Change and Continuity in Criminal Offending: Criminal Trajectories of the "Toronto" Sample

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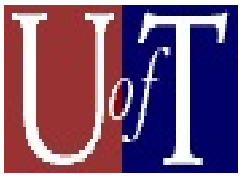

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➤ A C K N O W L E D G M E N T S

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➤ EXECUTIVE SUMMARY

The past two decades have witnessed considerable advances in the longitudinal analysis of criminal activity over the life span. As Piquero (2008) noted, developments in methodological and statistical techniques have now "caught up" with longitudinal data, providing a "unique window within which to study, document, and understand developmental trajectories of criminal activity" (p. 23).

Much of this research has been influenced by the seminal work of Alfred Blumstein and his colleagues on *criminal careers*[1] (e.g., Blumstein, Cohen, Roth, & Visher, 1986). Blumstein et al. (1986, p. 12) defined a criminal career as "the longitudinal sequence of offending committed by an individual offender" that is characterized during a lifetime by three components: an initiation or onset; a termination or end; and a duration or career length (Blumstein, Cohen, & Farrington, 1988). Criminal career research is concerned with how "careers are initiated, how they progress, and why they are discontinued" (Petersilia, 1980, p. 322). During their careers, offenders may display changes and continuities in criminal activity on various dimensions, including rate, type, timing, versatility, and severity. It is the pattern of transition and stability on these sorts of variables across different developmental periods, as well as the underlying reasons for the observed patterns, that is of interest to researchers, theoreticians, practitioners, and policy makers (Barnett, Blumstein, & Farrington, 1987; Piquero & Mazerolle, 2001). Today, the notion of a criminal career or criminal trajectory has become a central paradigm for social scientists interested in studying "crime over time." The present investigation holds firm to this notion and aims to elucidate the changes and continuities in the nature and pattern of criminal activity over time in a Canadian sample of offenders.

[1] Although the term "criminal career" is commonly used in the relevant literature and is used throughout this report, we do not mean for the term to be taken literally, that is, to imply that individuals in the sample have, in some way, elected to follow this particular pathway as a "career" nor do we mean to define the individuals solely on the basis of this one dimension. Rather, we use the term to describe the course of their criminal activity on various dimensions, including the rate, type , timing, severity, and so forth. As well, the term is used here in a way that is consistent with a *life course* perspective on criminal behaviour (Thornberry, 2005).

The Present Report

This report presents findings on the changes and continuities in criminal offending evinced by 378 male youth who received open custody dispositions as Phase II adolescents, comprising the "Toronto" sample. Analysis of the data and presentation of the results were guided by a series of empirical questions and "topical issues" posed as section headings in the Results chapter and addressed within that section. An aim of the analyses was to examine the nature and pattern of offending on various dimensions, including the frequency, rate, type, timing, severity, and versatility of offending. In addition, two particular foci of the analyses were on the changes and continuities in offending over the developmental periods of adolescence and early adulthood and on the relationship between crime-related events in adolescence (e.g., rate of offending, receiving a custody disposition) and the rate of offending in adulthood. Developmental theorists and researchers stress the importance of advancing knowledge about developmental transitions (e.g., Rutter & Sroufe, 2000) and it was our aim to contribute to this issue with respect to the criminal activity of the Toronto sample. For the Ministry of Children and Youth Services (MCYS), such information could potentially contribute to the development of effective early intervention and prevention programs for at-risk children and youth, shape treatment and rehabilitation services for young people in contact with the justice system, and inform criminal justice policy and practice. Some of the questions examined in this report include:

- Were certain types of offences more common at certain ages?
- Did offenders become more versatile or specialized in their offending over time?
- Did offences become more severe or less severe over time?
- How was adolescent offending related to adult offending?

Last, many of the analyses in this report are descriptive and the data are presented in the form of Tables and Figures. However, in order to address certain empirical questions, sophisticated analytical techniques also were used, including latent Poisson classes (LPC), generalized linear models (GLM), and Cox proportional hazards, as well as group-based trajectory analyses to capitalize on the longitudinal nature of the "Toronto" data set. In this regard, not only does this report address substantive issues about the patterning of offending over time but it also advances

current statistical issues about longitudinal data analysis. For example, in an article published in *Advances and Applications in Statistics* (Day, Bevc, Duchesne, Rosenthal, Rossman, & Theodor, 2007; see also Section 3.13 and Chapter 4 of this report), a novel method was proposed for comparing the accuracy of different prediction methods for analyzing complex longitudinal models using a technique called *cross-validation* and a statistical method was presented for adjusting criminal frequency data (λ) for the age at offence-age at conviction time lag and time at-risk. These adjustments allowed for greater precision in modelling the criminal offence data.

Sample, Data, and Coding

The sample of 378 offenders was derived from the population of 769 Phase II youth who had served a sentence, between 1986 and 1996, at one of two open custody group homes operated by The Hincks-Dellcrest Centre (HDC), a children's mental health centre in Toronto. The sample is a 50% random selection of the residents who served a sentence during this period at one of the HDC houses.

The criminal offences data were based on official records and derived from four sources:

1. the (Ontario) Ministry of Community and Social Services (MCSS);
2. the (Ontario) Ministry of Correctional Services (MCS);
3. the Canadian Police Information Centre (CPIC);
4. Predisposition Reports (PDR) maintained in the client records of the HDC.

Four data sources were used to ensure a high degree of completeness and accuracy of the sequenced, longitudinal court contact data, which is essential for this type of research (Arnold & Kay, 1999; Smith, Smith, & Norma, 1984). As youth court records are confidential according to the Young Offenders Act (YOA) (the Act pertaining to most of the criminal offences of our sample), the youth court data were obtained through a court order signed by a youth court judge.

With respect to the coding of the data, information was coded for each offender about *all* their unique court contacts, that is, all court contacts arising from a new set of charges, up until March

17, 2001, the end of the follow-up period. An extensive coding scheme was developed and a wide range of variables was created in order to capture as much information about their criminal activity as possible, particularly about the various dimensions of the criminal trajectory (e.g., rate, type, severity, versatility, duration). Additional information included in the data set about the offenders were date of birth, length of stay at the HDC house (both time given and time served, in days), and, for those seen by the staff psychiatrist, psychiatric diagnoses received while at the HDC youth homes.

Summary of Main Findings

The criminal trajectories of the Toronto sample were tracked for an average of 12.1 years (*SD* = 3.0, range = 5.8 - 22.8), from early adolescence into adulthood, with 73% of the sample being followed for 10 years or more. Their average age at the time of the most recent follow-up was 27.6 years (*SD* = 2.6, range = 22.2 - 33.5). The average trajectory length was 8.4 years (*SD* = 4.5). During these trajectories, the sample amassed a total of 4,964 court contacts, which amounted to an average of 13.1 court contacts. More specifically, coding only the most serious offence (MSO) at each court contact, these included 2,387 property offences, 1,189 violent offences, 296 drug offences, 141 sex offences, 304 "other" offences (e.g., obstruction of justice, dangerous driving), and 647 administration of justice offences (i.e., "breach" offences). It was also found that, compared to the average for the sample, an early age for a first court contact was associated with a higher offence rate and longer criminal trajectory.

In terms of the severity of their offending (which was based on the seriousness codes from the Ministry of Correctional Services Statistics Reporting User Manual; Ministry of the Solicitor General and Correctional Services, 1995), the data for the overall sample showed an increase to age 23, followed by a steady decline. The diversity of offending (based on a Diversity of Offending Index score, which reflects their involvement in six offence types, i.e., property, violent, drug, sex, other, and administration of justice or "breach"), also peaked at age 23, on average, followed by a decline until age 30 (the second peak at age 30 reflects the offending activity of a small group of offenders). Although both the severity and diversity of offending

peaked at age 23, the rate of offending (based on the frequency of court contacts at each age) peaked six years earlier, on average, at the age of 17. Therefore, as the rate of offending declined in late adolescence, the severity and diversity of offending did not decrease until a number of years later, in early adulthood. Thus, it appears that the various dimensions of the criminal trajectory unfold at different time periods over the course of development from adolescence to adulthood (see also Hoeve, Blokland, Dubas, Loeber, Gerris, & van der Laan, 2008).

In terms of the types of offences in which they engaged over time, four findings were of interest. First, the involvement in property offences, relative to the four other types of offence categories, was much higher in early adolescence than at any other time period. Second, by age 17, the relative involvement in violent and other offences increased, as the relative involvement in property offences decreased. Third, sexual offences were primarily committed during adolescence and, fourth, drug offences occurred primarily in adulthood.

Over the course of their criminal trajectories, the vast majority of the sample engaged in a range of offence types, primarily property, violent, and breach. At the same time, based on the Diversity of Offending Index score (D), 12 "specialists" (i.e., those who committed only one type of the six offence categories) were found, comprising sex offenders (n = 4), violent offenders (n = 4), and property offenders (n = 4). The specialists committed few offences and had few court contacts and very brief criminal trajectories (i.e., less than two years).

With regard to the relationship between the rate of offending in adolescence and the rate of offending in adulthood, little evidence for continuity was found. In other words, the rate of offending in adolescence was largely unrelated to the rate of offending in adulthood. Possible reasons for this observation are provided. With regard to the relationship between dispositions (i.e., sentences) in adolescence and offending in adulthood, a greater number of days spent in secure custody as an adolescent and a greater number of days spent on probation as an adolescent were associated with a higher rate of offending in adulthood.

With regard to the group-based trajectory analyses, four groups were identified. More than half the sample were low-rate offenders (57.4%) who committed relatively few offences and had relatively brief criminal trajectories. A small percentage of the individuals were high rate offenders whose offence trajectories peaked in adulthood (7.7%). This group had lengthy criminal trajectories and incurred a large number of court contacts. As well, a small percentage of the sample were found to have a high rate of offending that was largely limited to the adolescent period (5.3%). Last, 29.6% of the sample were found to be moderate rate offenders whose offending rate was steady but moderate over time. This latter group had the second longest trajectory length, 11.0 years, on average, which was only slightly shorter than the 12.1 years, on average, for the high rate chronic group.

Last, it is significant and noteworthy that, of the 248 youth who were seen by the HDC psychiatrist, 82% (n = 203) met the diagnostic criteria for at least one psychiatric disorder. This figure stands in sharp contrast to the 15% to 21% of children and youth in the general population in Canada who are affected by a mental health disorder (MCYS, 2006). The most common disorders seen in the Toronto sample were Substance Abuse Disorder (33.9%), Personality Disorder (22.2%), Antisocial Personality Disorder/Conduct Disorder (20.2%), Adjustment Disorder (13.7%), Impulse Control Disorder (12.9%), Sexual Disorder and Gender Identity Disorder (11.7%), and Mood Disorder (10.9%).

Policy and Practice Implications

Eight findings emerged from this study that have policy and practice implications. First, the results indicated that four distinct trajectories best represent the offending patterns among this sample. It is important that policy and practice reflect such differences, work towards identifying which trajectory a particular young person might follow, research the most effective approaches with each group, and apply sanctions and rehabilitation interventions differentially to prevent or delay further criminal activity. Second, the offending pattern of the Toronto sample was characterized by a high degree of versatility. In other words, across all four trajectory groups, the offenders tended to engage in more than one offence type, and usually three or four, including

property, violent, and other. Additionally, over the course of their trajectories, the patterning of their involvement in the different types of offences indicated greater involvement in property offences in the early years of adolescence followed by a steady decline and a concomitant increase in violent and other offences beginning at age of 17. Ideally, early intervention and prevention programs would effectively prevent or delay a person's onset of criminal behaviour. However, for those individuals who do have an early age for contact with the justice system, effective sanctions or interventions at the time of their initial contact with the system may prevent or delay an escalation in the diversity of offending. Moreover, understanding the factors that give rise to a diversity of offending is an area for further investigation.

Third, in comparison to offenders with a later age of onset for a first court contact, an early age for a first court contact was associated with a higher rate of offending and a longer criminal trajectory. This is a robust finding in the literature and emphasizes and supports the need for early intervention and prevention efforts. Fourth, over the course of their criminal trajectories, nearly half the offences committed by the sample were property crimes. A response to those who engage in property offences by the criminal justice system might include extrajudicial measures and sanctions and diversion programs that focus on criminogenic thinking and cognitive justifications that support covert offending (e.g., the idea that property crimes are "victimless" because no one gets hurt), associations with a delinquent peer group, and alcohol and drug use and abuse. However, further research is needed on the effectiveness of such programs for youth who engage in property offences. Fifth, while the rate of offending decreased at about age 18, the level of diversity and severity continued to increase up until about age 23. Understanding the factors that influence offending patterns (both escalations and de-escalations) in terms of the rate, versatility, and severity is an area for further investigation.

Sixth, although most of the drug offences began in late adolescence and early adulthood, a small number of high rate drug offenders (n = 21) was found in the Toronto sample. If this subgroup could be identified early, they could be targeted for specialized intervention. Early involvement with drug offences also may be associated with co-occurring psychosocial and mental health

problems (Chassin, Ritter, Trim, & King, 2003), which could be addressed in treatment and rehabilitation. Seventh, compared to other types of offenders, sex offenders in the Toronto sample were more likely to be "specialists" (including one-time offenders; see Table 6) whose offences tended to be limited to the adolescent period (see Figure 7). However, the findings with respect to sex offenders in the Toronto sample may not be generalizable to other samples because of the high number of sex offenders in the HDC houses and the availability of treatment programs for this population. Further research is needed to better understand the trajectories of sex offences in this and other samples.

Eighth, 82% of the youth who were seen by the HDC psychiatrist met the diagnostic criteria for one or more mental health disorder. Such a finding supports the frequent suggestion (e.g., Grisso, 2004) that the provision of psychosocial and mental health assessment and treatment services for this population is of paramount importance and supports the provision of a continuum of comprehensive services both within the institutional facilities of the criminal justice system and within the community.

In conclusion, this study addressed a number of issues about the longitudinal patterning of criminal offending in a Toronto sample. The study also identified a number of areas for further investigation, including: exploring the relationship between psychiatric disorders and criminal trajectories; teasing apart the causal relations between placement in an open or secure custody facility as an adolescent and adult offence patterns; identifying childhood predictors of trajectory group membership; looking at trajectories in later adulthood; and replicating the study findings with a second sample of offenders.

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1.0 INTRODUCTION

"Life must be lived forwards, but can only be understood backwards."

- Søren Kierkegaard

"Criminal career dimensions are useful to visualize lives."

- Rice, Cohn, and Farrington (2005, p. 247)

1.1 Study Overview

Every crime scene tells a story and it is the role of the investigating officers to piece together the story behind the event, based on the available evidence. Many crime stories, as they unfold over time, are recounted daily in the news media, ensuring that the issue of crime is kept at the forefront of the mind of the general public. The information conveyed to the public about crimes and criminals, however, is largely superficial and incomplete. Often missing from the media reports, unlike that which unfolds at a criminal trial, for example, is the back story of the individual offenders, their criminal histories, and the connections between the events in their lives and the particular criminal incidents, as well as the events that transpire just before the crime was committed. Using an analogy from Nagin and Tremblay (2005), the difference can be likened to that of a photograph and a moving picture. Whereas the former provides a mere snapshot of a single point in time, the latter offers a sense of perspective on the sequence of events as they unfold over time. In the context of statistical analysis, Nagin and Tremblay assert, "photographs are the equivalent of a cross-sectional analysis of individual differences at one point in time....Longitudinal analysis of developmental trajectories is the equivalent of cinema" (pp. 875-876).

The research described in this report reflects that of a moving picture rather than a photograph. It concerns a longitudinal investigation of the criminal activity of 378 offenders who comprise the "Toronto" sample. In this research, official records were tracked for an average of 12.1 years, during which time the sample amassed a total of 4,964 unique court contacts, that is, court contacts arising from a new set of charges. It is this longitudinal sequence of criminal activity

that constitutes their criminal trajectories and is the focus of the present report. The overall aim of the research was to examine the nature and pattern of offending over time with respect to such dimensions as frequency, rate, severity, versatility, type, and timing (Blumstein, Cohen, Roth, & Visher, 1986; Cohen, 1986).

The sample under investigation amassed a total of 4,964 unique court contacts. It is this longitudinal sequence of criminal activity that constitutes their criminal trajectories and is the focus of this study.

Because of the amount of detail in the Toronto data set, a large number of issues about criminal trajectories may be examined (see Day, Bevc, Theodor, Rosenthal, & Duchesne, 2005). Some of the questions addressed in this report include:

- Were certain types of offences more common at certain ages?
- Did offenders become more versatile or specialized in their offending over time?
- Did offences become more severe or less severe over time?
- How was adolescent offending related to adult offending?

1.1.1 Study Strengths

The design of this investigation offers a number of strengths for the analysis of crime across the life-course, including:

1. the sample size of 378 is large enough to allow for sophisticated statistical analyses;
2. the data were derived from four sources to increase the accuracy and completeness of the criminal offending information;
3. the sample includes low, moderate, and high rate offenders, allowing for an analysis of heterogeneity in criminal offending;

4. the data set extends from late childhood/early adolescence into adulthood and allows for an examination of the changes and continuity of criminal activity across this developmental transition;
5. a wide range of variables about each unique court contact was coded, allowing for a variety of empirical questions to be examined;
6. the Toronto sample provides a regional (Ontario) perspective on the criminal career paradigm;
7. the data set could be expanded *vertically*, to include additional offenders, and *horizontally*, to include additional criminal court contact data and a longer follow-up period.

1.1.2 Study Limitations

The study has a number of limitations, largely relating to the lack of information in our data set that were not gathered for this study, including:

1. information on the family background of the sample or on significant life events;
2. information about the treatment or rehabilitation received at The Hincks-Dellcrest Centre (HDC) houses or elsewhere; and
3. information about the context of the criminal events.

In addition, two other limitations of the study concern the limited criminal information and relatively small number of offenders at the early ages (i.e., before age 14) and later ages (i.e., after age 27) and that the sample includes relatively few *very* low rate offenders and no nonoffenders, which limits the ability to examine the issue of criminal desistance.

1.1.3 Organization of the Report

This report is organized into six Chapters. Chapter 1 introduces the study and briefly reviews the literature on the criminal career paradigm. Chapter 2 provides an overview of the research methodology, including a description of the sample, data, and coding. Chapter 3 reports on the

descriptive results. Chapter 4 presents the results for the group-based trajectory analysis. Chapter 5 considers the social policy and practice implications of the study. Chapter 6 presents the conclusions and directions for further research. The Appendix provides a brief summary and synopsis of the criminal trajectories of four individuals in the Toronto sample, as case vignettes.

1.2 Literature Review on Criminal Careers

Over the past two decades, the criminal career paradigm has dominated the criminology literature, as significant theoretical and empirical gains have been made to advance this important concept. A "criminal career" or life history approach to investigating crime has a long history, however, dating back to the 1900s and the ethnographic research methodology used at the University of Chicago. As well, the term "career" appears in the title of a 1931 book published by Clifford R. Shaw, *The natural history of a delinquent career*. It should be noted that the term "criminal career" is not meant to imply that offenders have necessarily selected crime as their primary source of remuneration for work, only that their offending behaviour engenders a developmentally progressive involvement in antisocial activity (Blumstein, Cohen, & Hsieh, 1982).

1.2.1 Criminal Career Paradigm

In their seminal work, Blumstein et al. (1986, p. 12) defined a criminal career as "the longitudinal sequence of offending committed by an individual offender" that is characterized during a lifetime by three components: an initiation or onset; a termination or end; and a duration or career length (Blumstein, Cohen, & Farrington, 1988). Criminal career research is concerned with how "careers are initiated, how they progress, and why they are discontinued" (Petersilia, 1980, p. 322). During their careers, offenders may display changes and continuities in criminal activity on various dimensions, including rate, type, timing, versatility, and severity. It is the pattern of transition and stability on these sorts of variables across different developmental periods, as well as the underlying reasons for the observed patterns, that is of interest to

researchers, theoreticians, practitioners, and policy makers (Barnett, Blumstein, & Farrington, 1987; Piquero & Mazerolle, 2001).

Describing within-individual trajectories is of particular relevance to research on chronic offenders whose criminal career or trajectory often begins at an early age and persists into adulthood. These individuals are known to account for a large number of court contacts, commit serious violent offences, and pose the greatest challenge to the criminal justice system (Piquero, Farrington, & Blumstein, 2003, 2007). Understanding their criminal trajectories will facilitate the development of more effective criminal justice policies and treatment and rehabilitation programs, yet surprisingly little research on criminal trajectories has been conducted in Canada. Our aim is to fill this research gap.

A criminal career is defined as "the longitudinal sequence of offending committed by an individual offender" (Blumstein, Cohen, Roth, & Visher, 1986, p. 12).

Influential studies that have capitalized on the criminal career paradigm include Sheldon and Eleanor Glueck's investigation in the 1930s of 500 delinquents and 500 nondelinquents (Glueck & Glueck, 1940, 1950), the Philadelphia studies by Marvin Wolfgang and his colleagues (Tracy, Wolfgang, & Figlio, 1990; Wolfgang, Figlio, & Sellin, 1972), the Cambridge (UK) Study in Delinquent Development (Farrington & West, 1990), and the more recent Pittsburgh Youth Study (Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998) and Montreal Longitudinal Experimental Study (Nagin & Tremblay, 1999; Tremblay, 2001). Two key findings from these longitudinal studies are that: (a) an early age of onset portends a lengthy criminal career, characterized by a wide range of antisocial behaviour, including more serious and violent offences; and (b) a small proportion of offenders (between 5% and 10%) accounts for a disproportionate number of criminal charges, arrests, and convictions (about 60% to 70%).

The criminal career notion is not without controversy. The main criticism arises from Michael Gottfredson and Travis Hirschi's (1990) contention that criminal activity throughout the lifespan is a function of a single, unchanging dimension or general propensity (i.e., low self-control) that is invariant across time, place, and social conditions and that, following the classic age-crime curve, offending invariably rises in middle adolescence, peaks at age 17 or 18, and declines sharply thereafter. Consequently, studying presumed age-related criminal activity cannot yield meaningful insights into criminal careers. Gottfredson and Hirschi were also critical of the prominent position that the criminal career paradigm has attained in the literature and the considerable financial investments in funding longitudinal research, arguing that these expensive studies will yield few meaningful findings and so cannot easily be justified. Indeed, Tracy and Klempf-Leonard (1996) noted that Gottfredson and Hirschi added an important element of debate to the issue of criminal career research and shook up a previously complacent criminology field. Tracy and Klempf-Leonard also concede that Gottfredson and Hirschi's arguments are not without merit, as the ability of longitudinal research to clearly and unequivocally elucidate the nature and pattern of criminal activity over time or to effectively shape criminal justice policy has yet to be realized. At the same time, it can be said that the arguments for a general propensity theory of criminality are overstated and do not explain, for example, the continued criminal activity of some individuals well into their 30s, 40s, 50s, and beyond and the unpredictable changes that can occur in offending type, rate, and severity evinced by some offenders (DeLisi, 2005).

1.2.2 Challenges of Criminal Career Research

Not surprisingly, given the complex nature of criminal behaviour, criminal career research has its challenges. Some of these challenges are methodological. A lack of consensus about how to operationally define versatility, for example, has hampered efforts to elucidate the changes and continuities in criminal trajectories. Over the past decade, however, considerable developments in the ways in which criminal trajectories are studied have led to important empirical and theoretical insights. A 2004 issue of the *Journal of Quantitative Criminology* published a

number of articles that addressed some methodological challenges of the criminal career research (Eggleston, Laub, & Sampson, 2004; Nagin, 2004; Sampson, Laub, & Eggleston, 2004). An issue examined in a number of these papers, for example, was the use of semi-parametric mixed Poisson regression (SPMM) and the Bayesian Information Criterion (BIC) to determine the appropriate number of latent offender groups in a sample. The use of the BIC is controversial because of the subjectivity involved in making such a determination (Nagin, 1999). We address this issue in our own analyses of the Toronto sample (Day, Bevc, Duchesne, Rosenthal, Rossman, & Theodor, 2007). In this paper (see also Section 3.13), we discuss the use of *cross-validation* as an alternative to both the BIC and the Akaike Information Criterion (AIC) as a way to compare the accuracy of different prediction methods. We propose that, unlike the BIC and the AIC, cross-validation provides a clear and unambiguous measure of prediction accuracy. Within the literature, further methodological advances will continue to highlight the appropriate analytical and statistical approaches, particularly for dealing with the heterogeneity within the criminal population. This work will lead to greater accuracy and precision in mapping criminal trajectories.

Some of the challenges of the criminal career research are theoretical. For example, at the heart of the debate between the general propensity (i.e., persistent heterogeneity) versus life course (i.e., state-dependent) frameworks are questions about the origins or etiology of offending behaviour and whether criminality is, by its nature, static or dynamic (DeLisi, 2005; Piquero & Mazerolle, 2001). In contrast to Gottfredson and Hirschi's (1990) general propensity theory, two major propositions of a dynamic life-course perspective are that past criminal behaviour increases the probability of future criminal behaviour and that different factors (e.g., family interactions, peer group) exert their influence at different stages of the criminal career (Nagin & Farrington, 1992). Considerable research has supported these conjectures and a number of theories have been proposed to describe the processes that account for the continuities and changes in offending over time.

1.2.3 Two-Group Models

The two most prominent life-course theories of criminality were proposed by Terrie Moffitt (1993) and Gerald Patterson (Patterson, Capaldi, & Bank, 1991; Patterson & Yoerger, 1993). According to these theorists, offenders begin their criminal careers in either childhood (early starters) or adolescence (late starters). Patterson and Yoerger state that the early starters experience high rates of aggressive and "coercive" family experiences during childhood, which place them on a developmental pathway toward a protracted criminal career in adolescence and adulthood. By contrast, the late starters experience fewer developmental risk factors and begin to engage in delinquent behaviour in adolescence as a result of an association with a deviant peer group. Taking a more biopsychosocial approach, Moffitt postulates that the early starters (life-course persistent) have neurological problems that interact with aversive environmental conditions to yield a life-long, highly stable pattern of antisocial behaviour. The late starters (adolescent-limited), on the other hand, experience relatively normal development until about age 15, at which time a striving for personal independence leads them to mimic the antisocial lifestyle of their delinquent counterparts. The criminal acts in which the late-starter group engage are often relatively mild in nature and tend to desist within a few years of onset.

Providing support for the two-group model, Osborn and West (1978) reported that 61% of individuals who committed an offence prior to age 14 had a subsequent conviction before age 25, compared with 36% of those with an age of onset in their teens. Similarly, Day (1998) reported that an age of onset prior to 12 to 15 years substantially increases the likelihood that an individual will continue to offend, diversify his or her offending behaviour over time, and be represented among the 5% to 10% of youth who become chronic and serious offenders.

1.2.4 How Many Offender Groups are There?

An ongoing debate in the criminal career literature concerns the categorization of offenders into homogeneous groups or clusters and the number of groups that are needed to adequately describe the population. As Gottfredson stated, "efforts to classify offender populations have a long

tradition in empirical criminology" (2005, p. 46). The two-group models by Moffitt and Patterson, described above, were based on theoretical grounds. Advances in the statistical analysis of group-based trajectories allow for models to be developed based on empirical grounds. The statistical issue, then, becomes, "how best to model the population heterogeneity of individual-level trajectories" (Nagin & Tremblay, 2005, p. 879). Using rates of offending (e.g., arrests, court contacts, convictions) within a given time period (e.g., one-year intervals), and corrected for time-at-risk, discrete groups or clusters of offenders, based on common underlying or unobserved (latent) trajectories, can be predicted. Each group is characterized by a distinct criminal trajectory and each individual has a probability of trajectory group membership. "Trajectory groups can be thought of as latent strata in longitudinal data that distinguish clusters of individuals following distinctive developmental paths" (Nagin & Tremblay, p. 896).

Support for a two-group model of offenders is provided by Osborn and West (1978) who reported that 61% of individuals who committed an offence prior to age 14 had a subsequent conviction before age 25, compared with 36% of those with an age of onset in their teens.

To date, however, the findings with regard to the number of groups that best describe offenders are far from conclusive (Chung, Hill, Hawkins, Gilchrist, & Nagin, 2002). Based on separate samples, four-group models (see Table 1) have been proposed both by D'Unger and colleagues (D'Unger, Land, McCall, & Nagin, 1998) and by Blokland, Nagin, and Nieuwbeerta (2005). Wiesner and Capaldi (2001) reported data supporting a five-group model and a model yielding eight groups was presented by Thornberry, Bushway, Krohn, and Lizotte (2004). Differences in the number of derived groups may be a function of various factors, including the nature of the sample (criminal versus community) (Wiesner & Capaldi, 2001), the data used (self-report

versus official records) (Piquero, 2008), the length of follow-up (Nagin, 2004), and the sample size (Sampson et al., 2004). The next step in this line of investigation is to determine whether members of the same trajectory groups share common etiologies and similar developmental risk factors.

Table 1. Offender Groups Derived from Trajectory Analysis

Study	Number of Groups	Study Sample	Offender Group Names
Blokland et al. (2005)	4	Offender	Sporadic Low-rate Moderate-rate High-rate
D'unger et al. (1998)	4	High risk community	Nonoffender Adolescent-limited Low-level chronic High-level chronic
Wiesner & Capaldi (2001)	5	High risk community	Abstainer Decreasing moderate Decreasing frequent Chronic moderate Chronic frequent
Thornberry et al. (2004)	8	General community	Low-level Low-level desister Late bloomer Intermittent Transitional Gradual-uptake Mid-adolescent chronic Persistent high-level

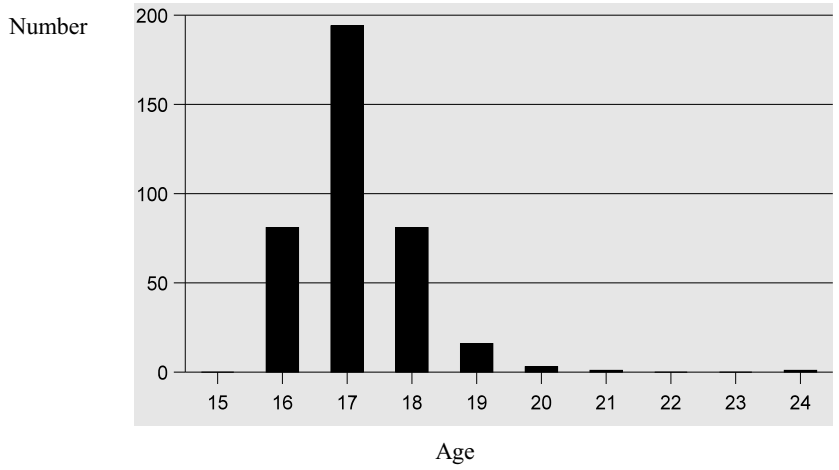
2.0 METHOD

In this chapter, we provide a detailed overview of the study sample, the nature of the criminal offence data, the coding schemes used to generate the criminal trajectory dimensions, and a description of the study variables.

2.1 Sample

The Toronto sample comprises 378 males who had served a criminal sentence as a youth, during a 10-year period, between January 22, 1986 and April 22, 1996, at one of two Phase II open custody group homes operated by the Dellcrest Children's Centre (now The Hincks-Dellcrest Centre; HDC), a children's mental health centre in Toronto. This sample is a 50% random selection of all the residents from these two youth homes during this period.[2] The offenders in the Toronto sample were born between September 17, 1967 and January 16, 1979 and, as shown in Figure 1, the vast majority (94.2%) was between 16 to 18 years of age at the time of their last

Figure 1. Number of Offenders by Age at Admission



[2] We are currently in the process of coding the criminal activity data for the remaining 391 individuals in this population, currently referred to as "Sample B" of the Toronto sample.

admission to the HDC houses (some had more than one admission) (*M* = 17.6, *SD* = .85, range = 16.1 - 24.4 years). The average sentence length for the sample was 124.6 days (*SD* = 109.8, Median = 92, Mode = 122, range = 1 - 1,087). For 26.7% of the sample, the HDC was not their first custodial (open or secure) placement.

To assess the comparability of the Toronto sample with a general population of young offenders, a comparison was made between the most serious offence (MSO) committed at the "event" court contact (i.e., the court contact that resulted in their last admission into the HDC youth homes) and the offences committed by young people seen in youth court for the period 1995-1996 (for which data that overlapped with the study period were available). The general population data appeared in Table 9.1 of Bell (1999) and were adapted from Statistics Canada (1997; Juristat, Catalogue No. 85-002, 17 [10], pp. 4 and 11).[3] As shown in Table 2, the rates of property and other federal offences were very similar between the two groups. However, the Toronto sample committed more violent offences and fewer "other" criminal code (e.g., obstruction of justice, dangerous driving), YOA, and drug offences.[4] The larger number of violent offences may have been due to the fact that 37.4% of these offences were sexual offences, which accounted for 13.1% of the event offences committed by the Toronto sample. According to a report by Public Safety and Emergency Preparedness Canada (2006), sexual assault/sexual offences only accounted for between 1.9% and 2.3% of the cases seen in youth court over the 5-year period between 1999 to 2004. The HDC houses may have received more sex offenders because of the

[3] It is recognized that not all young people seen in youth court receive an open custody disposition. Between 13% and 15% of youth seen in youth court over the 5-year period between 1999 and 2004 received an open custody disposition (Public Safety and Emergency Preparedness Canada, 2006). Nonetheless, these data are presented to generally compare the types of offences with which these two groups were charged at the point of adjudication. A comparison also was made between the 26 cases in the Toronto sample who were admitted into the HDC houses in 1995 to 1996 and the general population data. The results were very similar to those for the entire Toronto sample.

[4] Because these figures are based on the MSO at each court contact, rather than *all* the offences with which they were charged, they underestimate the actual number of offences with which the sample was charged, particularly breach and "other" offences (see Table 3). Therefore, if counting all charges incurred by the sample, not just the MSO, the Toronto sample would be more comparable to the general population of offenders on the drug offence category and higher on the other offence category.

Table 2. A Comparison of the Number and Percentage of the MSOs for the "Event" Court Contacts for the Toronto Sample with Cases Seen in Youth Court for the Period of 1995-1996

Offence Category	Frequency (%) for the Toronto Sample	Frequency (%) for the General Population
Property	161 (49.4)	52,743 (48.0)
Violent	115 (35.2)	23,084 (21.0)
Other Criminal Code	35 (10.7)	19,173 (17.0)
YOA Offences[1]	7 (2.1)	10,906 (10.0)
Drug	9 (2.8)	4,897 (4.0)
Other Federal Statutes	0 (0.0)	224 (<1)
Total	327[2] (100.0)	111,027 (100.0)

Note: [1]YOA offences include failure to comply with a disposition or undertaking.
[2]Cases in the Toronto sample for whom data were available.

treatment focus at these facilities and the availability of mental health services. In general, then, the Toronto sample was equivalent to a general population of young people seen in youth court with regard to property and other federal offences. There were more violent offenders in the Toronto sample, perhaps due to the above average number of sex offenders, and fewer of all other types of offenders.

The sample size of 378 is sufficiently large to examine group-based trajectories of criminal activity. Nagin (2004), for example, reported that a sample of 300 to 500 yielded robust findings in terms of identifying the number of latent trajectory groups in a sample. Similarly, Sampson et al. (2004) found that the number of groups yielded by their trajectory analyses reached a plateau at about sample size 200, indicating stable findings (see also Farrington, Coid, Harnett, Jolliffe, Soteriou, Turner, & West, 2006; Nagin & Tremblay, 2005). At the same time, it makes intuitive sense that the longer the follow-up period, the more precise the derived statistical models.

Although this is true, it is also correct that "a statistical model is a characterization of collected, not uncollected, data" (Nagin & Tremblay, 2005, p. 889).

Last, for context, *Section 24.1* of the Young Offenders Act (YOA) (the Act that pertains to the majority of offences committed by the study sample) defines an open custody facility as "a community residential centre, group home, child care institution, or forest or wilderness camp, or...any other like place of facility designated...as a place of open custody" by the provincial government. According to Bala (1997, p. 241), "there is a judicial expectation that open-custody will have a rehabilitative focus, and this is taken into account when sentencing a youth." Most of the youth admitted to the HDC houses agreed to be seen by the staff psychiatrist; also many agreed to be involved in some form of counselling or specialized treatment programs, such as for anger management or adolescent sexual offending. However, the design of the current study does not allow for conclusions to be drawn about the causal effects of these programs on subsequent offence patterns.

2.2 Data

The criminal offences data for the sample were derived from *all* their unique court contacts, that is, all court contacts arising from a new set of charges, up until March 17, 2001, the end of the follow-up period.[5] Court contacts included: (a) those that resulted in a conviction and disposition (e.g., secure or open custody, fine, etc.), including a suspended sentence; (b) those that resulted in a finding of guilt but not a conviction (e.g., absolute or conditional discharge); and (c) those that resulted in either a withdrawal of charges, stay of proceedings, or determination that the person was unfit to stand trial (e.g., due to cognitive competence). These latter types of court contacts, which involved neither a finding of guilt nor a conviction, only accounted for 5.7% of the total number of court contacts. Counting court contacts, whether resulting in a conviction or not, was similar to the method used in the Philadelphia cohort study (Tracy et al., 1990), which counted

[5] We recently received an additional six years' worth of follow-up data from CPIC for the period ending September 26, 2007 and will soon begin coding this information.

offenders' contacts with the Juvenile Aid Division of the Philadelphia Police Department. Last, for 9.7% of the court contacts, the final status in the Ministry's records was "remand," and, as such, no specific outcomes were available.

The court contacts were tracked for an average of 12.1 years (*SD* = 3.0, range = 4.9 - 22.8), from late childhood/early adolescence into adulthood, with 73% of the sample being followed for 10 years or more. The sample was, on average, 27.6 years of age at the time of the last follow-up (*SD* = 2.6, range = 22.2 - 33.5 years). In 2008, they would be between 29 and 40 years of age. Based on available data, 5 of the offenders had died during the follow-up period, all before their 31st birthdays, and 12 had been deported.

Official criminal records for Phase I (committed while the youth was 12 to 15 years of age), Phase II (committed while the youth was 16 to 17 years of age), and adult offences were obtained from four sources:

1. the (Ontario) Ministry of Community and Social Services (MCSS) for Phase I records;
2. the (Ontario) Ministry of Correctional Services (MCS) for Phase II and adult records;
3. the Canadian Police Information Centre (CPIC) for youth and adult records;
4. Predisposition Reports (PDR) maintained in the client records by the HDC for additional youth records.

The youth court records, which are confidential under the YOA, were obtained through a court order signed by a youth court judge. The court order included a number of provisions designed to maintain the anonymity of the records and restrict the use of the data. Steps were taken to ensure that the identifiable information in the records was kept confidential.

Four data sources were used to ensure a high degree of completeness and accuracy of the sequenced, longitudinal court contact data, which is essential for this type of research (Arnold & Kay, 1999; Smith, Smith, & Norma, 1984). Although the use of official criminal records has

been called into question (Dunford & Elliot, 1984), many studies have reported a high degree of concordance between self-report delinquency and official records (e.g., Moffitt, Caspi, Dickson, Silva, & Stanton, 1996), particularly for chronic offenders. For example, Farrington (2003) reported considerable overlap between offences based on self-reports and offences based on court referrals for a sample of youth from the Seattle Social Development Project.

Official records are appropriate for this study because they provide the requisite precision with regard to the timing and sequence of offending (Smith et al., 1984). At the same time, we acknowledge some of the difficulties associated with conducting longitudinal research on crime, such as the impact of "historical" changes in policy or incarceration practices on the nature of the data. Many of these issues have been discussed at length in the literature (e.g., Weis, 1986). It is recognized that, as long as the researcher is aware of the potential biases due to these factors, and that these factors are more random than systematic (e.g., affecting all offenders in the sample equally), such limitations are tolerable.

The lengthy criminal records of many of these individuals (up to 55 successive court contacts) allowed for a rich and detailed analysis of the nature and pattern of their offence trajectories. Additional information included in the data set about the offenders were date of birth, length of stay at the HDC house (both time given and time served, in days) and, for those seen by the staff psychiatrist, psychiatric diagnoses received while at the HDC youth homes.

Four data sources were used to ensure a high degree of completeness and accuracy of the court contact data.

2.3 Coding

The goal of the coding was to capture as much information as possible about each unique court contact. For each unique court contact, a number of variables were recorded, including: (a) the

disposition (i.e., sentence) date; (b) the disposition received (i.e., open custody, secure custody, probation, fine); (c) the sentence length in days, including both time given and time served; (d) the offence type, which was a categorical variable based on the seriousness rating of the most serious offence (MSO) committed; (e) *all* the different offences committed, not just the MSO, classified into six offence type categories (i.e., property, violent, drug, sex, other, and breach); and (f) the Offender Type, which was a categorical variable also based on *all* the different offences committed (see definition below).

2.4 Criminal Trajectory Dimensions

A number of variables were created to measure various dimensions of the criminal trajectory, including frequency, rate, type, versatility, severity, and duration or length.

Frequency - was a simple count of the total number of unique court contacts amassed by each individual, referred to as lambda (λ).

Rate - was the frequency of court contacts committed in a given time period (e.g., a year) corrected by two variables: (a) the *age at offence-age at court contact time lag* and (b) *time-at-risk* (see Section 2.5 for a discussion of these correction factors).

Offence type - denoted the types of offences that were committed and included three levels of codes: (a) specific offences committed, taken from a list of 969 criminal code violations (Ministry of the Solicitor General and Correctional Services, 1995); (b) 26 severity levels (Ministry of the Solicitor General and Correctional Services, 1995); and (c) 5 broad offence categories,[6] as follows:

- property (e.g., break and enter, theft, possession of stolen property);

[6]Note that for reasons having to do with the way in which the data were coded, for some analyses five offence categories were used and for others six offence categories were used, for which breach offences were separated from the other offence category. The larger number of categories (for finer discrimination) was used to increase the precision of the versatility measure.

- violent (e.g., murder, robbery, assault, weapons);
- drug (i.e., trafficking and possession);
- sex (includes both violent and nonviolent);
- other (e.g., administration of justice or "breach" offences, obstruction of justice, traffic offences).

Offender type - was a categorical variable created to address a limitation of the existing research. In many studies, only the most serious offence (MSO) is coded for each unique court contact (e.g., Lattimore, MacDonald, Piquero, Linster, & Visher, 2004; Lattimore, Visher, & Linster, 1994; Stander, Farrington, Hill, & Altham, 1989; Piquero & Buka, 2002). Although a convenient means of coding offence data, this method can oversimplify the extent of an offender's criminal behaviour. For example, this approach may lead to inaccurate statements about broad offender type groups, such as "violent," "property," "drug," or "sex" offender. As well, measures of versatility may yield different results depending on *what* exactly is counted. For example, a measure of versatility based on a count of the MSO would underestimate the full range of the offender's criminal behaviour when compared to a measure of versatility based on *all* the offences committed by the individual at each court contact. To illustrate this notion, Table 3 displays the counts for six broad offence type categories (i.e., breach offences were separated from the other offences) for each unique court contact, comparing the MSO with *all* their different offences committed. As shown, there were 70% more offences across all offence types when the full array of offences committed was counted than when only the MSO was counted. As well, other and breach offences accounted for the greatest increase in the offence counts, indicating that these offence types were the most common that occurred alongside more serious offences.

As a result, the Offender Type variable was based on *all* the different offences committed by the individual at each court contact (as much as is available on the offender's criminal records), not just the most serious. For example, if an individual was charged with three theft and two assault

Table 3. A Comparison of MSO and All Different Offences Committed

Offence Category	MSO	All Different Offences	Percent Increase
Property	2,387	3,315	39%
Violent	1,189	1,938	63%
Drug	296	435	47%
Sex	141	188	33%
Other	304	816	168%
Breach	647	1,726	167%
Total	4,964	8,418	70%

offences, a code denoting a property and violent offence was recorded for that court contact (code 8 as shown in Table 6). Counting all the different offences more completely captured the range of the offender's repertoire of criminal behaviour and also served to avoid a potential bias introduced with plea bargaining. The Offender Type variable, then, captured whether an individual (including one-time offenders) was a "pure" type offender (e.g., violent *or* property *or* drug offender) or a "versatile" offender and what type of versatility he expressed (e.g., violent *and* drug offender).

Offender Type was a categorical variable created to track the versatility of an offender across his criminal trajectory. This variable captured whether an individual was a "pure" type offender (e.g., violent *or* property *or* drug offender) or a "versatile" offender and what type of versatility he expressed (e.g., violent *and* drug offender).

Versatility - was a continuous measure of the extent to which each offender engaged in one or more offence types (e.g., property, violent, drug, sex, other, or a combination thereof) over *successive* court contacts (Paternoster, Brame, Piquero, & Mazerolle, 1998). As a measure of versatility, we used the Diversity of Offending Index score (D) (Sullivan, McGloin, Pratt, & Piquero, 2006), calculated as follows:

$$D = 1 - \sum_{M-1}^{M} p^2_m$$

"in which p equals the proportion of offences in crime category 'm'" (p. 207). For each individual, the D score was calculated both by age (e.g., at age 12 years, 13 years, and so forth), for short term offence specialization, and over the course of their criminal trajectories, as an overall score. For those years in which an offender committed none or one offence, that *year* was excluded from the D score-by-age calculations.[7] Also, nine offenders who committed only one offence over the course of their trajectories were omitted from the overall D score calculations. These included five sex offenders, two violent offenders, and two "other" offenders. Calculating a D score by age provided an indication of the sample's versatility over a shorter window of time (i.e., yearly rate) than calculating the D score over the course of their trajectories. As well, this approach is useful both for elucidating the developmental course of versatility of offending and to identify concomitant life circumstances (e.g., marriage, community supervision, drug and alcohol use) that may be associated with observed patterns of offence diversification (e.g., McGloin, Sullivan, Piquero, & Pratt, 2007; Sullivan et al., 2006).

In order to increase the precision of the versatility measure, the D score was based on a total count of the number of *different* offences committed by each individual at each unique court contact, across six broad offence types (property, violent, drug, sex, other, and breach), even if the offences were included in the same broad offence type. For example, if a person was charged with theft under $1,000, break and enter, and mischief property (all property crimes), a count of

[7] Adjustments also could be made for time-at-risk, that is, omitting those years in which the offender was incarcerated. However, we did not correct for this factor.

three property offences would be recorded for that conviction. If other offence types also were committed (e.g., violent, drug, or sex), a count of these would be recorded, as well. Note that we did not include a count of the *same* offence. For example, if a person was charged with three counts of robbery, only one robbery charge was counted. Once again, using a count of the total number of different offences committed allowed us to better capture the versatility of the individual's offending. Additionally, using six, rather than five, offence types allowed for a more precise indicator of their versatility.

Severity - was a measure of the seriousness of the offences taken from the MCS Statistical Reporting System User Manual (Ministry of the Solicitor General and Correctional Services, 1995). The severity ratings were ranked from 1 (murder/attempt) = most serious to 26 (unknown) = least serious. Table 4 presents the severity codes and the frequency and percentage of each offence type.

Trajectory length - was measured as the difference in years between the age at the first recorded court contact and the age at the last recorded court contact.

2.5 Two Correction Factors

Two correction factors were created to provide for a more precise measure of the court contact rates: (a) the *offence date-court contact date time lag* and (b) *time-at-risk*.

Offence date-court contact date time lag. Some of our analyses were based on the age of the offender. For example, comparisons were made between offences committed during adolescence and offences committed during adulthood. As well, in order to combine the data about court contact dates with the data about time-at-risk, we needed to estimate the offence date-court contact date time lag (Farrington et al., 2006). This created a problem because our official criminal records provided the offenders' age at the time of their *court contacts* rather than at the time of their *offences*. As noted by Porter, Birt, and Boer (2001), who also used Canadian

official criminal records, “criminal records for individual offenders give the date of adjudication, not the date of crime commission" (p. 658). However, although Porter et al. acknowledged the issue, they did not address it. By comparison, in a study conducted in the UK, Francis, Soothill, and Ackerley (2004) adjusted their data by 90 days, based on an estimate of the offence date-conviction date time lag.

For our research, we devised a statistical means of correcting the data for this offence-court contact time lag based on actual offence date information provided to us by the Metropolitan Toronto Police Service (MTPS). In the summer of 2007, we provided the MTPS with the date of the court contact for 479 court contacts (occurring within the city of Toronto) incurred by 134 offenders. For each court contact, the MTPS provided us with the actual date the offence was committed. Based on an examination of these time lag data, we used a time lag adjustment of 157.6 days, which was the observed mean. The specific methodology we used to adjust the data (based on a previous time lag adjustment of 90 days) is described in Day et al. (2007).

Time-at-risk. Researchers have pointed out that, in order to increase the accuracy of the data, offending frequencies (λ) need to be adjusted for the length of time an offender was incarcerated in secure custody in a given period, with no access to the community (e.g., Piquero et al., 2003). While in secure custody, the individual is not at any real risk for committing another criminal offence. (Though it is possible for an offender to be charged with an offence committed while in secure custody, it is not likely.) Eggleston et al. (2004) argue that prediction models that fail to take into account the time during which the offender is incarcerated lead to inaccurate estimations of criminal trajectories. More specifically, ignoring this information could result in an underestimate of an individual offender's criminal propensity. For example, if an individual incurred five court contacts at the age of 17 years and was in secure custody for a total of six months during that year, then his effective court contact rate during that time period would be twice as large as it would have been had he been at risk the entire time. The method we used to correct the count data for time-at-risk is described in Day et al. (2007).

3.0 DESCRIPTIVE RESULTS

In this chapter, we examine a number of issues pertaining to the nature and pattern of criminal offending in the Toronto sample. A particular focus of the analyses is the changes and continuities of criminal activity over time. For example, we examine patterns of diversity, type, stability, and severity of offending over time, the relationship between adolescent dispositions and adult offence rates, and the relationship between juvenile offending and adult offending. Because of the exploratory nature of the analyses, much of the data are presented as descriptive results. Subsequent analyses, with a larger data set and longer follow-up periods, using more sophisticated longitudinal data analyses, will allow us to address some of these issues in greater detail.

3.1 Court Contacts, Offences, and Offender Types

Over the course of the tracking period of the study, the sample amassed a total of 4,964 unique court contacts. This amounted to an average of 13.1 court contacts for each offender (*SD* = 9.6, Median = 11.0, Mode = 7.0, range = 1 - 55). With regard to specific offences committed as the MSO, as shown in Table 4, the highest number were property offences, including break and enter (806) and theft (1,246). At the most serious offence level, 3 court contacts were incurred for first degree or second degree murder; 3 were for manslaughter; 1 was for criminal negligence causing death; 1 was for conspiracy to commit murder; and 16 were for attempt murder. Table 5 presents the frequency of each MSO grouped into six broad offence type categories. As shown, 48.1% of the crimes committed as the MSO were property offences, ranging across individuals from 0 to 42. With regard to the Offender Type variable, according to Table 6, codes 14 (P+V+O) and 15 (P+V+D+O) were the most common, accounting for 55% of the sample. Based on this categorical coding scheme, "specialists" were a rare occurrence, comprising only 5.6% of the sample (*n* = 21). Sex offenders made up the largest category of specialists (*n* = 9).

Table 4. Severity Codes and Number and Percentage of Each Type of Offence Committed[1]

Severity Code	Offence	Frequency	Percent	Range Across Individuals
1.	Murder/Attempt	24	.5	0 - 2[2]
2.	Serious Violent (e.g., robbery, kidnapping, extortion)	275	5.5	0 - 8
3.	Sexual Violent	123	2.4	0 - 5
4.	Break and Enter (includes B&E tools)	806	16.2	0 - 18
5.	Sexual Nonviolent	18	.4	0 - 3
6.	Trafficking/Importing	164	3.3	0 - 8
7.	Weapons	236	4.8	0 - 5
8.	Fraud	177	3.6	0 - 12
9.	Misc. Against Persons (e.g., utter threat)	163	3.3	0 - 6
10.	Theft	1,246	25.1	0 - 38
11.	Assault	491	9.9	0 - 16
12.	Property Damage	158	3.2	0 - 3
13.	Misc. Against Morals (e.g., prostitution, gambling)	13	.3	0 - 1
14.	Obstruction of Justice	79	1.6	0 - 7
15.	Drug Possession	132	2.7	0 - 7
16.	Traffic Criminal Code (e.g., dangerous driving)	32	.6	0 - 3
17.	Breach (includes UAL, ELC)	647	13.0	0 - 14
18.	Driving While Under the Influence	31	.6	0 - 4
19.	Misc. Against Public Order (e.g., petty trespass, public mischief)	51	1.0	0 - 6
20.	Other Federal Statutes	12	.2	0 - 1
21.	Parole Violations	0	.0	0 - 0
22.	Highway Traffic Act	28	.6	0 - 5
23.	Liquor Control Act	28	.6	0 - 8
24.	Other Provincial Statutes	24	.5	0 - 2
25.	Municipal Bylaws (e.g., parking fines)	3	.1	0 - 1
26.	Unknown	3	.1	0 - 1
	Total	4,964	100.00	1 - 55

Note: [1]Based on the Most Serious Offence (MSO) at each court contact.
[2]For example, at least one individual was convicted twice for murder/attempt as the MSO.

Table 5. Number and Percentage of Six Offence Categories[1]

Offence Category	Frequency	Percent	Range Across Individuals
Property (codes 4, 8, 10, 12)	2,387	48.1	0 - 42
Violent (codes 1, 2, 7, 9, 11)	1,189	24.0	0 - 20
Drug (codes 6, 15)	296	6.0	0 - 11
Sex (codes 3, 5)	141	2.8	0 - 6
Other (codes 13, 14, 16, 18, 19 20, 21, 22, 23, 24, 25, 26)	304	6.1	0 - 16
Breach (code 17)	647	13.0	0 - 11
Total	4,964	100.00	1 - 55

Note: [1]Based on the Most Serious Offence (MSO) at each court contact.

Table 7 presents: (a) the number and percentage of individuals in the data set at each age (see Figure 2); (b) the number of court contacts amassed by the sample by age (see Figure 3); (c) the Diversity Index score (D) at each age (see Figure 4); and (d) the number of individuals with a first court contact at each age (see Figure 5). As shown in Table 7, both the number of court contacts (675) and the number of offenders (301) peaked at age 17, a finding that is consistent with the results of the Cambridge sample (Farrington et al., 2006). Moreover, dividing the number of individuals at each age by the number of court contacts incurred at each age yields an average court contact rate by age. These results are displayed in Figure 6. After controlling for the number of offenders by age, the court contact rate still peaks at ages 16 to 18 years, except for a second peak at age 30, which is likely a function of this particular sample.

Table 6. Offender Type Codes and the Frequency and Percentage of Each Offender Type[1]

Code	Offender Type	Frequency	Percentage
1.	Property (P)	4	1.1
2.	Violent (V)	6	1.6
3.	Drug (D)	0	0.0
4.	Other (O)	2	.5
5.	P + O	15	4.0
6.	V + O	6	1.6
7.	D + O	0	0.0
8.	P + V	15	4.0
9.	P + D	2	.5
10.	V + D	0	0.0
11.	P + D + O	11	2.9
12.	V + D + O	2	.5
13.	P + V + D	4	1.1
14.	P + V + O	106	28.0
15.	P + V + D + O	102	27.0
16.	Sex (S)	9	2.4
17.	S + P	3	.8
18.	S + V	3	.8
19.	S + D	0	0.0
20.	S + O	2	.5
21.	S + P + O	2	.5
22.	S + V + O	3	.8
23.	S + D + O	0	0.0
24.	S + P + V	4	1.1
25.	S + P + D	0	0.0
26.	S + V + D	1	.3
27.	S + P + D + O	1	.3
28.	S + V + D + O	3	.8
29.	S + P + V + D	1	.3
30.	S + V + P + O	35	9.3
31.	S + V + P + D + O	38	10.1
Total		378	100.0

Note: [1]Based on all their different offences across all court contacts not just MSO.

Table 7. Changes in Unique Court Contacts with Age

Age	No. of Offenders	(%)	No. of Court Contacts	Diversity Index Score[1,2]	No. of First Offenders
8[3]	1	(.3)	1	.0	1
9	1	(.3)	1	.0	1
10	2	(.5)	3	.0	1
11	2	(.5)	2	.0	1
12	27	(7.1)	40	.38	24
13	82	(21.9)	127	.35	61
14	113	(30.0)	204	.42	59
15	186	(49.2)	324	.41	81
16	254	(67.2)	619	.45	64
17	301	(79.6)	675	.48	59
18	233	(61.6)	553	.50	21
19	210	(55.6)	459	.49	3
20	188	(49.7)	390	.50	0
21	153	(40.5)	301	.49	2
22	150	(39.7)	278	.51	0
23	151	(38.9)	256	.53	0
24	101	(26.7)	173	.47	0
25	96	(25.4)	182	.43	0
26	73	(19.3)	122	.53	0
27	63	(16.7)	105	.46	0
28	48	(12.7)	84	.53	0
29	29	(7.7)	48	.55	0
30	17	(4.5)	36	.58	0
31	7	(1.9)	11	.52	0
32	2	(.5)	3	.50	0

Note: [1]Larger values denote less specialization and greater versatility.

[2]The D score was 0.0 for ages 8 to 11 years because all their court contacts were for property crimes.

[3]Offences committed under the age of 12 years were charges that occurred under the Juvenile Delinquents Act (JDA), for which the minimum age of criminal liability was 7 years.

Figure 2. Number of Individuals in the Data Set by Age at Court Contact

Figure 3. Number of Court Contacts by Age

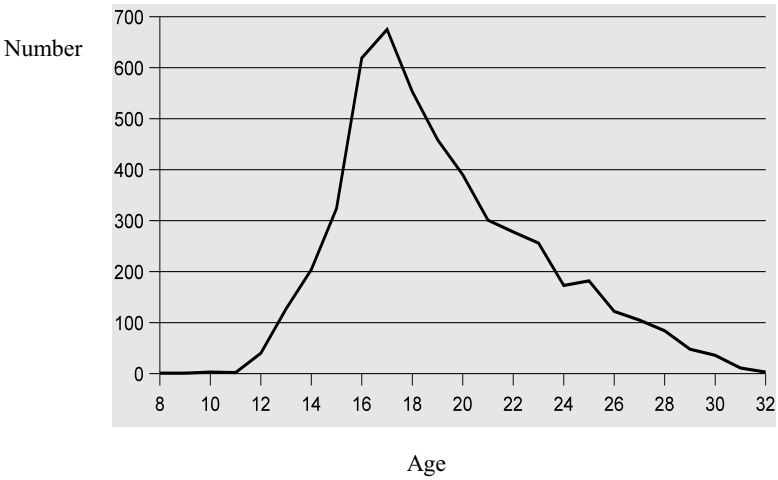


Figure 4. Diversity Index Score (D) by Age

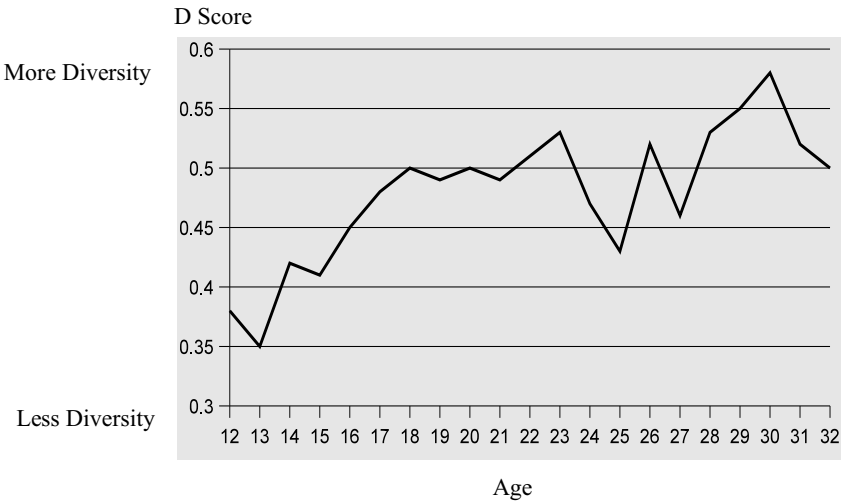


Figure 5. Number of Offenders by Age at First Court Contact

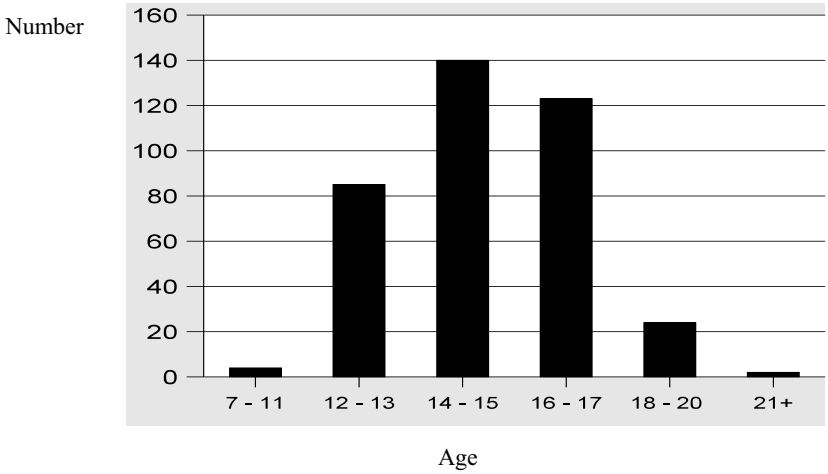
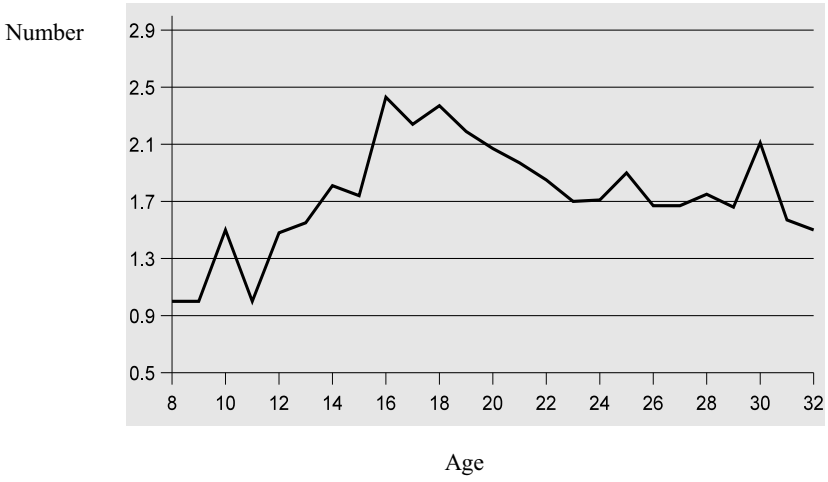


Figure 6. Average Number of Court Contacts by Age



Summarizing the data using percentiles, the 25th percentile, at which one quarter of the court contacts were incurred, was at age 16 years, the median age was at age 18 years, and the 75th percentile was at age 22 years.

The frequency of court contacts peaked between the ages of 16 and 18 years. At age 17, 301 offenders incurred 675 court contacts.

3.2 How Many Specialists were in the Toronto Sample?

An overall D score was calculated for each individual who had committed one or more offences across the course of their trajectories. Recall that the D score was based on *all* their different offences, not just the MSO. For six categories of offences, D scores can range from .00 to .83 (the maximum value of D is given by $k - 1/k$, in which k = the number of categories), with higher scores indicating greater diversity. The average D score for the Toronto sample was .62 (*SD* = .14, range = .00 - .79), indicating a very high degree of diversity. In contrast, the average *yearly* D score was lower at .47 (*SD* = .13, range = 0 - .72), suggesting greater specialization within one-year time frames. By comparison, for their sample of 658 adult male offenders, using self-report data, Sullivan et al. (2006) reported an overall D score of .29 and an average yearly D score of .21. Last, using *all* the different offences committed by the Toronto sample, 12 individuals were found to have a D score of 0.00, indicating that they were "pure" specialists. Of these, four were sex offenders, four were violent offenders, and four were property offenders. These individuals tended to commit few offences (*M* = 3.1, *SD* = 1.4) and have few court contacts (*M* = 2.0, *SD* = 1.2) and brief criminal trajectories (*M* = 1.4 years, *SD* = 1.5).

Within the literature, research that has attempted to identify which offence types are most closely associated with specialists has been largely inconclusive. Weak evidence for specialization has been found for sex, drug, fraud, and auto theft offences (Blumstein et al., 1986; Stander,

Farrington, Hill, & Altham, 1989). Petersilia (1980) found some evidence for specialization among drug and robbery offenders. Piquero et al. (2003) reported that sex offenders tend to be specialists. Last, juvenile offenders tend, in general, to be more versatile than adult offenders (Britt, 1996; Lattimore et al., 1994), as they switch between property and violent crimes (Piquero et al. 2003).

3.3 Did Offenders Become More Diverse in their Offending Over Time?

This question was examined by calculating a D score for each individual by age, based on the number of different offence types committed at each unique court contact. Only years in which the offender had more than one offence were included in the calculations. The results are presented in Figure 4 and indicate that the diversity of offending steadily increased from early adolescence through to early adulthood, where it peaked at age 23. The second peak at age 30 reflects a high rate of diversity among a very small subgroup of offenders in this sample (see Figure 2).

3.4 Were Certain Types of Offences More Common at Certain Ages?

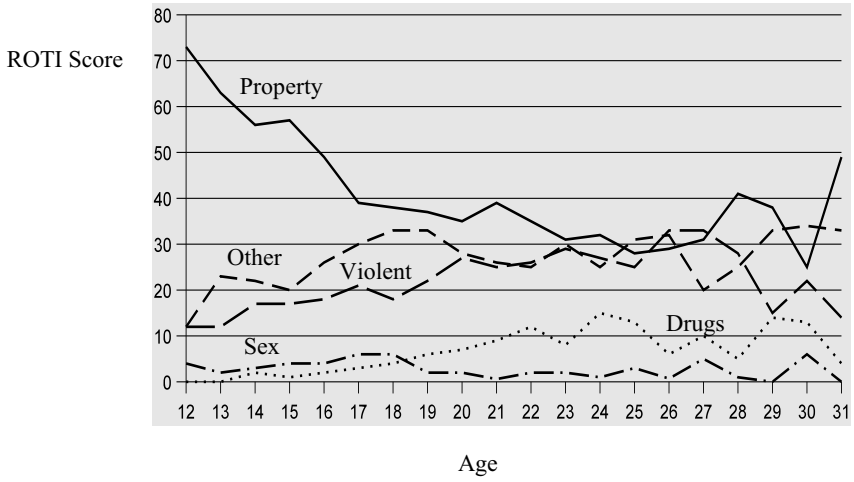
To address this question, a Relative Offence Type Involvement (ROTI) score was calculated for each individual at each age using the following formula:

$$ROTI_{ij} = \frac{r_{ij}}{\sum r_i} \times 100,$$

where r = age-specific offence charge frequency, i = age category, and j = offence type. The ROTI score is based on the Offender Type variable and is calculated as the total number of charges for each of five offence types committed at a given age (e.g., number of property offence charges incurred at age 17) divided by the total number of charges incurred at that age (e.g., total number of charges incurred at age 17). At each age, the scores across offence types sum to 100%. The pattern of scores (see Figure 7) yielded four interesting results. First, the relative involvement in property offences was much higher in early adolescence than at any other

developmental period. This high rate of involvement in property offences was reflected in the relatively lower D scores, as discussed previously. Second, the relative involvement in violent and other types of offences increased between the age of 16 and 20 years, as the relative involvement in property offences decreased. The increased involvement in violent and other offences during this period may correspond to a developmental progression or shift when the individual becomes more physically strong, perhaps more menacing and threatening; develops a wider network of criminal contacts with a corresponding increase in opportunities for criminal behaviour; and becomes more deeply entrenched in criminal activity, possibly as a result of involvement in street gangs (Thornberry, 2005). Third, sexual offences were primarily committed during adolescence and, fourth, drug offences occurred primarily in adulthood.

Figure 7. Relative Offence Type Involvement (ROTI) Scores for Five Offence Types



The later onset for an increased involvement in drug offences is consistent with other studies and may be associated with greater freedoms associated with early adulthood and an increased desire to make some fast cash (Massoglia, 2006). At the same time, it is of interest to note that, in the Toronto sample, a small group of offenders (n = 21, or 5.6% of the total sample and 15% of the 140 offenders with at least one drug-related court contact) accounted for 40.2% (119/296) of the drug-related court contacts (as the MSO), averaging 5.7 court contacts for drug-related charges as

the MSO. More specifically, this small group of high rate drug offenders accounted for 44.5% of the trafficking-related court contacts and 34.8% of the possession-related court contacts. Looking only at the MSO for their pre-HDC admission court contacts, they accounted for 36.4% of the trafficking-related court contacts and 55.0% of the possession-related court contacts. This pattern suggests a sort of graduation in offence severity for this subgroup, from simple possession to drug trafficking. In terms of the versatility of their offending, presented in Table 8, all the high rate drug offenders had engaged in at least two other types of offences, though they only accounted for 8.1% of all non-drug-related court contacts. Taken together, these findings suggest a high degree of offence specialization amid considerable versatility for this subgroup.

The relative involvement in property offences was much higher in early adolescence than at any other developmental period. As well, the relative involvement in violent and other types of offences increased between the age of 16 and 21 years, as involvement in property offences decreased.

3.5 Relationship Between Age at First Court Contact and Criminal Trajectory Dimensions

Table 9 shows that the individuals who began their criminal trajectories at the earliest ages amassed the most court contacts $F(3, 374) = 19.9$, $p < .001$, partial $\eta^2 = .14$, and had the longest criminal trajectories (up to age 32), $F(3, 374) = 35.2$, $p < .001$, partial $\eta^2 = .22$. Nearly all (95.5%) of those with a first court contact by age 8[8] to 13 years ($n = 89$) were recidivists, that is, had a re-offence following their discharge from the HDC house, compared with 88.7% of those who started at age 14 to 16 years ($n = 204$). The individuals who started at age 8 to 13 years

[8] Court contacts that occurred prior to the age of 12 years (i.e., 8 to 11 years) were committed under the Juvenile Delinquents Act (JDA) and took place between 1979 and 1983.

Table 8. Offence Frequencies for High Rate Drug Offenders (n = 21)

Offender	Age First Offence	Age Last Offence	Property	Violent	Drug	Sex	Breach	Other	Total
1	16.7	28.7	8	7	8	1	1	2	27
2	16.3	29.3	8	1	4	0	1	0	14
3	17.1	27.0	1	4	4	3	0	0	12
4	13.1	23.3	9	2	9	0	11	11	38
5	15.3	24.6	8	2	6	0	8	0	24
6	15.1	24.2	9	7	5	0	1	0	22
7	16.5	29.8	6	10	8	0	0	2	26
8	16.3	30.2	6	2	4	0	0	0	12
9	16.6	24.6	1	6	4	0	0	0	11
10	17.1	24.2	13	5	5	0	5	5	33
11	16.0	29.6	14	2	4	1	5	0	26
12	14.0	24.4	5	0	4	0	1	0	10
13	13.7	28.9	29	0	4	0	5	2	40
14	14.8	25.7	11	0	4	0	2	0	17
15	14.5	28.2	13	2	7	0	2	9	33
16	15.4	25.5	6	15	4	2	2	4	33
17	15.7	27.1	0	5	11	1	4	2	23
18	14.8	23.4	3	0	7	0	6	1	17
19	17.0	32.2	25	4	9	0	11	6	55
20	16.3	23.7	0	4	4	0	1	1	10
21	17.1	26.7	1	5	4	0	0	2	12
Sum	15.7 (*M*)	26.7 (*M*)	176	83	119	8	66	43	495

incurred 18.7 contacts, on average, compared with 12.8 contacts for those who started at age 14 to 16 years. The men who started at age 8 to 13 years had their last court contact at an average of 24.7 years and had an average criminal trajectory length of 11.5 years. In comparison, those who started at age 14 to 16 years had their last court contact at age 23.9 years on average and had a criminal trajectory length of 8.3 years (8.5 years, excluding the one-time offenders, who had a trajectory length of 0 years). These conclusions may have been affected by the truncation of the data at age 27.6 years, the average age at the end of the follow-up period, as the average age of the last court contact of those who had their first court contact at the oldest ages (21 or greater)

Table 9. Age at First Court Contact and Criminal Trajectory Measures

Age at First Court Contact	No. of Offenders	% Recidivist[1]	Total No. of Contacts	Av. No. of Contacts	Av. Age Last Contact	Av. Trajectory Duration[2]	Av. Traject. Duration (Exc O)[3]
8-13	89	95.5	1660	18.7	24.7	11.5	11.5
14-16	204	88.7	2607	12.8	23.9	8.3	8.5
17-20	83	78.3	685	8.3	23.1	5.4	6.5
21-30	2	50.0	12	6.0	25.2	4.0	8.1
Total	378	87.8	4964	13.1	23.9	8.4	8.9

Note: [1]Subsequent to discharge from the HDC houses.
[2]Average duration in years.
[3]Exc O = Excluding one-time offenders.

occurred at age 25.2 years, only 2 years prior to age 27.6 years. As well, the specific ages of the last court contact for these two individuals were 21.3 years and 29.3 years. Continuing to follow-up the sample would yield more accurate information about criminal trajectory lengths (see Footnote 4).

The average age of the last court contact for the Toronto sample was 23.9 years. This figure is lower than the average age of 38.8 years for the last recorded offence in the Cambridge sample, who were followed-up to age 50 (Farrington et al., 2006), and age 30 years for the last recorded arrest in the sample followed-up by Blumstein et al. (1982). This would suggest that the Toronto sample might not have "aged out" of their criminal trajectories and that extending the follow-up period would be worthwhile (see Footnote 4).

Over all offenders, the average criminal trajectory lasted from age 15.5 years to age 23.9 years, a mean duration of 8.4 years (*SD* = 4.5), and contained 13.1 unique court contacts. For those with two or more court contacts, the average trajectory duration was 8.9 years. In comparison,

Farrington et al. (2006) reported that the average criminal trajectory length for the Cambridge sample, who were followed until age 50, was 9.1 years, from age 19.1 years to age 28.2 years and contained 4.8 convictions. It is of interest to note that following-up the Cambridge sample to age 40 years yielded an average trajectory length of 7.1 years, a difference of only 2 years when compared with the results up to age 50.

Using police contact as a measure of criminal behaviour, Piquero, Brame, and Lyman (2004) found that the average criminal trajectory length for their sample was 17.3 years, ranging from 4 to 30 years. Note that, in comparison to the Toronto sample, the Piquero et al. sample was followed for a slightly longer period of time, as the average age at follow-up was 31 years and many of their parolees had a very early age of onset for police contact. In reviewing the literature, Piquero et al. reported that average trajectory lengths tend to be about 7 to 8 years, but, depending on how criminality is measured (e.g., self-reports versus official records), may reach as high as 10 to 20 years.

The average criminal trajectory length was 8.4 years. The earlier the age at first court contact, the longer the criminal trajectory length and the greater the average number of court contacts.

3.6 Early Onset Offenders

The average age at first court contact was 15.5 years, with a range from 8.9 to 21.3[9] years (*SD* = 1.8). Four individuals (1.1% of the sample) had a court contact before the age of 12 years (see Footnote 7). Table 7 indicates that two of these individuals incurred three additional under-12

[9] First court contacts for which the age was 18 years or older were the result of offences that were committed prior to age 18 but were adjudicated after the age of 17.

court contacts. All seven of these contacts were for property offences, including mischief property, break and enter, possession under $1,000, and various theft charges (i.e., under $1,000, over $1,000, under $5,000). Probation was the most common disposition. In addition, by the end of the follow-up period, all four of these individuals had lengthy criminal trajectories, ranging from 17 to 21 years, and had amassed a large number of court contacts, ranging from 18 to 33. Not surprisingly, by the end of the follow-up period, all four early starters were versatile offenders, three of whom fell into category 14 (P+V+O) and one into category 15 (P+V+D+O).

In comparison, Farrington et al. (2006) reported that 12 out of 167 offenders (7.2%) in the Cambridge sample were convicted of an offence before age 12 years. As an indicator of age of onset for criminal behaviour, however, both the results of the current study and the Cambridge study are somewhat misleading, as they relate either to the age of first court contact or first conviction, rather than the age of first arrest or police contact. Indeed, the minimum age of criminal responsibility varies with jurisdiction and historical developments (e.g., compare the JDA with the YOA and YCJA). Piquero et al. (2004) reported that the average age at first police contact for their sample of 377 California Youth Authority parolees was 11.9 years, with a range from 5 to 18 years. The age of onset also will be lower when based on self-reports than official records (LeBlanc & Frechette, 1989). For example, Loeber, Farrington, and Waschbusch (1998) found that, based on self-report data, the onset for serious offending begins about seven years prior to a first recorded conviction. Therefore, with an average age of first court contact of 15.5 years, serious misbehaviour could have occurred in the Toronto sample as early as 8 years of age, which supports the provision of early intervention and prevention programs to prevent or delay the onset of offending.

In general, the findings for the relation between age of first court contact and criminal trajectory dimensions for the Toronto sample concur with other studies that show a negative relationship between age of onset and trajectory duration and extent of criminal activity (e.g., Farrington et

al., 2006; Piquero et al., 2004). As LeBlanc (1990, p. 83) stated, "if delinquency starts early it will probably be more abundant, lasting, and varied."

3.7 Offence Frequency and Criminal Trajectory Dimensions

Table 10 shows average trajectory durations according to numbers of court contacts up to age 32. The one-time offenders, of course, had an average trajectory length of 0 years. In contrast, offenders who had 15 or more court contacts had an average criminal trajectory lasting 11.7 years, from age 14.4 to age 26.2 on average. Similarly, offenders who had court contacts between age 10 and 14 years had an average criminal trajectory lasting 9.3 years, from age 15.4 to age 24.7 on average.

Table 10. Frequency of Offending Versus Criminal Trajectories and Placement in Secure Custody

No. of Court Contacts	No. of Offenders	Av. Age First Contact[1]	Av. Age Last Contact	Av. Trajectory Duration	No. in Secure Custody	% in Secure Custody
1	20	17.9	17.9	0.0	8	40.0
2	15	16.6	19.6	2.9	5	33.3
3-4	35	16.6	20.8	4.1	19	54.3
5-9	94	16.0	23.1	7.2	80	85.1
10-14	80	15.4	24.7	9.3	79	98.8
15+	134	14.4	26.2	11.7	134	100.0
Total	378	15.5	23.9	8.4	325	86.0

Note: [1]Average ages and durations in years.

Table 11 shows the number of individuals committing each number of offences. For example, 20 individuals incurred only 1 court contact and, at the other extreme, 1 individual incurred 55

Table 11. Total Number of Court Contacts Incurred

No. of Offences	No. of Offenders	Cum. No. Offenders	Cum. % of Offenders	Cum. No. of Court Contacts	Cum. % of Contacts
1	20	378	100.0	4964	100.0
2	15	358	94.7	4944	99.6
3	13	343	90.7	4915	99.0
4	22	330	87.3	4875	98.2
5	17	308	81.5	4787	96.4
6	16	291	76.9	4702	94.7
7	23	275	72.5	4606	92.8
8	21	252	66.7	4445	89.5
9	17	231	61.1	4277	86.2
10	18	214	56.6	4124	83.1
11	19	196	51.9	3944	79.5
12	20	177	46.8	3735	75.2
13	8	157	41.5	3495	70.4
14	15	149	39.4	3391	68.3
15	13	134	35.4	3181	64.1
16	10	121	32.0	2986	60.1
17	11	111	29.4	2826	56.9
18	5	100	26.5	2639	53.2
19	9	95	25.1	2549	51.3
20	7	86	22.8	2378	47.9
21	7	79	20.9	2238	45.1
22	5	72	19.0	2091	42.1
23	7	67	17.7	1981	39.9
24	10	60	15.9	1820	36.7
25	5	50	13.2	1580	31.8
26	6	45	11.9	1455	29.3
27	6	39	10.3	1299	26.2
28	6	33	8.7	1137	22.9
29	4	27	7.1	969	19.5
30	2	23	6.1	853	17.2
31	2	21	5.6	793	15.9
32	1	19	5.0	731	14.7
33	5	18	4.8	699	14.1
35	1	13	3.4	534	10.8
36	1	12	3.2	499	10.1
38	2	11	2.9	463	9.3
39	3	9	2.4	387	7.8
40	1	6	1.6	270	5.4
42	2	5	1.3	230	4.6
43	1	3	.8	146	2.9
48	1	2	.5	103	2.1
55	1	1	.3	55	1.1
Total	378	378	378	4964	4964

court contacts. The Table also shows cumulative numbers of offenders and offences, adding up from the offenders having the most contacts. Last, Table 11 indicates that a small proportion of offenders accounted for a large number of all court contacts; one third of the sample (121/378) accounted for 60% of the court contacts (2,986), which amounted to an average of 24.7 court contacts. Each member of this smaller group had at least 16 court contacts. These individuals may be referred to as high rate (HR) offenders. The finding that one third of the offenders accounted for close to two thirds of the court contacts is a robust finding in the criminal career literature.

3.8 Were High Rate Offenders Stable Over Time or was their Offence Rate Variable?

This question was examined across the developmental periods from adolescence (ages 8 to 17 years) to adulthood (18 years and older).[10] For each age period, a group of offenders who accounted for about 60% of the court contacts was classified as High Rate (HR). The remainder were classified as Low Rate (LR).

The total number of court contacts amassed during adolescence was 1,996. Using a cutoff of seven contacts (i.e., incurring seven or more court contacts to be classified as HR), a subgroup of 115 HR offenders (30.5%) was found to account for 1,160 (58.1%) of these court contacts. The total number of court contacts amassed during adulthood by the whole sample was 3,001. Using a cutoff of nine contacts (i.e., incurring nine or more court contacts to be classified as HR), a subgroup of 125 HR offenders (33.1%) was found to account for 2,060 (68.6%) of these adult court contacts. A McNemar test (the repeated measures equivalent of a chi-square test) was performed to examine the stability of the HR classifications across these time periods. The test did not yield a statistically significant effect ($\chi^2 = .41$, p = n.s.), indicating greater stability than change. In other words, HR adolescents tended to be HR adults. However, it is important to

[10] Age was based on court contact or conviction dates rather than offence dates.

note that 47% of the HR adolescents did *not* become HR adults, indicating that, for a substantial proportion of adolescents, a high rate of offending behaviour did not continue into adulthood.

3. 9 Did Offences Become More Serious Over Time?

In order to address this question, a quadratic equation was fit to the severity by age data to generate the curve presented in Figure 8 (actual and predicted values are shown). The significant coefficients for *age.CV* and *age.CV^2* in Table 12 indicate a good fit to the data. As indicated by the curve, the severity level peaked at about age 23, where a lower score denotes greater severity.

Figure 8. Offence Severity by Age

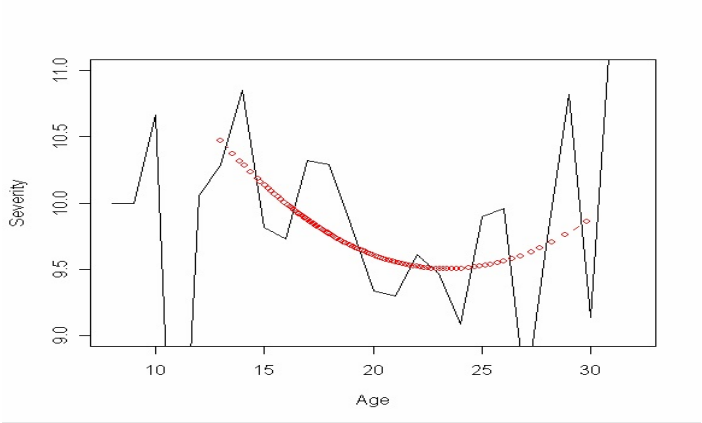


Table 12. Results for Modeling Severity Data

	df	F-value	p-value
(Intercept)	1, 4434	61.23	0.01
age.CV	1, 4434	5.41	0.02
I(age.CV^2)	1, 4434	4.34	0.03

3.10 Psychiatric Disorders

Of the 248 youth who were seen by the HDC staff psychiatrist for assessment of a psychiatric diagnosis, 82% (*n* = 203) met the diagnostic criteria for at least one disorder. Figure 9 presents the percentage of offenders who met criteria for none, one to two, three to four, and six or more disorders. As shown in Figure 10, the seven most common psychiatric disorders were Substance Abuse Disorder (33.9%), Personality Disorder (22.2%), Antisocial Personality Disorder/Conduct Disorder (20.2%), Adjustment Disorder (13.7%), Impulse Control Disorder (12.9%), Sexual Disorder and Gender Identity Disorder (11.7%), and Mood Disorder (10.9%).

Figure 9. Number of Psychiatric Disorders by Percentage of Offenders

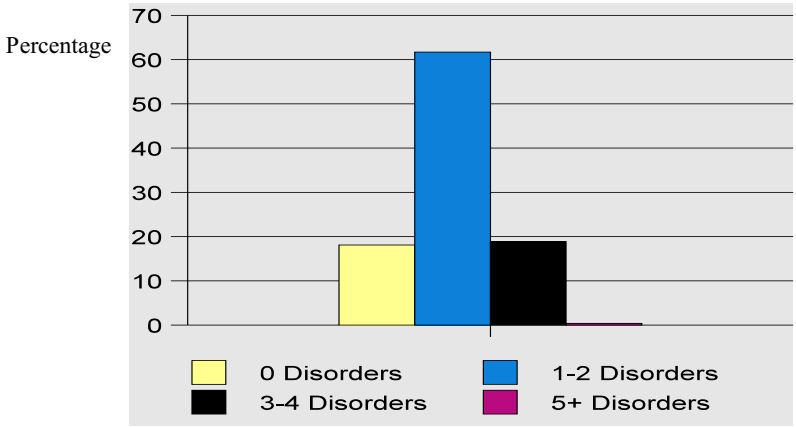
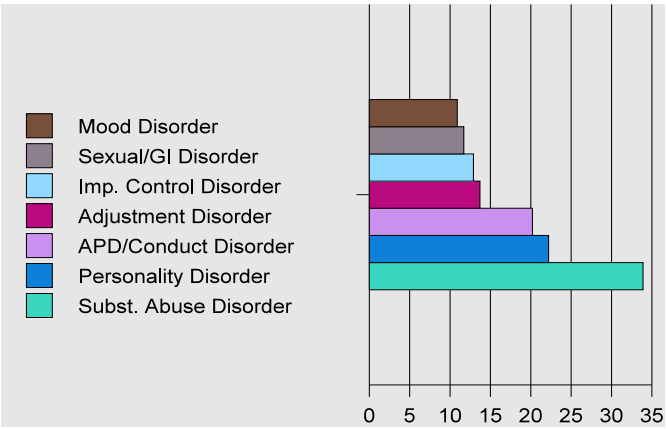


Figure 10. Seven Most Common Psychiatric Disorders



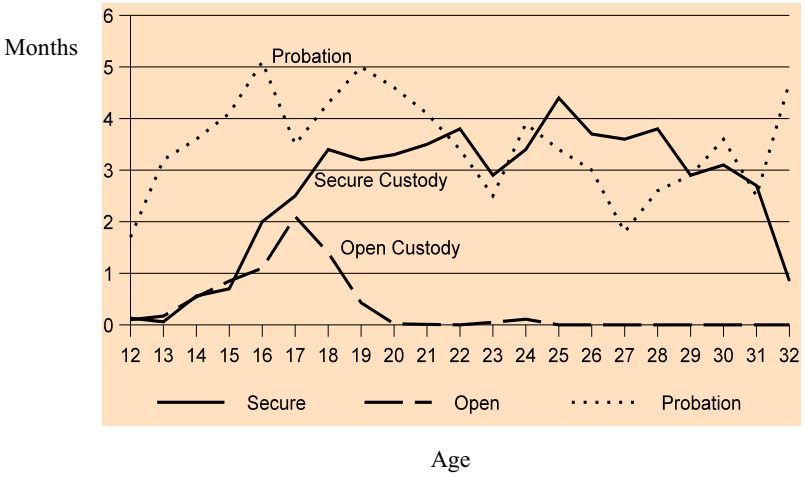
The large percentage of youth in the Toronto sample who met criteria for a psychiatric disorder is consistent with a growing body of literature on the mental health needs of young people involved in the criminal justice system (Altschuler, 2005; Grisso, 2004; Nicol, Stretch, Whitney, Jones, Garfield, Turner, & Stanion, 2000; Teplin, Abram, McClelland, Dulcan, & Mericle, 2002; Wierson, Forehand, & Frame, 1992). Moreover, the prevalence of Substance Abuse, Disruptive Behaviour, Conduct, Adjustment, and Mood Disorder is consistent with available data for young offenders in Canada (Day, 2002; Kendall, Andre, Pease, & Boulton, 1992), the US (Mezzich, 1990; Wierson et al., 1992), and the UK (Anderson, Vostanis, & Spencer, 2004). For example, in a survey of 50 youth at a secure custody facility in Ontario, using a self-reported measure of mental health and psychosocial problems, Day reported that 85.4% of the sample met the clinical criteria for one or more psychiatric disorder. With regard to specific disorders, 52.4% met the diagnostic criteria for Conduct Disorder, 45.9% for Substance Abuse Disorder, 45.8% for Oppositional Defiant Disorder, and 39.6% for Attention-Deficit-Hyperactivity Disorder.

Of the 248 youth who were seen by the HDC staff psychiatrist for assessment of a psychiatric diagnosis, 82% (*n* = 203) met the diagnostic criteria for at least one disorder.

3.11 Dispositions

Our coding scheme yielded 71 disposition codes. The large number of codes was the result of the various combinations of dispositions received, which included absolute discharge, fine, restitution, community services order, probation, open custody, and secure custody. Combinations involving probation, open custody, and secure custody were the most common. Figure 11 shows the average number of months spent in each of three dispositions (probation, open custody, and secure custody) by age.

Figure 11. Average Number of Months Spent in Three Types of Dispositions by Age



As indicated in Figure 11, the time spent on probation during adolescence was greater than the time spent either in secure or open custody. The time spent in secure custody was the same (in early adolescence) or greater (in late adolescence) than the time spent in open custody. In early adulthood, the time spent on probation was greater than the time spent in secure custody. In later adulthood, the pattern was reversed so that the time spent in secure custody was generally greater than the time spent on probation.

In terms of the amount of time spent in each of these three dispositions, summing across all court contacts among those who had ever received the disposition, the average number of days spent

on probation was 2,410.9 or 10.3 months (*SD* = 1,653.1, Median = 2,007, Mode = 1,461, range = 94 days - 12,050 days); the average number of days spent in open custody was 228.9 or 7.6 months (*SD* = 196.2, Median = 181, Mode = 30, range = 3 days - 1,470 days); the average number of days spent in secure custody was 1,065 or 3.0 years (*SD* = 2,471, Median = 464, Mode = 15, range = 1 day - 39,856 days).

As presented in Table 10, 86.0% of the sample spent some time in secure custody over the course of the follow-up period of the study. These individuals amassed a total of 2,236 secure custody sentences, receiving a total of 972.7 years in prison. The average number of secure custody dispositions received (both by itself and in combination with other dispositions) was 6.9 (*SD* = 6.6, range = 1 - 41) and the average sentence length for a single secure custody sentence was 140.2 days (range = 1 day - 36,135 days; 99 years was given for a second degree murder charge, which was omitted in calculating the group average).

3.12 What was the Relationship Between Adolescent Dispositions and Adult Offending?

The question about the relationship between sentences or dispositions received in adolescence (e.g., open and secure custody, probation) and adult offending patterns is an important one that has significant theoretical, policy, and practical implications. Perhaps serving time in open or secure custody hardens the adolescent to a life of crime, resulting in a more serious adult offender. Perhaps serving time in custody is a sufficient deterrent for the individual, causing the young person to turn away from involvement in criminal activity. A greater understanding of the factors that influence these outcomes could inform criminal justice policy with regard to providing meaningful consequences for young people in contact with the law that facilitate rather than undermine the individual to make the kinds of personal and social changes that reduce the likelihood of re-offending.

At the same time, drawing *causal* connections between dispositions received in adolescence and offence patterns committed in adulthood is a complex issue and cannot easily be addressed with

the type of longitudinal data available in the Toronto sample. However, we can conduct some preliminary analyses to reach *tentative* conclusions about the strength and direction of the relationship. Further analyses may be conducted on the Toronto sample based on the work of Daniel Nagin and his colleagues (Haviland & Nagin, 2005; Haviland, Nagin, & Rosenbaum, 2007) that can tease apart some of these causal connections. Such analyses involve examining the impact of an "event," such as adolescent incarceration, on subsequent criminal trajectories.

We conducted a stepwise regression analysis to examine the relationship between three adolescent dispositions (open custody, secure custody, and probation) and the frequency of adult court contacts. For each individual, we examined the total number of days an adolescent spent in secure custody, in open custody, and on probation and regressed these values against the total *weighted* number of adult court contacts (*Contact_weighted*). Each court contact was weighted by the severity of the MSO, based on the Ministry's severity codes (Ministry of the Solicitor General and Correctional Services, 1995) (see Table 4 for the severity codes), using *sum(1/s_i),* where *s_i* is the severity code of the *i'th* offence. Since *Contact_weighted* was not normally distributed, we performed a log transformation on the data. The regression coefficients (Estimates) provide an indication of the correlation between these variables, that is, of the strength and direction of the relationship.

As shown in Table 13, the overall R^2 value for the model was statistically significant. Examination of the regression coefficients indicated a significant positive relationship between *Contact_weighted* and the number of days spent in secure custody and on probation. In other words, the more days spent in each of these dispositions, the greater the number of weighted court contacts incurred in adulthood. Moreover, the regression coefficients indicated that the number of weighted adult court contacts was most strongly related to secure custody. That is, the greater the number of days spent in secure custody as an adolescent, the greater the number of weighted adult court contacts incurred. As a comparison, without the weighting factor, the strength of the overall model to account for adult offending was slightly lower, with an R^2 of .12

Table 13. Results for Regressing Adult Weighted Court Contacts on Adolescent Dispositions

Model	Estimate	Std. Error	t-value	Multiple R^2	F (df)
Intercept	0.61057	0.04826	12.65**	.13**	18.0 (3, 374)
Secure Custody	0.37016	0.06785	5.46**		
Open Custody	0.04536	0.09706	0.47		
Probation	0.08999	0.03577	2.52*		

* $p < .01$.
** $p < .001$.

($F = 16.2$, $p < .001$). However, the regression coefficients were somewhat higher at .45 ($p < .001$), .07 (n.s.), and .25 ($p < .001$), for secure custody, open custody, and probation, respectively.

Though causal relations cannot be inferred, a greater number of days spent in secure custody as an adolescent was associated with a greater number of adult court contacts (weighted by severity).

Based on these findings, it is unclear whether incarceration in adolescence *causes* an increase in the rate and severity of adult offending, as some evidence suggests (Altschuler, 2005), whether the more severe offences that resulted in incarceration during adolescence are associated with the observed adult offending, or whether the relationship is due to a third variable, such as labeling or social stigma associated with incarceration. Further analyses of the Toronto sample may help disentangle some of the causal relations. Moreover, it is unclear whether these findings are generalizable beyond the Toronto sample. Replication with a different sample would shed

further light on the relationship between the use of secure custody placements with adolescents and adult offending patterns.

3.13 What was the Relationship Between Adolescent Offence Patterns and Adult Offence Patterns?

As a last question to be examined in this chapter, we take up the issue of the relationship between adolescent and adult offending. Researchers concur that much can be learned by examining the transition from adolescence to adulthood, a time when life paths become more sharply focused (Johnson, Simons, & Conger, 2004). This transition affords both opportunities and challenges; most individuals navigate it well, but for some it is highly stressful and overwhelming (Petersen & Leffert, 1995). In the latter case, the net effect may be a disruption in the achievement of the normative developmental tasks of adolescence, including completing school, developing positive peer relations, and forming a healthy and integrated sense of self (Masten & Coatsworth, 1998).

It is suggested that involvement in serious antisocial behavior during adolescence, particularly if it (a) begins at an early age; (b) is protracted; and (c) involves contact with the justice system, may lead to a disruption in normal development, bringing about a premature transition from adolescence into adulthood and a concomitant redefinition of roles and contexts (e.g., being processed as a "criminal," making court appearances, and spending a great deal of time with police, correctional, probation, and parole officers) (Chung, Little, & Steinberg, 2005; Johnson et al., 2004). It also can lead to an increase in the number of transitions and non-normative stressors with which the person must contend (Petersen & Leffert, 1995) and impede the young person's ability to accomplish normative developmental tasks. The *cumulative* impact is a continued disruption in normative functioning that can interfere with the person's ability to develop the requisite skills and capabilities to assume the socially accepted roles and expectations of adulthood (e.g., autonomy, independence, and social responsibility). This process can result in an increased likelihood of maintaining criminal activity into adulthood, as opportunities for completing high school and entering the labor force diminish.

This section summarizes the findings reported in the article by Day et al. (2007), in which the extent to which adult offence conviction patterns can be predicted from adolescent offence conviction patterns was examined. Specifically considered was what information about an individual's offence convictions before age 18 can be used to predict his offence convictions at or after age 18. In terms of the analytical models, the study concentrated on predicting the total number of adult offence conviction dates. Conventional prediction methods based on latent Poisson classes (LPC) and generalized linear models (GLM) were used. Also considered was a more sophisticated method based on Cox proportional hazards model that predicts entire post-18 offence conviction timelines, that is, a full curve of the cumulative number of offence convictions as a function of age. Two further methodological issues addressed were, how to account for a time lag in the official criminal records between the date of the offence and the date of decision or sentencing and how to account for time-at-risk.

Based on the analyses of the Toronto sample, using a variety of statistical techniques, it was concluded that no method can yield very accurate predictions of adult offending based on juvenile offending. In other words, juvenile offence behaviour cannot completely predict adult offending activity. For example, it was found that, although latent Poisson classes (LPC) models may be effective at modeling *population* characteristics, as demonstrated by Paternoster, Brame, and Farrington (2001), they are not very useful for predicting *individuals'* adult offence patterns. Some factors that could have undermined the prediction efforts include the choice of covariates to include in the models, the relatively small sample size of the Toronto data set, and the lack of nonoffenders in the Toronto sample (i.e, resulting in a relatively homogenous sample). Other possible reasons for the poor performance of the prediction models include the "chance" factor underlying criminal behaviour in terms of, for example, the opportunistic nature of crime, and the myriad factors that lead one to incur an official criminal record, including being detected, apprehended, and so forth. At the same time, it was found that some prediction methods (i.e., based on Cox proportional models) were able to make better use of adolescent offence

information to improve the precision of the prediction models, particularly when time-at-risk adjustments were made to the data.

Although latent Poisson classes (LPC) models may be effective at modeling *population* characteristics, they are not very useful for predicting *individuals'* adult offence patterns.

4.0 GROUP-BASED TRAJECTORY ANALYSES

In this chapter, we address the issue of the number of latent trajectory groups that are best represented by the Toronto sample. The latent groups are derived from the *rate* of offending over the course of the follow-up period, where rate of offending is determined by adjusting the frequency of court contacts (λ) incurred at a given age by two correction factors: (a) the time lag between age of offence and age at court contact and (b) time-at-risk for that age. The trajectory analysis is based on current developments in model estimation of longitudinal data (Nagin, 2005).

4.1 Group-Based Trajectories: Making Sense of Heterogeneity

Criminal trajectories were estimated using a group-based trajectory model, which is a special application of the finite mixture modeling framework. According to Bushway, Thornberry, and Krohn (2003, p. 134), "the model assumes that there are a finite number of discrete groups of individuals who follow some type of parametric pattern of behavior (such as the Poisson distribution). Each group of individuals is allowed to have its own offending trajectory (a map of offending rates throughout the life course) with a distinct intercept and slope for each group of offenders." Because the criminal activity variable takes the form of an event count, we modeled the data as variations on the Poisson process (Bushway et al., 2003; Nagin, 2005). We first tested the homogeneity of the court contact variable and found that it is better to use a mixture model. Our Poisson model was:

$$\log(\lambda_u^k) = \beta_0^k + \beta_1^k \text{Age}_{it} + \beta_2^k \text{Age}^2_{it} + \beta_3^k \text{Age}^3_{it}$$

where the parameter λ_u^k is the predicted rate of court contacts for individual *i* at age *t* given membership in group *k*. Following the method described by Blokland et al. (2005), the β

parameters were estimated by the method of maximum likelihood under the assumption that, within the trajectory groups, the number of court contacts followed a Poisson process with rate parameter λ_u^k. The model was applied using PROC TRAJ, a SAS-based procedure described by Jones, Nagin and Roeder (2001). The Bayesian Information Criterion (BIC) was used to determine that the optimal number of trajectory groups was four (BIC = -9167.77). Using the maximum likelihood (ML) estimate to obtain coefficients (β), we derived the following results:

$$\log(\lambda_{it}^1) = -43.30 + 6.03\text{Age}^1 + -0.27\text{Age}^2 + 0.00\text{Age}^3$$
$$\log(\lambda_{it}^2) = -30.00 + 4.23\text{Age}^1 + -0.19\text{Age}^2 + 0.00\text{Age}^3$$
$$\log(\lambda_{it}^3) = -19.00 + 2.31\text{Age}^1 + -0.07\text{Age}^2 + 0.00\text{Age}^3$$
$$\log(\lambda_{it}^4) = -46.63 + 6.61\text{Age}^1 + -0.28\text{Age}^2 + 0.00\text{Age}^3$$

The actual and predicted group trajectories for the four-group model are presented in Figure 12. For ease of presentation, the actual trajectories are shown in Figure 13.

Figure 12. Predicted and Actual Criminal Trajectories for a Four-Group Model

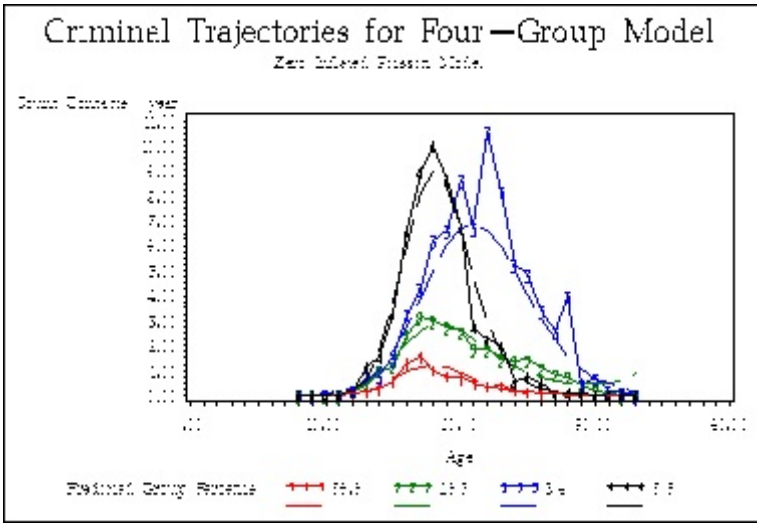
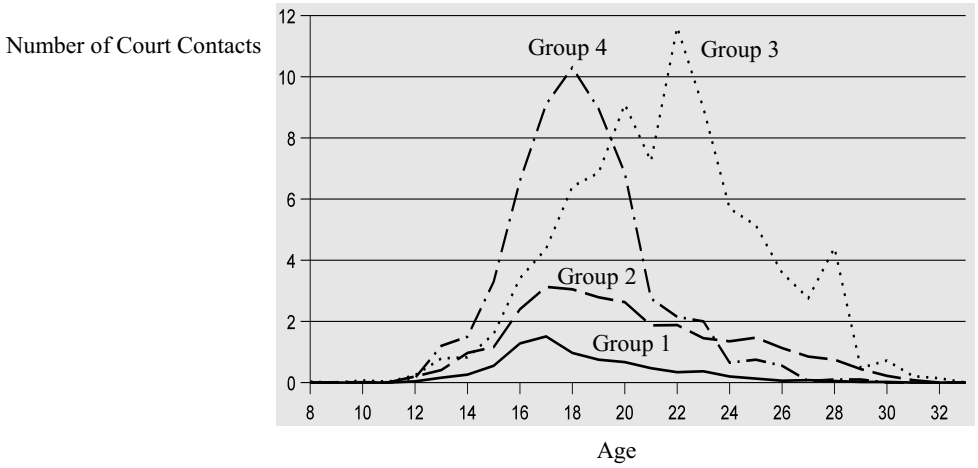


Figure 13. Actual Criminal Trajectories for a Four-Group Model



These findings suggest that the Toronto sample may best be represented by four trajectory groups. According to Nagin and Tremblay (2005, p. 888), "[a] trajectory group is a cluster of individuals following a similar trajectory." We have chosen to label our groups, low rate (Group 1; $n = 217$), moderate rate (Group 2; $n = 112$), high rate-adult peaked (Group 3; $n = 29$), and high rate-adolescence peaked (Group 4; $n = 20$). However, as Piquero, Blumstein, and Farrington (2007) noted, the labels are not meant to reify the existence of these groups, only to provide more descriptive names than abstract labels of, say, Group 1, Group 2, and so forth. Information about each trajectory group is provided below. As well, it must be kept in mind that the *corrected* number of court contacts, on which the trajectory analysis was based, was a function of both the uncorrected number of court contacts and the number of days spent in custody. That is, when regressed on corrected court contacts, uncorrected court contacts and the number of days spent in secure custody each contributed significantly to the equation ($\beta = .43$, $t = 14.8$, $p < .001$, and $\beta = .62$, $t = 17.7$, $p < .001$, respectively), resulting in an overall R^2 of .82 ($F = 742.2$, $df = 2,332$, $p < .001$).

The findings of the group-based trajectory analysis suggest that the Toronto sample may best be represented by four trajectory groups.

4.1.1 Group Differences

Group 1 (Low Rate) comprised 57.4% of the sample. For individuals following the LR trajectory, the average number of (corrected) court contacts was 7.9 (*SD* = 4.6). This group incurred an average of 3.8 (*SD* = 2.7) court contacts in adolescence and 4.2 (*SD* = 3.5) court contacts in adulthood. Their average criminal trajectory length lasted for 6.5 years, from ages 16.0 to 22.5 years. This trajectory group also spent the least amount of time in secure custody, having been sentenced, on average, to a total of 281.2 days (*SD* = 350.6).

Group 2 (Moderate Rate) comprised 29.6% of the sample. The average individual in the MR trajectory incurred 28.3 (corrected) court contacts (*SD* = 11.3). This group incurred an average of 8.3 (*SD* = 5.2) court contacts in adolescence and 19.9 (*SD* = 11.1) court contacts in adulthood. Their average criminal trajectory lasted for 11.0 years, beginning at age 15.0 and ending at age 26.0 years. This trajectory group was sentenced, on average, to a total of 1166.7 days (*SD* = 939.8) in secure custody.

Group 3 (High Rate-Adult Peaked) comprised 7.7% of the sample. For individuals following the HRADP trajectory, the average number of (corrected) court contacts was 84.7 (*SD* = 32.1). This group incurred an average of 11.4 (*SD* = 9.0) court contacts in adolescence and 73.3 (*SD* = 29.6) court contacts in adulthood. The HRADP group had the longest criminal trajectory, lasting, on average, 12.1 years, beginning at age 14.5 and ending at age 26.6 years. This trajectory group also spent the most amount of time in secure custody, having been sentenced, on average, to a total of 3,610.3 days (*SD* = 1,964.6).

Group 4 (High Rate-Adolescence Peaked) comprised 5.3% of the sample. For individuals following the HRADOP trajectory, the average number of (corrected) court contacts was 57.1 (*SD* = 25.2). This group incurred an average of 21.9 (*SD* = 9.6) court contacts in adolescence and 35.2 (*SD* = 20.6) court contacts in adulthood. Their average criminal trajectory lasted for 9.7

years, beginning at age 14.3 and ending at age 24.0 years. This trajectory group spent, on average, a total of 1,850.4 days (*SD* = 880.2) in secure custody.

Table 14 presents the average posterior probabilities, which indicate how well the model was able to "sort individuals into the trajectory group to which they have the highest probability of belonging" (Piquero et al., 2007, p. 149). The mean probability coefficients are quite high across all four groups, exceeding .90, indicating that the model has little ambiguity when making group assignments.

Table 14. Mean Posterior Probabilities for Group Assignments

Trajectory Group	Prob. (G1)	Prob. (G2)	Prob. (G3)	Prob. (G4)
1. Low rate (n = 217)	**.97**	.03	.00	.00
2. Moderate rate (n = 112)	.05	**.92**	.02	.01
3. High rate-adult peaked (n = 29)	.00	.00	**.99**	.00
4. High rate-adolescent peaked (n = 20)	.00	.04	.01	**.95**

In summary, the four trajectory groups reflect the underlying heterogeneity of the Toronto sample, as reflected by their different rates and patterns of offending over time, which is consistent with a growing body of literature on criminal trajectories (Piquero, 2008). Indeed, these results are remarkably similar to the shapes (but not the distributions) of four of the five trajectory groups yielded by the Cambridge Study of Delinquent Development (CSDD) (Piquero et al., 2007). The fifth group of the CSDD comprised nonoffenders (62.3%). The four trajectory group labels from the CSDD sample and their distributions, corresponding to the four trajectory groups from the Toronto sample (i.e., LR, MR, HRADP, HRADOP), were Low Adolescence

Peaked (18.6%), Very Low Rate Chronics (11.3%), High-Rate Chronics (2.5%), and High Adolescence Peaked (5.4%).

4.1.2 Crime Mix

In this section, we examined the crime mix across the four trajectory groups in order to address the question of whether the offenders following different trajectories, on average, engage in different types of offences. We examined the issue in three ways. First, we compared the average *number* of offences committed by each trajectory group for each of six types of offences (property, violent, drug, sex, breach, and other). Second, we examined the *percentage* of offenders in each trajectory group who committed one or more of each of six offence types. Third, we compared the average *proportion* of all offences committed by the trajectory groups across the six offence types.

A Multivariate Analyses of Variance (MANOVA) was performed with the average (uncorrected) number of offences for each of six offence types across the four trajectory groups. The omnibus F test (Pillai's Trace) was statistically significant, $F(18, 1113) = 17.9$, $p < .000$, $\eta^2 = .23$. The univariate F tests are presented in Table 15 and indicated that the groups differed on all the offence types, except sex. Follow-up Scheffe tests revealed that the LR group differed from all the other groups on property, violent, drug, and breach offences. The MR group differed from the HRADP group on property and violent offences and from the HRADOP group on drug and breach offences. The HRADP and HRADOP did not differ on any of the offence type variables.

Given that the average number of offences committed for each of six types of offences showed some significant differences across the trajectory groups, we examined the issue from another perspective to determine whether there were any differences in the percentage of offenders who engaged in particular offence types. For example, we address the question, were there significantly more offenders in the LR group who committed one or more sex offences than in the other three groups? These results are presented in Table 16. Note that the offender type

Table 15. Mean (*SD*) Number of Offences for Six Offence Types Across Trajectory Groups

Offence Type[1]	Trajectory Group				
	LR (*n* = 217)	MR (*n* = 112)	HRADP (*n* = 29)	HRADOP (*n* = 20)	F (df)
Property	3.0 (2.65)	9.5 (5.4)	15.1 (9.8)	11.5 (6.2)	95.6** (3.374)
Violent	1.9 (1.9)	4.2 (3.0)	6.7 (4.6)	5.3 (3.7)	42.8** (3.374)
Drug	.4 (.8)	1.3 (2.0)	1.3 (1.9)	1.5 (2.4)	11.9** (3.374)
Sex	.4 (24.7)	.3 (.8)	.1 (.4)	.4 (.7)	1.4 (3.374)
Breach	.8 (1.2)	2.6 (1.9)	3.3 (2.6)	4.2 (3.7)	47.1** (3.374)
Other	.4 (8.5)	1.4 (2.0)	1.1 (1.5)	1.7 (2.8)	14.4** (3.374)

[1]Note: Based on the most serious offence (MSO) at each court contact.
** $p < .001$.

groups are not mutually exclusive. Chi-square tests revealed statistically significant differences for all offender types (all tests significant at, $df = 3$, $p < .001$), except for sex offenders ($df = 3$, $p < .18$). At the same time, although the percentages of offender types in the LR group were relatively lower than in the other three groups (with the exception of sex offenders), the *absolute* percentages suggested that there was considerable versatility in the LR group, as there was in the other trajectory groups, as well.

Last, following the work of Blokland et al. (2005), we examined the proportions of offences committed across six offence types within each individual's entire trajectory. These distributions were then "averaged across trajectory group members to establish the average crime mix for each group" (pp. 933-934). A ROTI score was calculated for each offender across their criminal

trajectory, based on the MSO.[11] In this way, the numbers in the columns in Table 17 sum to 100 percent. A MANOVA was performed with the proportion of each of the six offence types as the

Table 16. Percentage (Number) of Six Offence Types Across Trajectory Groups

Offender Type[1]	Trajectory Group				
	LR (n = 217)	MR (n = 112)	HRADP (n = 29)	HRADOP (n = 20)	Total Number of Offenders
Property	81.1% (176)	97.3% (109)	100.0% (29)	100.0% (20)	334
Violent	74.2% (161)	92.0% (103)	89.7% (26)	100.0% (20)	310
Drug	26.7% (58)	50.9% (57)	58.6% (17)	40.0% (8)	140
Sex	27.6% (60)	21.4% (24)	10.3% (3)	25.0% (5)	92
Breach	47.5% (103)	85.7% (96)	93.1% (27)	95.0% (19)	245
Other	25.3% (55)	54.5% (61)	55.2% (16)	45.0% (9)	141

[1]Note: Based on the most serious offence (MSO) at each court contact.

dependent variables across the four trajectory groups as the independent variable. The omnibus F test (Pillai's Trace) was found to be statistically significant, $F(15, 1116) = 2.8$, $p < .000$, $\eta^2 = .04$. The univariate F tests are presented in Table 17 and indicated that the groups differed on the average proportion of property and sex offences. Follow-up Scheffe tests revealed that the LR and MR groups differed on the proportion of property offences and the LR group differed from the MR and HRADP groups on the proportion of sex offences. Note that the small sample sizes in the HRADP and HRADOP groups may have affected these results.

[11] For this analysis we were unable to use *all* their offences, as we had with the previous ROTI score analyses.

In summary, the findings for the crime mix data support the position that all four trajectory groups comprise largely versatile offenders, who are represented in different proportions and who offend at different rates. Indeed, the degree of versatility across the trajectory groups, both in terms of the frequency of offences committed and the proportion of offenders who engage in a range of offences, was striking. This is consistent with a considerable body of literature that

Table 17. Proportion of Offences Committed for Six Offence Types Across Trajectory Groups

Offence Type[1]	Trajectory Group				
	LR (n = 217)	MR (n = 112)	HRADP (n = 29)	HRADOP (n = 20)	F (df)
Property	39.1 (28.5)	48.2 (21.3)	52.0 (22.2)	48.6 (20.5)	4.7* (3.374)
Violent	29.1 (27.3)	22.6 (15.8)	27.6 (18.8)	23.9 (16.2)	2.0 (3.374)
Drug	4.8 (10.2)	7.2 (11.3)	4.5 (5.7)	4.7 (5.7)	1.5 (3.374)
Sex	11.1 (24.7)	2.0 (6.2)	.5 (2.0)	1.4 (2.8)	7.6** (3.374)
Breach	10.4 (14.5)	13.4 (10.1)	11.9 (7.8)	16.3 (10.8)	2.3 (3.374)
Other	5.4 (13.0)	6.5 (8.5)	3.4 (4.0)	5.0 (8.0)	.7 (3.374)

[1]Note: Based on the most serious offence (MSO) at each court contact.
*$p < .05$. **$p < .001$.

finds criminal trajectories to be marked by more versatility than specialization, particularly among juvenile offenders (Piquero et al., 2003; cf Lattimore et al., 1994). Even in the LR group, the individuals showed evidence of engaging in a range of offence types. At the same time, it should be noted that 100% of the specialists (12/12) were in the LR group.

The findings of the crime mix data support the position that all four trajectory groups comprise largely versatile offenders, though who are represented in different proportions and who offend at different rates.

➤ 5.0 POLICY AND PRACTICE IMPLICATIONS

In this chapter, we consider the social policy and practice implications of the findings of the present study in the context of the criminal career research.

5.1 Policy and Practice Implications of the Criminal Career Research

Over the past two decades, criminal career research has generated a great deal of information, largely descriptive, about the longitudinal patterning of offending on a range of dimensions, such as rate, type, timing, severity, and diversity. Much has also been written about the policy implications of these findings. According to Farrington (1988), at its essence, "the most basic policy question centers on how offending can be reduced most effectively" (p. 321). A particular focus of this work has been on two key findings, grounded in two broad practical issues, prediction/prevention and retributive justice (DeLisi, 2005): (a) the early identification of chronic and high rate offenders and the optimal response to this group, including prevention, deterrence, rehabilitation, and selective incapacitation; and (b) the expected duration of criminal trajectories in regard to decisions about prison sentence lengths, in order to optimize the efficient and effective allocation of limited criminal justice resources.

With regard to the former issue, Piquero et al. (2007) reported that effective prevention of the onset of criminal behaviour, focusing on low academic achievement, ineffective parenting, impulsivity, and economic disadvantage, can reduce not only the incidence of crime but also its correlates (e.g., alcohol substance use, school failure, unemployment). With regard to the latter issue, Piquero et al. called into question the use of lengthy incarceration periods into mid-adulthood to late adulthood for some groups of chronic offenders, given that the offence rate of the high rate chronic offender group in the CSDD sample declined by their late 30s (see also

Kazemian, LeBlanc, Farrington, & Pease, 2007 who found a similar result with a French-Canadian sample).

5.2 Policy and Practice Implications of the Present Study

Many of the results presented in this report were descriptive. The study was designed as an exploratory investigation of the various dimensions of the criminal trajectories of the Toronto sample. Such is the nature of the research on criminal trajectories (Blumstein et al., 1988). Although a number of empirical questions were posed and addressed with the data at hand, many other questions raised by the data cannot be addressed here. In some measure, these questions relate to two broader sets of questions: (a) what is the impact of *specific* criminal justice practices on offenders' criminal trajectories?; and (b) how do we *explain* the observed findings of the present study? With regard to the former question, we could ask, for example, "How does the use of custodial sentences in early adolescence impact the subsequent course of offending?" With regard to the latter, for example, while we know that, as a group, the diversity and severity of offending increased into early adulthood as the rate of offending decreased, how do we account for these findings? Further work is needed both to test specific hypotheses of interest to the criminal justice system and to develop the theoretical underpinnings of the observed offending patterns. At the same time, the data of the present study *can* contribute to the broad knowledge base about developmental criminology and identify possible areas for further investigation. Both types of knowledge generation (i.e., testing specific hypotheses through empirical research and drawing conclusions based on a synthesis of various lines of research) are important to inform social policy (Huston, 2008; Wadell, Lavis, Abelson, Lomas, Shepherd, Bird-Gayson, Giacomini, & Offord, 2005). Additionally, where the findings of the present study converge with the results of other studies about responding to the needs of youth involved in the justice system, broad suggestions for policy and praxis can be made. It is from this context that we proceed.

5.2.1 Eight Findings

Eight findings from the present study suggest areas for criminal justice policy and practice. These findings and their implications are summarized in Table 18. First, the results indicated that four distinct trajectories best represent the offending patterns among the Toronto sample. For example, more than half the sample evinced a low rate trajectory and a small percentage showed a high rate trajectory. It is important that policy and practice reflect such differences, work towards identifying which trajectory a particular young person might follow, research the most effective approaches with each group, and apply sanctions and rehabilitation interventions differentially to prevent or delay further criminal activity. Greater understanding of the early predictors of trajectory group membership would be particularly helpful in this regard. For example, although chronic offenders made up only a small proportion of the sample, they accounted for a disproportionately large number of court contacts. This observation suggests that appropriate responses at the earliest contact with the justice system (and, ideally, even earlier, targeting high-risk children) would pay off in the long run. For example, in a review of the literature on the effectiveness of early prevention programs for children at risk for antisocial and delinquent behaviour, Walsh and Farrington (2007) concluded that there was considerable support for the effectiveness of school-based programs (in particular), especially those that target the highest risk children (i.e., children with a large number of risk factors for antisocial behaviour). The cost to be saved in working effectively with a high risk youth to age 14 years is estimated to be between $2.6 to $5.3 million (US) (Cohen & Piquero, 2008). Last, it would be important to understand the factors that differentiate trajectory Groups 3 (HRADP) and 4 (HRADOP), as Group 4 showed a marked decrease in their offending in late adolescence/early adulthood, after engaging in a high rate of criminal activity, while Group 3 continued their criminal behaviour into adulthood.

Second, overall, the offending of the Toronto sample was characterized by a high degree of versatility. It is unclear, however, whether there was a particular patterning to this diversity (e.g., where theft leads to break and enters, which lead to robbery, which leads to trafficking, which

Table 18. Eight Findings from the Present Study and their Implications for Policy and Practice

	Finding	Implication
1.	There are distinct groups of young offenders, each of which has a different trajectory.	Policy and practice could reflect such differences, work towards identifying to which group a particular young person might belong, research the most effective approaches with each group, and apply sanctions and rehabilitation interventions differentially.
2.	The sample was characterized by a high degree of versatility in offending, but typically began as property offenders.	Effective early intervention with youth may prevent or delay later involvement in a range of offence types.
3.	An early age for a first court contact was associated with a higher rate of offending and a longer criminal trajectory.	Need for early identification and intervention for at-risk children and youth.
4.	Throughout their trajectories, nearly half the offences committed by the sample were property crimes.	Need to understand and address the criminogenic risk factors that support such antisocial behaviour.
5.	The rate of offending declined at age 17 years but the diversity and severity rates began to decline at age 23 years.	Need for further research to better understand these criminal trajectories.
.		
6.	Drug offences had primarily a late adolescent or early adulthood onset, though a small group of high rate drug offenders with an early age of onset was identified in the Toronto sample.	Need to be able to early identify youth at risk for high rate drug offending and provide a range of specialized services.
7.	The offending rate for sex offenders tended to be low with some degree of specialization.	Need for specialized services provided within a range of intensity levels.
8.	A large proportion of offenders had a mental health problem.	Need for a range of appropriate mental health assessment and treatment services.

leads to weapons offences, and so forth) (Farrington, 1988). Such a pattern would suggest a need to sequence interventions, targeting the risk factors associated with each offence type (as risk factors for each become known). This would be an area for further investigation as would understanding the factors that give rise to a diversity in offending. The longitudinal pattern of offence involvement in the Toronto sample suggests that early involvement in criminal activity, which involves largely property crimes, coupled with an increase in breach and other offences in late adolescence, may reflect an emergence or consolidation of a more clearly defined anti-authority and antisocial attitude and thinking style as well as a further entrenchment in a criminal lifestyle. This outcome places young people at risk for escalating the rate, diversity, and severity of offending. An alternative hypothesis is that difficulties complying with the conditions of a disposition (e.g., probation) or with other orders pertaining to the administration of justice (e.g., to appear in court at a certain time) result in subsequent criminal charges, contributing to their further entrenchment in the justice system (Sprott, 2006). Effective early intervention at the time of the initial contact with the justice system may prevent or delay an escalation in the diversity of offending. However, research is needed to identify how best to respond to youth at their first contact with the system, whether this response involves judicial or extrajudicial sanctions. Either way, sanctions that emphasize meaningful consequences and hold a person accountable for his or her behaviour likely holds the greatest chance for success. Moreover, it is important to bear in mind that a majority of the individuals in the Toronto sample were in the low rate offender trajectory group, and so "over-responding" to youth may lead to iatrogenic effects; "deep" interventions may do more harm than good.

Third, consistent with other studies, in comparison to offenders with a later age of onset for a first court contact, an early age for a first court contact was associated with a higher rate of offending and a longer criminal trajectory. Indeed, Loeber and Farrington (2001) reported that early onset offenders have a two-to-three times greater likelihood than late onset offenders to become chronic offenders. Such findings emphasize and support the need for early intervention and prevention programs, which have been shown to be effective to reduce the likelihood of

problematic outcomes (e.g., Augimeri, Koegl, Farrington, & Day, 2007; Walsh & Farrington, 2007).

Fourth, nearly half the offences committed by the sample were property offences, primarily theft and related (i.e., possession of stolen property). Again, this observation highlights the importance of effectively responding at the first contact with the justice system in order to avert further involvement in criminal activity, a broadening of the range of offences in which the individual engages, and an escalation in the severity of offences. A possible response to those who engage in property offences could include extrajudicial measures and sanctions, and diversion programs (e.g., restorative justice, restitution, youth justice conferences). A focus of early treatment and rehabilitation could be the criminogenic thinking patterns and cognitive justifications that support covert offences (e.g., the idea that property crimes are ”victimless” because no one gets hurt), as well as associating with a delinquent peer group and substance use and abuse. However, further research is needed on the effectiveness of such diversion programs for youth who engage in property offences.

Fifth, while the rate of offending began to decrease at age 18, the level of diversity and severity did not begin to decrease until about age 23. This patterning in diversity and severity is an interesting finding that may reflect either a “normative” delinquent trend, like the age-crime curve, or an atypical trajectory that is in need of further investigation. In another way, the observed trajectories of rate, versatility, and severity may reflect a marked developmental shift for this sample, related to their coping with the developmental period of *emerging adulthood*, from ages 18 to 25 years (Arnett, 2000). As the Toronto sample reached this age, they also might have become further ensnared by the consequences of their antisocial behaviour, entrenched in a criminal lifestyle, and increasingly disengaged from such normative influences and prosocial institutions and opportunities such as access to education, employment, and stable relationships (Moffitt, 1993). This trend may reflect a narrowing of options in terms of engagement in legitimate employment and academic opportunities. Moreover, Arnett describes this period as

one of greater instability than other developmental periods, with more loosely defined social roles and obligations. It also is a time when rates of many associated risky behaviours peak, such as binge drinking, drug use, and risky sexual practices. These factors can make it difficult to navigate this developmental period, particularly for members of such vulnerable populations as those involved in the criminal justice system (Arnett, 2007). A greater understanding of the factors that influence offending patterns (both escalations and de-escalations) in terms of the rate, versatility, and severity is needed.

Sixth, although most of the drug offences began in late adolescence and early adulthood, a small number of high rate drug offenders was found in the Toronto sample. This group of 21 individuals accounted for a disproportionately large number of drug offences both in adolescence and adulthood. If this subgroup could be identified early, they could be targeted for specialized intervention. Early involvement with drug offences also may be associated with co-occurring psychosocial and mental health problems (Chassin, Ritter, Trim, & King, 2003), which could be addressed in treatment and rehabilitation. Addressing their needs at the earliest age would be particularly important as some evidence suggests that drug use at ages 13 to 17 years is a precursor to Antisocial Personality Disorder (APD) in early adulthood (Loeber, Burke, & Lahey, 2002).

Seventh, sex offenders are often seen within the criminal justice system and by society at large as a very high risk criminal subgroup. The present study indicated that the "specialists" in the Toronto sample (including one-time offenders; see Table 6) were more likely to be sex offenders and that sex offences tended to be committed during the adolescent period (see Figure 7). Moreover, findings in the literature suggest that the rates of recidivism for both adolescent and adult sex offenders tend to be relatively low (Hanson & Morton-Bourgon, 2005; Nisbett, Wilson, & Smallbone, 2004). For example, Hanson and Morton-Bourgon conducted an extensive meta-analysis of 82 studies and found that, over an average follow-up period of five to six years, the average sexual recidivism rate was 13.7%, with a higher recidivism rate for general (any)

offending (36.2%). However, any findings pertaining to sex offenders in the Toronto sample may be not be generalizable to other samples because of the high number of sex offenders in the HDC houses and the availability of treatment programs for this population. As a result, further research is needed of the criminal trajectories of sex offences in this and other samples. Moreover, it would be of interest to compare the recidivism rates (and other characteristics) of offenders in the Toronto sample who began engaging in sex offences during adolescence with those who began in adulthood, based on available criminal data.

Eighth, it is significant and noteworthy that 82% of the youth who were seen by the HDC psychiatrist met the diagnostic criteria for one or more mental health disorder. This figure stands in sharp contrast to the 15% to 21% of children and youth in the general population in Canada who are affected by a mental health disorder (MCYS, 2006). Clearly, in comparison to the general population of children and youth, young people in contact with the law have a considerably higher prevalence of mental health disorders. Based on the findings of other studies, the prevalence rate of mental health disorders among youth in custody is estimated to be between 65% and 75% (Golzari, Hunt, & Anoshiravani, 2006). For example, Nicol et al. (2000) reported that 75% of their sample of 116 male adolescents, which included both incarcerated and non-incarcerated offenders, had a "clinically significant psychiatric problem" (p. 251). Teplin et al. (2002) reported that nearly 66% of males and nearly 75% of females in a juvenile detention centre met the criteria for at least one psychiatric disorder. Young people in contact with the law also show high levels of other psychosocial problems, such as anger management, interpersonal problems, poor emotional regulation, and suicidality (Day, 2002). Such youth may be described as both troubled and troubling and support the frequent suggestion (e.g., Grisso, 2004) that the provision of psychosocial and mental health assessment and treatment services for this population is of paramount importance and that a continuum of comprehensive services need to be available both within the institutional facilities of the criminal justice system and within the community. According to Soler (2000), failure to meet these mental health and psychosocial needs may lead to an increased risk for violent and disruptive behaviour and institutional

management risk problems. The relationship between mental health problems and criminal activity will be explored in subsequent analyses of the Toronto sample.

The latter point highlights the common observation that many young people in contact with the law, particularly those with an early age for a first contact, manifest complex and often longstanding risk factors (e.g., family problems, school or learning problems, child abuse history, mental health or other psychosocial problems). These factors require interventions that are perhaps better addressed outside the justice system and outside the purview of the YCJA, which, by necessity, have as their primary focus a *reactive* response to crime rather than a proactive or preventative mandate. Ideally, a range of services for children, youth, and their families would be provided by a system (or network of systems) that is multifaceted, well-coordinated, and provides sustained programming.

➤ 6.0 C O N C L U S I O N S

This longitudinal study examined the criminal trajectories of the Toronto sample. An aim of the study was to gain a greater understanding of the nature and pattern of offending on various dimensions of their criminal trajectories, particularly across the developmental transition from adolescence to adulthood. It is hoped that the insights gained from this research could inform criminal justice policy and practice to reduce offending in individuals at its earliest stages.

The analyses presented in this report were guided by the concept of a *criminal career*, which was thoroughly described by Alfred Blumstein and his colleagues in their seminal two-volume work published in 1986. Since that time, the criminal career paradigm (CCP) has become an important framework from which to study changes and continuities in criminal activity over time (Piquero, 2008), in keeping with the prominence of the life course perspective on criminal behaviour (Thornberry, 2005). The CCP has a number of features that make it appealing for the study of offending over the life-course. First, a criminal career or criminal trajectory is understood to be a multidimensional construct encompassing various parameters including type, timing, frequency, rate, diversity, and severity. Each of these dimensions may be monitored, mathematically modelled, and graphically displayed as it unfolds over the course of a particular trajectory. A question that arises, then, is whether the shape of each dimension follows a similar pattern over time or whether the dimensions show distinct patterns.

The findings of the present study suggest that, rather than unfolding in unison, as a singular entity, the various dimensions of a criminal trajectory unfold at different periods over the course of development (see also Hoeve et al., 2008). For example, with regard to the type of offences committed, the Toronto sample showed greater involvement in property offences in early adolescence, followed by a steady decline in property offending and a concomitant increase in violent and other offences beginning at age 17. As well, although the rate of offending peaked at

the age of 17, the severity and diversity of offending peaked six years later, at the age of 23. Greater understanding of the life events that influence changes in these dimensions is needed.

Additionally, increased conceptual and methodological clarification of the criminal trajectory dimensions over the past several years (e.g., use of the D score as a measure of versatility) has facilitated comparisons across studies. For example, some of the descriptive results reported in the present report were the same analyses reported by David Farrington and his colleagues (2006) in their follow-up (to age 50) of the Cambridge sample. Where applicable, comparisons were made in the present report between the Toronto and Cambridge samples. For example, in both studies, the number of court contacts and the number of offenders peaked at age 17. However, the average age of the last court contact for the Toronto sample was considerably lower (23.9 years) than the average age for the last recorded offence in the Cambridge sample, (38.8 years), suggesting that the Toronto sample might not have "aged out" of their criminal trajectories and that continued follow-up might be warranted.

Second, as implied in the previous point, the CCP takes a developmental approach and aims to understand the multiple pathways to criminal behaivour and the mediating and moderating influences along the way. From a theoretical, empirical, and policy perspective, this line of investigation is important to identify the specific processes by which the complex phenomenon of criminal behaviour is initiated, maintained, and desists. In other words, from a CCP perspective, criminal trajectories are mapped onto developmental trajectories. The insights gained from this approach may then be applied to the development of prevention and early intervention programs that target the risk factors that are causally linked to the onset and maintenance of criminal behaviour and, likewise, strengthen the factors found to be associated with criminal desistance. Last, with the application of finite mixture models to examine criminal trajectories, the underlying heterogeneity of longitudinal criminal activity can be revealed. In the present study, a four-group model was identified, comprising low rate, moderate rate, high rate-adult peaked, and high rate-adolescence peaked trajectories.

6.1 Areas for Further Research

While a number of questions were answered in the present report, additional questions not examined may be addressed in subsequent analyses and reports to the MCYS. First, we will explore in more detail the relationship between psychiatric disorders and criminal trajectories. For example, how is co-morbidity (the occurrence of more than psychiatric disorder within an individual) related to offence patterns? Is co-morbidity a risk or protective factor and what combinations of disorders lead to specific criminal outcomes? What is the relationship between adolescent placement in secure custody and psychiatric disorders? These are important questions given the consistently high rate of mental health and psychosocial problems among young people in contact with the law. Second, we will attempt to disentangle some of the causal relationships between placement in an open or secure custody facility as an adolescent and adult offending. Third, early risk and protective factors that are associated with trajectory group membership will be examined. A file review of predisposition reports, psychiatric notes and reports, psychological reports, and other available documents will be conducted by a psychology graduate student for a Master's thesis at Ryerson University, in order to identify significant childhood predictors. Fourth, the results of this study will be replicated with a second sample from the same population of offenders from the HDC houses. Fifth, with the inclusion of additional follow-up data for Samples A and B (to September, 2007), further trajectory analyses will be conducted for later adulthood. Last, although it would require a new study sample and ten years to conduct, it would be of interest to replicate the study findings with a more recent cohort of offenders who have been processed under the Youth Criminal Justice Act (YCJA).

Other areas of investigation are suggested but which are beyond the scope of the present study. For example, from a life-course perspective, it would be important to identify the particular life events that are associated with changes and continuities of the criminal trajectories, including onset, maintenance, and desistance. This is an emerging area of study within the criminology field (e.g., McGloin et al., 2007; Sullivan et al., 2006) facilitated by recent methodological and statistical advances in longitudinal research. Theory development informed by the empirical

research is needed to help guide our interpretations of the observed results. For example, how are risk and protective factors mediated through individual (e.g., temperament, IQ) and environmental (e.g., neighbourhood, peer groups, family structure, SES) factors, leading to particular outcomes and how do we explain the findings? Last, although a great deal is known about criminal trajectories in males, further research is needed on criminal trajectories in females.

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➤ APPENDIX A: FOUR CASE VIGNETTES

The following four case studies are provided to convey a sense of the diversity in the nature and pattern of the offence trajectories of the individuals in the Toronto sample, to describe some of the "trees within the forest." The cases were selected because of some unique or interesting aspect of their trajectories, such as an unusual charge, a lengthy sentence at a first conviction, or a brief, but full, criminal trajectory. However, they also reflect some critical features of the entire sample. A brief summary of the key characteristics of the case is a provided followed by a more detailed description of the offence trajectory.

"Martin"

Summary: Martin was a versatile offender who committed property, violent, and other (breach, unlawfully at large) types of offences. His trajectory length spanned 10 years, from ages 16 to 26. He was admitted to the HDC at the age of 17 and served a 4-month sentence. For his first conviction, he received a 10-month sentence in secure custody. While at the HDC, he was diagnosed by the staff psychiatrist as psychotic.

Synopsis: Five days after turning 16, Martin was convicted for arson and sentenced to 10 months in secure custody, followed by 7 months in open custody and 6 months on probation. This was his first conviction. Twenty-one months later, he was convicted a second time, for failure to comply with probation, and was given a 4-month sentence in open custody, served at the HDC house. He was convicted a third time, 18 months after his release from the HDC group home, at the age of 19, for break and enter. Within 12 months, he was convicted twice more, for possession of stolen credit cards and escaping lawful custody, for which he received sentences of 4 months and 1 month, respectively. Seven months later he was charged with uttering a death threat and, 5 years after that, with simple assault. While serving time at the HDC, the staff psychiatrist diagnosed him with psychosis.

"Sam"

Summary: Sam was a versatile offender, committing sex and property offences. His trajectory length spanned 6 years, from ages 12 to 18. He was admitted to the HDC at the age of 18 and served a two-month sentence.

Synopsis: At the age of 12, Sam was convicted for incest. He was convicted a second time for incest at the age of 13. Two years later, he was convicted for possession of break and enter instruments, his only property offence. He had three more convictions between the ages of 17 and 18, two for sexual assault and one for sexual interference. He was admitted to the HDC at the age of 18 and served a two-month sentence, followed by one year of probation. He committed no subsequent offences after his release from the HDC.

"Joe"

Summary: Joe was a highly versatile offender with a lengthy criminal record, spanning a period of 11 years. During his criminal trajectory, he was charged with a variety of offence types, including property, violent, drug, and other. He was first convicted at the age of 14 and tended to have many convictions in rapid succession, for example, every 3 or 4 months. He was admitted to the HDC house at the age of 17 where he served a 3-month sentence. Available data indicate that Joe died at the age of 27.

Synopsis: Joe was first convicted at the age of 14 for a break and enter and, 2 days later, for assault simple. After a 2-year break, he was convicted at the age of 16 for assault simple, followed in rapid succession by 6 more convictions, for failure to comply with recognizance, break and enter, trafficking, and possession over $1,000. He was admitted to the HDC at the age of 17. He had his first subsequent conviction 3 days after his release. Over the next 8 years, he would be convicted 29 more times, for a range of offences, mostly property, including break and enter and related, mischief property, and theft. He was also convicted for various violent offences including robbery, weapons, uttering a death threat, assaulting a peace officer, and

resisting arrest, as well as once for trafficking. For his crimes, he received mostly short prison sentences, of 4 months or less, though, for his last 2 convictions (both for property offences), he received much longer sentences. Joe's last conviction was on August 14, 1998, at the age of 24, for a break and enter. He died on December 4, 1999, at the age of 27.

"John"

Summary: John was a versatile offender, committing property, violent, sex, and "other" offence types. His trajectory length was brief, spanning a mere 3 years, from ages 15 to 18. However, during this period, he managed to incur a total of 10 convictions. He was admitted to the HDC at the age of 17, where he served a 6-month sentence.

Synopsis: John was first convicted at the age of 14 for robbery. Less than a month later he was convicted a second time for robbery. One year later he was convicted for a weapons offence. Over the next 10 months he would be convicted 5 more times, for failure to comply with recognizance, weapons, possession under $1,000, and break and enter. He received mostly probation for his offences, with some short (3 - 6 months) open custody sentences. He was admitted to the HDC at the age of 17 for a 6-month sentence as a result of a conviction for sexual assault. While at the HDC, he was diagnosed by the staff psychiatrist with sexual or gender identity disorder, antisocial personality disorder, and borderline-narcissistic personality disorder. One month before his discharge, he was sent to a secure custody facility for no more than 15 days under Section 24.2(9) of the YOA. Based on available data, he committed no subsequent offences after his release from the HDC.

Two overwhelming features of these case studies are reflective of many of the offenders in the sample, as a whole. The first is the very early age of their first conviction and the second is the versatility of their offending. After a first conviction in early adolescence, they (mostly) continue to experience contact with the law, resulting in subsequent convictions, sometimes in very rapid succession, and in some cases, extending well over a ten-year period, late into their 20s. As well,

the individuals described in the case studies are all versatile offenders, engaging in more than one offence type. Indeed, heterogeneity is a hallmark of offender populations, but also has been the bane of much criminal career research, which has attempted to identify general patterns in criminal behaviour.