g. May = 05, November = 11). The admission date can be found on the cover of the client file and on the first page of the Intake Sheet.

- Second box: Indicate the two digit year of admission of the individual to the program (e.g. 1999 = 99, 2000 = 00).

- Third box: Indicate the reviewer’s assigned code. Each reviewer will be assigned a code number

<table>
<thead>
<tr>
<th>Chart Reviewer</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reviewer A: Heath Priston</td>
<td>01</td>
</tr>
<tr>
<td>Reviewer C: Karina Ng</td>
<td>03</td>
</tr>
</tbody>
</table>

- Fourth box: Each reviewer will number the study subjects sequentially beginning with 001.

After creating a subject number for the individual record the individual’s name, and date of birth and subject number on the Coding Key form (see Appendix A1).
H) Pilot Study ID #: [ ____  ____  ____  ____ ]

- For the purpose of the pilot study only, numerically enter four-digit pilot study identification number. The first digit of the identification number is the number of the reviewer (reviewer numbers specified above). The following three digits of the identification number are the three digits that appear on a post-it note attached to each of the charts in the pilot sample.
Demographic Information (numbered 1 – 2)

Demographics

1) Age:______

- Write the age (numerically) of the subject at time of arrest. Age at arrest can be found on the police record of arrest or the intake assessment sheet of the chart. If the subject has multiple admissions to the program for different violent offenses, use the admission/arrest information which relates to the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault), use the admission/arrest information which relates to the most recent violent index offense.

2) Race/Skin Colour: [ ] Black [ ] Brown [ ] White [ ] Other

- Record the subject’s skin colour as specified within the record of arrest under the section entitled Defendants Particulars. Check the “Other” box if the individual is identified as Asian, Southeast Asian, Oriental, or Aboriginal in the “Additional Information/Description” box found in the Defendants Particular section of the record of arrest. In addition, check the “Other” box if the individual has an Asian or Southeast Asian country named as his place of birth.
Clinical Factors (number 3 - 15)

Clinical Factors

3) Primary Diagnosis: [ ] Schizophrenia
[ ] Schizoaffective Disorder
[ ] Delusional Disorder
[ ] Other Psychotic Disorder (includes major affective disorders
with psychotic features, organic brain syndrome such as
dementia, psychotic disorder not otherwise specified)
[ ] Bipolar Affective Disorder (types I or II)
[ ] Major Depressive Disorder

- Indicate the primary diagnosis of the subject by checking one of the above
categories. If more than one of the above diagnoses appears within the chart, use the
following protocol to determine the diagnosis: i) use the diagnosis provided by a
psychiatrist over a diagnosis provided by a general medical practitioner; ii) use the
diagnosis provided in a medical report that involves the longest duration of
hospitalization/assessment over a diagnosis provided in a medical report based on a
brief assessment; iii) if multiple reports of relatively equal duration use the diagnosis
provided in a NCR report or pre-sentence report over those provided by medical
practitioner from a local schedule I facility.

4) Anti-Social Personality Disorder/Traits Present: [ ] Y Yes [ ] N No

- Note whether or not there is diagnosis of anti-social personality disorder or anti-
social traits present in the chart for the subject and check the appropriate box.

5) Other Personality Disorder Present: [ ] Y Yes [ ] N No

- Note whether or not there is a diagnosis of personality disorder other than anti-social
personality disorder present in the chart and check the appropriate box.

6) Alcohol Use Problem Present: [ ] Y Yes [ ] N No [ ] Unknown

- Note whether or not there is an alcohol use problem noted in the chart by checking
the appropriate box. An alcohol use problem exists if any of the following apply:

i. there is a chart diagnosis of alcohol abuse or alcohol dependence
   present, and/or

ii. there is a medical report indicating the presence of a alcohol
    abuse problem, and/or

iii. the subject received alcohol abuse treatment while in the
    program, and/or

iv. the subject was mandated to participate in alcohol abuse
treatment, and/or

v. the subject was encouraged to participate in alcohol abuse
treatment as part of his/her service care plan, and/or

vi. there is indication in the chart of the presence of an alcohol
abuse problem, and/or

vii. the subject endorsed the presence of two or more elements of
the CAGE questionnaire:

-C Have you ever felt that you ought to Cut down on your drinking?
-A Have people Annoyed you by criticizing your drinking?
-G Have you ever felt bad or Guilty about your drinking?
-E Have you ever had a drink first thing in the morning (Eye opener)
to steady your nerves or get rid of a hangover?

To determine if there is an alcohol use problem noted, review the intake assessment
form and accompanying notes, all medical reports and any probation or bail orders
present in the file. Tick the “Yes” box if there is:
i) a chart diagnosis of alcohol abuse or dependence, or
ii) a medical report in the chart indicating an alcohol use problem, or
iii) indication that the subject is involved in alcohol abuse treatment, or
iv) indication that the subject is mandated to participate in alcohol treatment, or
v) indication that alcohol abuse treatment was recommended to the subject, or
vi) indication in the chart that there is an alcohol use problem present, or
vii) indication that the subject endorsed two or more elements of the CAGE questionnaire.

Tick the “No” box only if there is:
i) no chart diagnosis of alcohol abuse or dependence present, and
ii) there is a medical report present in the chart but no reference to the presence
   of an alcohol use problem, and
iii) no indication that the subject is involved in alcohol abuse treatment, and
iv) no indication that the subject is mandated to participate alcohol abuse
   treatment, and
v) no indication that alcohol abuse treatment was recommended to the client, and
vi) no indication of the presence of an alcohol use problem in the chart, and
vii) no indication that the subject endorsed two or more elements of the CAGE questionnaire.

Tick the “Unknown” box only in the following circumstances:
i) there is no medical report available in the chart, and
ii) there is no service plan or treatment recommendations present in chart, and
iii) there is no reference in the chart to application of the CAGE questionnaire;

Every effort should be made to determine whether there is indication in the chart of
the presence or absence of an alcohol abuse problem before ticking the “Unknown”
box.
7) Drug Use Problem: [ ] Y Yes [ ] N No [ ] Unknown

- Note whether or not a drug use problem is noted in the chart. A drug problem exists if any of the following apply:

  i) there is a chart diagnosis of drug abuse or drug dependence present, and/or
  ii) there is a medical report indicating the presence of a drug abuse problem, and/or
  iii) the subject received drug abuse treatment while in the program, and/or
  iv) the subject was mandated to participate in drug treatment, and/or
  v) the subject was encouraged to participate in drug abuse treatment as part of his/her service care plan, and/or
  vi) there is indication in the chart of the presence of a drug abuse problem, and/or
  vii) the subject endorsed the presence of two or more elements of CAGE-AID (i.e. CAGE questionnaire Adapted for Illicit Drugs):
      - C Have you ever felt that you ought to Cut down on your drug use?
      - A Have people Annoyed you by criticizing your drug use?
      - G Have you ever felt bad or Guilty about your drug use?
      - E Have you ever used drugs first thing in the morning (Eye opener) to steady your nerves or get rid of a hangover?

To determine if there is a drug use problem noted, review the intake assessment form and accompanying notes, all medical reports and any probation or bail orders present in the file. Do not include overuse of prescription drugs as a drug use problem.

Tick the “Yes” box if there is:
  i) a chart diagnosis of drug abuse or dependence, (do not include a chart diagnosis of substance induced psychotic disorder or substance-induced mood disorder as indication of a drug abuse problem) or
  ii) a medical report in the chart indicating a drug use problem, or
  iii) indication that the subject is involved in drug abuse treatment, or
  iv) indication that the subject is mandated to participate in drug abuse treatment, or
  v) indication that drug abuse treatment was recommended to the subject, or
  vi) indication in the chart that there is an illicit drug use problem present, or
  vii) indication that the subject endorsed two or more elements of the CAGE-AID questionnaire

Tick the “No” box if there is:
  i) no chart diagnosis of drug abuse or dependence present, (a chart diagnosis of substance-induced psychotic disorder or substance-induced mood disorder is not
equivalent to and should **not** be considered indication of a diagnosis of substance abuse or dependence), and

ii) there is a medical report present in the chart but no reference to the presence of a drug use problem, and

iii) no indication that the subject is involved in drug abuse treatment, and

iv) no indication that the subject is mandated to participate in drug abuse treatment, and

v) no indication that drug abuse treatment was recommended to the client, and

vi) no indication of the presence of a drug use problem in the chart, and

vi) there is no reference in the chart to application of the CAGE-AID questionnaire

Tick the “Unknown” box only in the following circumstances:

i) there is no medical report available in the chart, and

ii) there is no service plan or treatment recommendations present in chart, and

iii) there is no reference in the chart to application of the CAGE-AID questionnaire;

Every effort should be made to determine whether there is indication in the chart of the presence or absence of a drug abuse problem before ticking the “Unknown” box.

8) **Persecutory Ideation—Followed:** [ ] Y Yes [ ] N No

- Review the intake assessment form(s) and all medical and psycholegal reports and indicate whether the subject at any time endorsed the belief that others are following him/her.

9) **Persecutory Ideation—Harm:** [ ] Y Yes [ ] N No

- Review the intake assessment form and all medical and psycholegal reports and indicate whether or not the subject at any time endorsed the belief that others are plotting against the subject, and/or to trying to hurt or poison the subject. Harm in this context refers to physical harm or violence.

10) **Delusion of Control:** [ ] Y Yes [ ] N No

- Review the intake assessment form and all medical and psycholegal reports and indicate whether or not the subject at any time endorsed the belief that some person(s), power or force(s) are controlling his/her mind or body.

11) **Thought Insertion/Though Withdrawal:** [ ] Y Yes [ ] N No

- Review the intake assessment form and all medical and psycholegal reports and indicate whether the subject at any time endorsed the belief that strange thoughts or thoughts that were not his/her own were being put directly into his/her mind or conversely that someone or something could steal thoughts from his/her mind.
12) Violent Command Hallucinations Present: [ ] Y Yes [ ] N No

- Review the intake assessment form and all medical and psycholegal reports and indicate whether or not the subject at any time endorsed command hallucinations to harm others. Command hallucinations are auditory hallucinations experienced as voices that issue direct instructions that a person is supposed to follow and which seem to come from an external source.

13) Familiar Hallucinated Voice Present: [ ] Y Yes [ ] N No

- Review the intake assessment form and all medical and psycholegal reports and indicate whether or not the subject at any time endorsed the presence of violent command hallucinations to harm others and recognized the hallucinated voice as familiar. “Familiar” refers to whether the subject could identify or name the source of the voice. For example, a familiar voice may be identified as belonging to a family member, friend, acquaintance or as belonging to a god or the devil.

14) Medication Non-compliant: [ ] Y Yes [ ] N No [ ] Unknown

- Review the intake assessment form and all medical and psycholegal reports and indicate whether or not the subject was not taking prescribed psychotropic medications at the time of the index offense. If the subject has multiple admissions to the program for different violent offenses, use the admission/offense information which relates to the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault), use the admission/offense information which relates to the most recent violent index offense. If the subject was prescribed psychotropic medications or if it was recommended by a medical doctor that the subject take psychotropic medication and the subject was not taking psychotropic medication at the time of the index offense, tick “Yes”. If the subject was prescribed psychotropic medication and was taking the prescribed medication at the time of the offense, tick “No”. If the subject was not prescribed any psychotropic medication and if psychotropic medication was not recommended by a medical doctor, tick “No”. If it is unclear whether the subject was compliant with his/her psychotropic medication regimen at the time of the relevant violent index offense, tick the “Unknown” box. Every effort should be made to determine whether there is indication in the chart of the medication non-compliance before ticking the “Unknown” box. **Note:** Medication non-compliance should not be confused with medication resistance. Medication non-compliance refers to the non-adherence by a client to a prescribed medication regimen. By comparison, medication resistance refers to a lack of response or improvement in individuals’ symptoms despite their being compliant with their prescribed medication regimen.
15) Age at Earliest Contact with Mental Health Professional: _______ or [   ] Unknown

- Numerically write the subject’s age at first contact with a mental health professional as such as a psychiatrist, psychologist, or mental health case manager. If first contact with a mental health professional occurred through the intervention of the court support program, note the age of the subject at the time of the intervention. If the age of the subject at earliest contact with a mental health professional is not known, check the “Unknown” box.
Criminal History (numbered 16 - 20)

16) Total Previous Sentencing Events: _______

- Report the number of previous sentencing events as indicated on the criminal record. On a criminal record, prior offenses are grouped together according to a date when an accused is sentenced. Any number of offences dealt with at the same time equals one sentencing event. For example, if an individual was charged with and found guilty of assault, threatening x2 for the same incident, record this as one sentencing event. Include entries with absolute discharge, conditional discharge, suspended sentence, conditional sentence and custodial sentence. If the subject has multiple admissions to the program over time for different violent offenses, use the criminal record information which existed and was obtained at or around the time of the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault), use the criminal record information which relates to the most recent violent index offense.

17) Total Prior Offenses: _______

- Write the total number of prior offenses (numerically) as indicated in the subject’s criminal record or the Crown’s Show Cause document or in psycholegal reports within the subject’s chart. For example, if the client was convicted of assault and threatening x2, record this as three offences. If the subject has multiple admissions to the program over time for different violent offenses, use the criminal record information which existed and was obtained at or around the time of the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault), use the criminal record information which relates to the most recent violent index offense. In calculating the total number of prior offenses from the relevant criminal record information, only include charges in which participants’ received a custodial sentence, conditional sentence, suspended sentence, conditional discharge or absolute discharge. In calculating the total number of prior offenses, do not include charges which were withdrawn, stayed, dismissed or peace bonded. Both violent and non-violent offenses should be included in the count of total prior offenses. Do not include the index offense(s) in calculating the total number of prior offenses. Also do not include previous charges which are still awaiting disposition from the court. If there is no criminal record in the chart or information about prior offenses in the chart but a FPS# appears on the record of arrest, note that the criminal record is missing in the Notes on Chart section of the Search Record tab.
18) **Total Prior Violent Offenses:** ______

- Write the total number of prior violent offenses (numerically) as indicated in the subject’s criminal record or the Crown’s Show Cause document or in psycholegal reports within the subject’s chart. If the subject has no prior violent offenses, type “0”. If the subject has multiple admissions to the program over time for different violent offenses, use the criminal record information which existed and was obtained at or around the time of the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault), use the criminal record information which relates to the most recent violent index offense. In calculating the total number of prior violent offenses from the relevant criminal record information, use the modified Cormier-Lang Classification System for Quantifying Criminal History to determine which offenses are violent as opposed to non-violent. In calculating the total number of prior violent offenses, only include charges in which participants’ received a custodial sentence, conditional sentence, suspended sentence, conditional discharge or absolute discharge. In calculating the total number of prior violent offenses, do not include charges which were withdrawn, stayed, dismissed or peace bonded. Do not include the index offense(s) in calculating the total number of prior violent offenses.

19) **Cumulative Seriousness of Prior Violent Offenses:** ______

- Write the composite offense seriousness score (numerically) of all prior violent offenses from the participants’ criminal record. If the subject has no prior violent offenses, type “0”. If the subject has multiple admissions to the program over time for different violent offenses, use the criminal record information which existed and was obtained at or around the time of the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault), use the criminal record information which relates to the most recent violent index offense. Using the criminal record specified above, calculate the composite offense seriousness score of all violent offenses appearing on the record using the modified Cormier-Lang Classification System for Quantifying Criminal History which assigns weights to offenses based on the type of crime. To obtain a single overall (i.e. composite) violent criminal history score, use the modified Cormier-Lang Classification System to assign the applicable score to each violent offense in the subject’s criminal record and then add all the scores. In calculating the total number of prior violent offenses, only include charges in which participants’ received a custodial sentence, conditional sentence, suspended sentence, conditional discharge or absolute discharge. In calculating the total number of prior violent offenses, do not include charges which were withdrawn, stayed, dismissed or peace bonded. Offenses appearing in the subject’s criminal record that are not listed in the modified
Cormier-Lang Classification System should be classified according to the listed offenses within the modified Cormier-Lang Classification System that they most closely resemble. Use the Criminal Code as a reference to determine which offense(s) on the modified Cormier-Lang Classification System the subject’s prior offense(s) most closely resembles. Do not include the index offense(s) in calculating the total number of prior offenses.

**20) Number of Arrests as Youth: ________**

- Write the total number of arrests (numerically) which occurred prior to the age of 18 as appearing within the subject’s criminal record or the subject’s chart. If the subject has no arrests as a youth, type “0”. In calculating the total number of arrests prior to age 18, include charges in which participants’ received a custodial sentence, conditional sentence, suspended sentence, conditional discharge, absolute discharge as well as withdraws, stays of proceeding, dismissals, and peace bonds. Do not include the index offense(s) in calculating the total number of prior arrests.
Offense Characteristics (numbered 21 - 38)

Offense Characteristics

21) Severity Score of Most Serious Violent Index Offense: _______

- Write the offense seriousness score (numerically) for the most serious violent index offense the subject is charged with as appears in the police synopsis for a guilty plea. Obtain the offense seriousness score for the most seriousness violent offense using the scoring protocol specified in the modified Cormier-Lang Classification System. An offense appearing in the police synopsis for a guilty plea not listed in the classification system will be classified on the basis of the listed offense within the classification system that it most closely resembles. Use the Criminal Code as a reference to determine which offense on the modified Cormier-Lang Classification System the subject’s most violent index offense(s) most closely resembles. If the subject has multiple admissions to the program for different violent offenses, use the offense information found in the synopsis for a guilty plea which relates to the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault), use the admission/offense information which relates to the most recent violent index offense. Note: If there is no synopsis for a guilty plea present in the chart relating to the violent index offense, do no include the chart in the review as there will not be sufficient information about the offense characteristics to complete this section of the file review.

22) Most Serious Violent Index Offense: Weapon Threat: [ ] Y Yes [ ] N No

- Indicate whether the most serious violent index offense is a weapon threat. To determine whether the most serious violent index offense is a weapon threat, refer to the police synopsis for a guilty plea. A weapon threat is a threat of bodily harm or death made with a weapon (real or imitation) in hand at the time of the violent incident. For a an incident to be coded as a weapon threat, the subject has to be charged with Threatening Bodily Harm or Threatening Death and has to have a weapon in hand at the time of the threat of injury or death; telling the victim that a weapon would be gotten hold of or having a weapon available but not in hand (e.g. in a drawer of the room) does not constitute a weapon threat. A weapon may be any object used by the offender to cause injury or threaten injury to the victim(s). A weapon is not confined to inanimate objects but may include the use of a dog or other animal to attack or threaten the victim(s). The weapon however should be an object capable of inflicting injury (e.g. bruising, cuts, broken bones) or death.
23) Composite Seriousness of Violent Index Offenses: ________

- Write the composite offense seriousness score (numerically) of all violent index offenses for the subject. To calculate the composite offense seriousness score of all violent index offenses, use the modified Cormier-Lang Classification System for Quantifying Criminal History which assigns weights to offenses based on the type of crime. To obtain a single overall (i.e. composite) violent index offense score, use the modified Cormier-Lang Classification System to assign the applicable score to each violent index offense and then add all the scores. To obtain a list of the violent offenses the subject is charged with, refer to the police synopsis for a guilty plea. If the subject has multiple admissions to the program across time for different violent offenses, use the synopsis for a guilty plea which relates to the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault), use the synopsis for a guilty plea which relates to the most recent violent index offense. Offenses appearing in the police synopsis for a guilty plea that are not listed in the offense classification system should be classified according to the listed offenses within the classification system which they most closely resemble.

24) Composite Seriousness of Index Weapon Threats: ________

- Write the composite offense seriousness score (numerically) of all weapons threats that occurred at the time of the violent index offense for the subject. To calculate the composite offense seriousness score of all index weapon threats, use the modified Cormier-Lang Classification System for Quantifying Criminal History which assigns weights to offenses based on the type of crime. According to the modified Cormier-Lang Classification System, each weapon threat is scored as 3. To obtain a single overall (i.e. composite) index weapon threat score, multiply the number of index weapon threats by 3. To determine whether the violent index offense(s) include weapon threat(s), refer to the police synopsis for a guilty plea. If the subject has multiple admissions to the program across time for different violent offenses, use the synopsis for a guilty plea which relates to the most serious violent index offense. A weapon threat is a threat of bodily harm or death made with a weapon (real or imitation) in hand. For an incident to be coded as a weapon threat, the subject must be charged with Threatening Bodily Harm or Threatening Death and have a weapon in hand at the time of the threat of injury or death; telling the victim that a weapon would be gotten hold of or having a weapon available but not in hand (e.g. in a drawer of the room) does not constitute a weapon threat. A weapon may be any object used by the offender to cause injury/death or threaten injury/death to the victim(s). A weapon is not confined to inanimate objects but may include the use of a dog or other animal to attack or threaten the victim(s). The weapon however should be an object capable of inflicting injury (e.g. bruising, cuts, broken bones) or death.
25) Number of Victims of Violence: _________

- Record the number of victims (numerically) of violence as noted in the police synopsis for a guilty plea. If the subject has multiple admissions to the program across time for different violent offenses, use the synopsis for a guilty plea which relates to the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault), use the synopsis for a guilty plea which relates to the most recent violent index offense.

26) Gender of Victim of Violence: [ ] Male [ ] Female

- Record the gender of the primary victim of the violent offense(s) as noted in the police synopsis for a guilty plea. If the subject has multiple admissions to the program across time for different violent offenses, use the synopsis for a guilty plea which relates to the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault), use the synopsis for a guilty plea which relates to the most recent violent index offense. The primary victim is the individual who experienced the most serious violence; seriousness of violence is discerned through application of the modified Cormier-Lang offense classification system. The offense with the highest score on the offense classification system is the most serious offense. Where more than one victim experiences the same level of violence, the first victim in the sequence of violent events will be designated as the primary victim.

27) Offender-Victim Relationship:

[ ] Spouse/partner/ex-intimate  
[ ] Other Family  
[ ] Friend/Acquaintance  
[ ] Stranger  
[ ] Peace Officer

- Record the nature of the relationship between the offender and the victim of violence as noted in the police synopsis for a guilty plea. If the subject has multiple admissions to the program across time for different violent offenses, use the synopsis for a guilty plea which relates to the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault), use the synopsis for a guilty plea which relates to the most recent violent index offense. “Spouse/ex-partner/ex-intimate” refers to the current or previous marriage partner, common law partner, girlfriend/boyfriend, or sexual intimate of the offender. “Other Family” refers to a person to whom the accused is related by blood or marriage other than a previous or current spouse/partner/ex-intimate. “Friend/Acquaintance” refers
to a person who is known or recognized by sight by the offender but is not related by blood or marriage to the offender. “Stranger” refers to a person who is not a peace officer and is not known to the offender—a person with whom the offender has no personal acquaintance. “Peace Officer” refers to a police officer, police constable, bailiff, constable or other person employed for the preservation and maintenance of the public peace. A peace officer also includes any court officer or correctional officer. Also include private security officers in this category. Where more than one victim is present, record the nature of the relationship between the offender and the primary victim of violence. The primary victim is the individual who experienced the most serious violence; seriousness of violence is discerned through application of the modified Cormier-Lang offense classification system. The offense with the highest score on the offense classification system is the most serious offense. Where more than one victim experiences the same level of violence, the first victim in the sequence of violent events will be designated as the primary victim.

28) Third Party Present during Index Violent Offense: [ ] Y Yes [ ] N No 

- Indicate whether there was a third party present during the index offense as recorded in the police synopsis for a guilty plea. Tick “Yes” if the third party was witness to the alleged violent act. Tick “No” if there was no third party present or if there was a third party that was in the general vicinity of the alleged violent offense but did not witness the alleged violent act. If the subject has multiple admissions to the program across time for different violent offenses, use the synopsis for a guilty plea which relates to the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault), use the synopsis for a guilty plea which relates to the most recent violent index offense. A third party includes individuals other than the alleged accused and the alleged primary victim of the violent index offense. To be considered a third party, persons must have the capacity to witness and recall the violent offense and/or intervene. As such, an infant would not be considered a third party as he or she would not have the capacity to witness and recall the violent offense. A pre-adolescent child could be considered a third party if present at the violent index offense as he or she presumably has the ability to witness and recall events and/or has the capacity to intervene. A third party may also be a victim of violence (other than primary victim) if violence was directed at the third party in addition to the primary victim. The primary victim is the individual who experienced the most serious violence; seriousness of violence is discerned through application of the modified Cormier-Lang offense classification system. The offense with the highest score on the offense classification system is the most serious offense. Where more than one victim experiences the same level of violence, the first victim in the sequence of violent events will be designated as the primary victim.
29) Third Party Known to Victim: [ ] Y Yes [ ] N No

- If there was a third party present during the alleged index offense, indicate whether the third party individual(s) knew the alleged primary victim of the violent offense according to the police synopsis for a guilty plea. For example, the third party individual present during the alleged offense would be known to the victim if the third party individual was the spouse/partner of the victim, a family member of the victim, a friend/acquaintance of the victim or co-worker/employee. If the subject has multiple admissions to the program across time for different violent offenses, use the synopsis for a guilty plea which relates to the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault), use the synopsis for a guilty plea which relates to the most recent violent index offense. A third party includes individuals other than the alleged accused and the alleged primary victim of the index violent offense. To be considered a third party, persons must have the capacity to witness and recall the violent offense and/or intervene. As such, an infant would not be considered a third party as he or she would not have the capacity to witness and recall the violent offense nor would he or she have the capacity to intervene. By contrast, a pre-adolescent child could be considered a third party if present at the violent index offense as he or she presumably has the ability to witness and recall events and/or has the capacity to intervene. A third party may also be a victim of violence (other than primary victim) if violence was directed at the third party in addition to the primary victim. The primary victim is the individual who experienced the most serious violence; seriousness of violence is discerned through application of the modified Cormier-Lang offense classification system. The offense with the highest score on the offense classification system is the most serious offense. Where more than one victim experiences the same level of violence, the first victim in the sequence of violent events will be designated as the primary victim.

30) Third Party Intervened during Index Violent Offense: [ ] Y Yes [ ] N No

- If there was a third party present during the alleged index offense, indicate whether the third party individual(s) attempted to intervene to prevent violence occurring against the alleged primary victim during the index violent offense as recorded in the police synopsis for a guilty plea. If the subject has multiple admissions to the program across time for different violent offenses, use the synopsis for a guilty plea which relates to the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault), use the synopsis for a guilty plea which relates to the most recent violent index offense. A third party includes individuals other than the alleged accused and the alleged primary victim of the index violent offense. To be considered a third party, persons must have the capacity to witness and recall the violent offense and/or intervene. As such, an infant would not be considered a third party as he or she would not have the capacity to witness
and recall the violent offense nor would he or she have the capacity to intervene. By contrast, a pre-adolescent child could be considered a third party if present at the violent index offense as he or she presumably has the ability to witness and recall events and/or has the capacity to intervene. A third party may also be a victim of violence (other than the primary victim) if violence was directed at the third party in addition to the primary victim, perhaps as a result of the third party’s effort to intervene. The primary victim is the individual who experienced the most serious violence; seriousness of violence is discerned through application of the modified Cormier-Lang offense classification system. The offense with the highest score on the offense classification system is the most serious offense. Where more than one victim experiences the same level of violence, the first victim in the sequence of violent events will be designated as the primary victim.

31) Weapon Use at Offense: [ ] Y Yes [ ] N No

- Indicate whether a weapon (real or imitation) was used in the commission of a violent act or threats of violence were made with a weapon (real or imitation) in hand at the time of the violent incident. A weapon may be any object used by the offender to cause injury/death or threaten injury/death to the victim(s). A weapon is not confined to inanimate objects but may include the use of a dog or other animal to attack or threaten the victim(s). If the subject has multiple admissions to the program across time for different violent offenses, use the synopsis for a guilty plea which relates to the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault), use the synopsis for a guilty plea which relates to the most recent violent index offense.

32) Motive for Current Violent Offense Known: [ ] Y Yes [ ] N No

- Indicate whether an expressive and/or instrumental motive for violence is apparent based on the police synopsis for a guilty plea and/or based on psycholegal reports and/or notes within the subject’s chart. If the subject has multiple admissions to the program across time for different violent offenses, use the synopsis for a guilty plea and/or the psycholegal report and/or notes which relates to the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault), use the synopsis for a guilty plea and/or psycholegal report and/or notes which relate to the most recent violent index offense. Expressive motive for violence would include allegations in which violence occurred in reaction to a dispute, provocation (perceived or real) or interpersonal conflict. Instrumental motive for violence would include allegations in which violence was used for a clearly identifiable purpose other than responding to provocation (perceived or real) such as co-opting resources, obtaining sex, avoiding apprehension. If it is not possible to
discern whether an expressive and/or instrumental motive for violence was present, check the “No” box and skip to question #35 below. In determining whether a motive for the violent offense is apparent, the presence or absence of symptoms or the effect of these symptoms on the subject’s motive for violence should not be considered. For example, if a subject is diagnosed with delusions of jealousy regarding his partner and assaults his partner in an argument about infidelity, the apparent motive would be expressive though the violence is predicated on the subject’s symptoms and may not have a basis in objective reality.

33) Expressive Motive for Violence: [ ] Y Yes [ ] N No

- Indicate whether or not an expressive motive for violence is apparent based on police synopsis for a guilty plea and/or based on psycholegal reports and/or notes within the subject’s chart. If the subject has multiple admissions to the program across time for different violent offenses, use the synopsis for a guilty plea and/or the psycholegal report and/or notes which relate to the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault), use the synopsis for a guilty plea and/or psycholegal report and/or notes which relate to the most recent violent index offense. Expressive motive for violence would include allegations in which violence occurred in reaction to a dispute, provocation (perceived or real) or interpersonal conflict. In determining whether an expressive motive for the violent offense is apparent, the presence or absence of symptoms or the effect of these symptoms on the subject’s motive for violence should not be considered. For example, if a subject is diagnosed with delusions of jealousy regarding his partner and assaults his partner in an argument about infidelity, the apparent motive would be expressive though the violence may be predicated on the subject’s symptoms/perceptions and not on objective reality.

34) Instrumental Motive for Violence: [ ] Y Yes [ ] N No

- Indicate whether an instrumental motive for violence is apparent based on the police synopsis for a guilty plea and/or based on psycholegal reports and/or notes within the subject’s chart. If the subject has multiple admissions to the program across time for different violent offenses, use the synopsis for a guilty plea and/or the psycholegal report and/or notes which relate to the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault), use the synopsis for a guilty plea and/or psycholegal report and/or notes which relate to the most recent violent index offense. Instrumental motive for violence would include allegations in which violence was used for a clearly identifiable purpose other than responding to provocation (perceived or real) such as co-opting resources, obtaining sex, avoiding apprehension/arrest. In determining whether an instrumental motive for the violent offense is apparent, the presence or absence of symptoms or the effect of these symptoms on the subject’s motive for violence should not be
considered. For example, if a subject is diagnosed with delusions of grandeur and believes he is a prophet who must kill another person in order to save the world from destruction, the apparent motive would be instrumental even though the violence is predicated on the subject’s symptoms/perceptions and not on objective reality.

35) Use of Alcohol at Time of Violent Offense: [ ] Y Yes [ ] N No

- Indicate whether subject was using alcohol at the time of the violent index offense or just prior to the violent index offense according to the police synopsis for a guilty plea, the Crown’s Show Cause, the police record of arrest, the intake assessment form and notes or psycholegal medical reports in the chart. If there is no reference to alcohol use at the time of the offense, check the No box. If the subject has multiple admissions to the program across time for different violent offenses, use the admission/arrest information, or psycholegal report(s) that relate to the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault), use the admission/arrest information, or psycholegal report(s) that relate to the most recent violent index offense.

36) Use of Illicit Drugs at Time of Violent Offense: [ ] Y Yes [ ] N No

- Indicate whether subject was using illicit drugs at the time of the violent index offense or just prior to the violent index offense according to the police synopsis for a guilty plea, the Crown’s Show Cause, the police record of arrest, the intake assessment form and notes or psycholegal medical reports in the chart. If there is no reference to illicit drug use at the time of the offense, check the No box. If the subject has multiple admissions to the program across time for different violent offenses, use the admission/arrest information, or psycholegal report(s) that relate to the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault), use the admission/arrest information, or psycholegal report(s) that relate to the most recent violent index offense.

37) Time of Violent Offense:

[ ] 6:00pm-11:59pm
[ ] 12:00am-5:59am
[ ] 6:00-11:59am
[ ] 12:00-5:59pm
[ ] Unknown

Note the time of the alleged violent index offense as noted in the police synopsis for a guilty plea. Check “Unknown” if the chart does not specify the time the violent offense occurred. If the subject has multiple admissions to the program across time for different violent offenses, use the synopsis for a guilty plea which relates to the most serious violent index offense. If the subject has multiple admissions to the program for the same
type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault),
use the synopsis for a guilty plea that relates to the most recent violent index offense. If
two or more violent offenses are noted in the relevant synopsis of a guilty plea and the
offenses occurred at different time periods, record the time period of the most serious
violent offense. If two or more violent offenses are noted in the relevant synopsis and
the offenses are of equal seriousness and occurred at different times, record the time
period of the first violent offense in the sequence of violent offenses. Seriousness of
violence is discerned through application of the modified Cormier-Lang offense
classification system. The offense with the highest score on the offense classification
system is the most serious offense.

38) Location of Offense:

- In-Home of Offender
- Other Residence
- Street/Outdoors
- Hospital/Mental Health Clinic
- Other
- Unknown

Note the location where the (alleged) violent index offense occurred as noted in the
police synopsis for a guilty plea. If the subject has multiple admissions to the
program across time for different violent offenses, use the synopsis for a guilty plea
which relates to the most serious violent index offense. If the subject has multiple
admissions to the program for the same type of violent offense (e.g. 3 separate
admissions for 3 separate occurrences of assault), use the synopsis for a guilty plea
that relates to the most recent violent index offense. Check only one category. Check
“In-Home of Offender” if the violence occurred in the residence of the offender.
Check “Other Residence” if the violence occurred in the residence of someone other
than the offender. If the violence occurred at a residence where both the offender
and victim live, check “In-Home of Offender”. Check “Street/Outdoors” if the
violence occurred out of doors irrespective of whether or not the violence occurred
on the property of the offender or other person. Include within this category violent
offenses occurring within public parking garages or parking garages with restricted
access such as in a condominium or an apartment building. Also include violence
occurring within transit/subway stations or on public transit within this category.
Check “Hospital/Mental Health Clinic” if the violence occurred in a medical or
mental health facility (in-patient or outpatient). Check “Other” if the violence
occurred at a location other than those specified above. Possible locations which
might fall within the “Other” category may include but are not limited to jail,
hostel/shelter, courthouse, and probation office. Also include indoor public locations
such as, for example, shopping malls, movie theatres, banks etc. Check “Unknown”
if the chart does not specify the location that the violence occurred. If two or more
offense locations are noted in the relevant synopsis for a guilty plea (e.g. violence
started in the home of offender and then moved outdoors), note the location of the
most serious violent offense. Seriousness of violence is discerned through
application of the modified Cormier-Lang offense classification system. The offense with the highest score on the offense classification system is the most serious offense. Where more than one victim experienced the same level of seriousness of violent offense or where the same level of seriousness of violent offense occurred in two or more locations, use the location of the first victim in the sequence of violent events to designate the location of the violent index offense.
Current Life Circumstances (39 - 42)

Current Life Circumstances

39) Meagre Income: [ ] Y Yes [ ] N No

- Note whether the subject had no stated income or was receiving general welfare assistance at the time of the (alleged) violent offense as noted on the intake assessment form, the record of arrest or the Crown’s Show Cause. If the subject had no stated income or was receiving general welfare assistance, tick the “Yes” box. If the subject had an income other than general welfare assistance, including income or financial support from his/her family, tick the “No” box. If the subject was residing with family and there is no stated income on the intake assessment form or record of arrest or Show Cause, tick the “No” box. However, if the subject was residing with family and was also receiving general welfare assistance, tick the “Yes” box. If the subject has multiple admissions to the program for different violent offenses, use the admission/arrest information relating to the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault), use the admission/arrest information which relates to the most recent violent index offense. If there is disagreement between sources of information as to income status at offense (e.g. divergence between income status reported on the intake assessment form and the record of arrest) give preference to the intake assessment form and then to the record of arrest as sources of information if the intake assessment was completed shortly after the subject’s arrest. If the intake assessment is dated several weeks after the date of arrest, give preference to the record of arrest as a data source when reporting income status at arrest.

40) Homeless: [ ] Y Yes [ ] N No

- Note whether the subject has no fixed address at the time of the index violent offense(s) as noted in the record of arrest or synopsis for a guilty plea. Individuals residing in a hostel or homeless shelter at the time of the index offense should be recorded as homeless. If the subject has multiple admissions to the program for different violent offenses, use record of arrest or synopsis for a guilty plea for the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense (e.g. 3 separate admissions for 3 separate occurrences of assault), use record of arrest or synopsis for a guilty plea which relates to the most recent violent index offense.
41) Use of Mental Health Services: [   ] Y  Yes [   ] N  No

- Note whether the subject was receiving service from a mental health professional such as a psychiatrist, psychologist, or mental health case manager at the time of the index offense by ticking the appropriate box. If the subject has multiple admissions to the program for different violent offenses, note whether he/she was receiving service from a mental health professional at the time of the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense, note whether he/she was receiving service from a mental health professional at the time of his/her most recent violent index offense.

42) On Bail/Probation or In-Custody: [   ] Y  Yes [   ] N  No

- Note whether the subject was on a recognizance (i.e. bail order) other than a peacebond or had a probation or conditional sentence order or was in jail at the time of the index violent offense(s) as noted in the police record of arrest, Crown’s Show Cause or police synopsis for a guilty plea or by the presence of a bail or probation order in the subject’s chart which predates the violent index offense. If the subject has multiple admissions to the program for different violent offenses, note whether he/she was on a recognizance or probation or conditional sentence order at the time of the most serious index offense. If the subject has multiple admissions to the program for the same type of violent offense, note whether he/she was on a recognizance or probation or conditional sentence order at the time of his/her most recent violent offense.
43) Postal Code: [ _____ _____ _____ _____ _____ ]

- Record the six-character alphanumeric postal code of the residence of the offender at the time of arrest as noted on the intake assessment form or the police record of arrest. If the subject has multiple admissions to the program for different violent offenses, record the postal code of the residence of the subject at the time of the most serious violent index offense. If the subject has multiple admissions to the program for the same type of violent offense, record the postal code of the residence of the subject at the time of the most recent violent index offense. If no postal code is present, use the individual’s street address to obtain his/her postal code through Canada Post’s online Postal Code Look-Up database: http://www.canadapost.ca/tools/pcl/bin/advanced-e.asp. In situations where an individual has no fixed address, the last known address prior to the relevant violent index offense identified in the file will be used. Individuals residing in shelters will be geo-coded according to the address of the shelter. Where no address is available (e.g. the individual is living on the street) the postal code of the address of the relevant violent index offense will be used as a proxy indicator of the individual’s neighbourhood residence. The address of the offense location may be found in the police record of arrest or the police synopsis for a guilty plea.

44) Census Tract Code: [ _____ _____ _____ _____ _____ _____ ]

- Using the above postal code, obtain the seven-character numeric code of the census tract that the subject resides within. The census tract numeric code is obtained using Statistics Canada’s Postal Code Conversion File. The Postal Code Conversion File (PCCF) provides the correspondence between the six character postal code and Statistics Canada’s standard geographical areas such as census tracts or dissemination areas.
## Appendix A1
### Coding Key Form

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<th>Name of Subject</th>
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Appendix B
Research Ethics Board Letter of Approval

UNIVERSITY OF TORONTO
Office of the Vice-President, Research and Associate Provost
Ethics Review Office

PROTOCOL REFERENCE #19749

June 28, 2007

Dr. Cheryl Regehr
Faculty of Social Work
246 Bloor Street W
Toronto, ON M5S 1A1

Mr. Frank Sirotich
Faculty of Social Work
246 Bloor Street W
Toronto, ON M5S 1A1

Dear Dr. Regehr and Mr. Sirotich:

Re: Your research protocol entitled “Putting Criminal Violence into Context: A Multi-Level Analysis of Correlates of Criminal Violence among Early- and Late-Start Mentally Disordered Offenders”

ETHICS APPROVAL

Original Approval Date: June 28, 2007
Expiry Date: June 27, 2008

We are writing to advise you that the Health Sciences I Research Ethics Board has granted approval to the above-named research study, for a period of one year. Ongoing projects must be renewed prior to the expiry date.

During the course of the research, any significant deviations from the approved protocol (that is, any deviation which would lead to an increase in risk or a decrease in benefit to participants) and/or any unanticipated developments within the research should be brought to the attention of the Ethics Review Office.

Best wishes for the successful completion of your project.

Yours sincerely,

Jenny Peto
Ethics Review Coordinator
Appendix B

Research Ethics Board Approval: First Annual Renewal

University of Toronto
Office of the Vice-President, Research
Office of Research Ethics

PROTOCOL REFERENCE #19749

Dr. Cheryl Regehr
Faculty of Social Work
246 Bloor Street W
Toronto, ON M5S 1A1

Mr. Frank Sirotich
Faculty of Social Work
246 Bloor Street W
Toronto, ON M5S 1A1

Dear Dr. Regehr and Mr. Sirotich:

Re: Your research protocol entitled, “Putting Criminal Violence into Context: A Multi-Level Analysis of Correlates of Criminal Violence among Early- and Late-Start Mentally Disordered Offenders” by Dr. C. Regehr (supervisor), Mr. F. Sirotich (PhD candidate)

ETHICS APPROVAL

Original Approval Date: June 28, 2007
Expiry Date: June 27, 2009
Continuing Review Level: 1*
Renewal: 1 of 4

We are writing to advise you that the Health Sciences Research Ethics Board has granted annual renewal of ethics approval to the above referenced research study through the REB’s expedited process. Please note that all protocols involving ongoing data collection or interaction with human subjects are subject to re-evaluation after 5 years. Ongoing projects must be renewed prior to the expiry date.

Any changes to the approved protocol or consent materials must be reviewed and approved through the amendment process prior to its implementation. Any adverse or unanticipated events should be reported to the Office of Research Ethics as soon as possible.

Best wishes for the successful completion of your project.

Yours sincerely,

[Signature]

Marianna Richardson
Research Ethics Coordinator

*See Continuing Review Guidelines on the Office of Research Ethics website -

Appendix B
Research Ethics Board Approval: Second Annual Renewal

University of Toronto
Office of the Vice-President, Research
Office of Research Ethics

PROTOCOL REFERENCE #19749

June 4, 2009

Dr. Cheryl Regehr
Faculty of Social Work
246 Bloor Street W
Toronto, ON M5S 1A1

Mr. Frank Sirotich
Faculty of Social Work
246 Bloor Street W
Toronto, ON M5S 1A1

Dear Dr. Regehr and Mr. Sirotich:

Re: Your research protocol entitled, “Putting Criminal Violence into Context: A Multi-Level Analysis of Correlates of Criminal Violence among Early- and Late-Start Mentally Disordered Offenders” by Dr. C. Regehr (supervisor), Mr. F. Sirotich (PhD candidate)

ETHICS APPROVAL

Original Approval Date: June 28, 2007
Expiry Date: June 27, 2010
Continuing Review Level: 2*
Renewal: 2 of 4

We are writing to advise you that you have been granted annual renewal of ethics approval to the above-referenced research study through the REB’s delegated process. Please note that all protocols involving ongoing data collection or interaction with human participants are subject to re-evaluation after 5 years. Ongoing projects must be renewed prior to the expiry date.

Any changes to the approved protocol or consent materials must be reviewed and approved through the amendment process prior to its implementation. Any adverse or unanticipated events should be reported to the Office of Research Ethics as soon as possible. If your research has funding attached, please contact the relevant Research Funding Officer in Research Services to ensure that your funds are released.

Best wishes for the successful completion of your project.

Yours sincerely,

Mariana Richardson
Research Ethics Coordinator