An Empirical Examination of the Behavioural Antecedents of Juvenile Sexual Offenders and Juvenile Non-Sexual Offenders: A Developmental Pathway Approach

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Abstract

Recent meta-analytical work suggests that juvenile sex offenders (JSOs) are less antisocial than juvenile non-sex offenders (JNSOs). This finding appears contradictory to the view that sex offences are manifestations of a general antisocial tendency. The current study explores the hypothesis that JSOs are characterized by a distinct developmental pattern. With data collected as part of the Serious and Violent Young Offenders Project, a series of latent class analyses were used to examine authority-conflict, covert and overt behavioural antecedents of 51 JSOs and 94 JNSOs. The analysis identified three latent classes: (a) a late-onset class, (b) a covert class, and (c) an overt class. Significant differences were found in the qualitative meanings of the behavioural patterns of JSOs when compared to JNSOs. Specifically, JSOs in the late-onset, covert and overt latent classes had lower probabilities of having engaged in any type of antisocial behaviour. Implications for future research are discussed.

Keywords: Young offenders; sexual offending; antisocial behaviour

Dedication

To my Grandfather, Lorne McCuish.

Acknowledgements

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Chapter 1.

Introduction

Recent longitudinal studies on juvenile offending have identified key risk factors that significantly improve explanations of offending. With a focus on both individual and situational risk factors, common risk factors have been identified as being particularly strong predictors of offending, including cognitive ability, aggression, associations with delinquent peers, neighbourhood environment, school experience, substance use and various negative attributes related to the parents of young offenders, such as parenting style and criminal behaviour (Tremblay & Nagin, 2005; Farrington, Loeber, Jolliffe, & Pardini, 2008; Savage, 2009). One specific purpose of these longitudinal studies has been to develop explanations for serious and violent offenders. Serious and violent offenders are responsible for the majority of juvenile crime (Howell, Krisberg, & Jones, 1995), and as such they have become a primary focus of both scholars and policy makers (Piquero, Farrington, & Blumstein, 2007). In addition to helping the field of criminology progress in its understanding of the causes of crime, such studies help dissuade the public from accepting government and media portrayals of youth as excessively violent and persistent in their criminal offending.   Contrary to discourse in the media and government's development of more punitive juvenile justice policies, such as Canada's recent passing of the *Safe Streets and Communities Act* (Bill C-10), which includes *Sébastien's Law*, developed with the purpose of emphasizing the principle of public safety (Department of Justice, 2011), recent longitudinal studies present a more balanced and comprehensive approach to the prevention of and response to juvenile offending (Howell, et al., 1995). As part of this comprehensive approach, models have been created to specify the development of juvenile offending.

Models of Juvenile Offending. The abovementioned longitudinal studies have improved the understanding of juvenile offending through the identification of similar risk factors predictive of future offending.   However, where consensus is lacking is in

relation to whether all offenders can be explained by the same risk factors, thus requiring a single explanation of the development of offending, or whether certain risk factors have greater importance for certain individuals, thus the need for an explanation that specifies the development of offending in multiple different ways. The current study will review three different models that propose to explain the development of offending: single pathway models, Moffitt's (1993) dual taxonomy and Loeber and Hay's (1994) three pathway model. In reviewing the three models, the current study provides empirical evidence that Loeber and Hay's (1994) three pathway model is the most well-supported model, particularly when it comes to explaining serious and violent offenders (see Loeber, Farrington, Stouthamer-Loeber, & White, 2008). A limitation of Loeber and Hay's (1994) three pathway model is that it is unclear whether the type of antisocial behaviour committed by juvenile sex offenders differs from the type of antisocial behaviour committed by juvenile non-sex offenders. To this point, whether differences do exist has yet to be explored remains unclear and to this point, has yet to be explored. The aim of the current study is to address whether Loeber and Hay's (1994) model should distinguish differences in the early antisocial behavioural patterns of sex offenders as compared to non-sex offenders. Recent evidence suggests that juvenile sexual offenders constitute a distinct group of offenders that require specialized theories to explain their offending. However, the contention that sex offenders are a unique group is not something that has been unanimously agreed upon (Seto & Lalumiere, 2010).

Explanations of Juvenile Sexual Offending. There are two general positions with regard to explanations of juvenile sexual offending. Some argue that juvenile sex offending can be parsimoniously explained as a manifestation of general antisocial behaviour (Seto & Lalumiere, 2010). For example, Elliott (1994) argued that sexual offending was the endpoint of an increasingly severe sequence of general offending. As such, sexual offending was not seen as a distinct offence, but rather an indication that the offender likely has a history of serious and violent criminal behaviour. The three models of juvenile offending mentioned above all align themselves with this general explanations hypothesis, as none of these models treat the development of sexual offending as distinct from non-sexual offending. The second position on sexual offending suggests that in order to best understand the development of adolescent

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sexual offending, special explanations are required. Seto and Lalumiere's (2010) meta-analysis of studies which compared juvenile sex and non-sex offenders found that the explanatory power of various risk factors differs based on whether the youth is a sexual or non-sexual offender. For example, sex offenders have less extensive criminal histories, fewer substance abuse issues, lower scores on measures of psychopathy, have greater issues with depression and anxiety and were more likely to have been exposed to violence, including sexual violence and were also more likely to have experienced different forms of abuse, particularly sexual abuse (Freeman, Dexter-Mazza, & Hoffman, 2005; Seto & Lalumiere, 2010). As such, the support for a special explanations hypothesis suggests that it may be necessary for models of juvenile offending to incorporate a distinct pathway explaining sexual offending.

Aim of the Current Study

There is currently a gap in the research on juvenile offending. Evidence suggests that special explanations are needed to understand juvenile sexual offending (Seto & Lalumiere, 2010), yet models that propose explanations for juvenile offending do not differentiate between the development of sexual and non-sexual offending (see Elliott & Huizinga, 1984; Patterson et al., 1989; Moffitt, 1993; Loeber & Hay, 1994). The current study will examine why this gap exists and then attempt to explore how this gap could be narrowed by ascertaining how sex offenders, relative to non-sex offenders, fit within Loeber and Hay's (1994) three pathway model. The current study attempts to address whether there are qualitative and quantitative differences in the antisocial behaviour patterns of sex offenders when compared to non-sex offenders. The results from this comparison have implications for the efficacy of Loeber and Hay's (1994) model's ability to account for the behavioural heterogeneity of juvenile sex offenders and whether or not this model requires modification. The current study draws from a subsample of juvenile offenders who were interviewed as part of the Incarcerated Serious and Violent Young Offenders Study. Now in its second wave of data collection, the project is a cross-sectional study focusing on developmental risk factors associated with serious and violent offending. The sample contains only serious and violent offenders because, based on s. 39(1) of the *Youth Criminal Justice Act* (*YCJA*)*,* Canadian judges cannot incarcerate a youth unless they have committed a serious

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offence or they have a record of prior offending (Bala, Carrington, & Roberts, 2009). These offenders account for the majority of youth crime; however, in cohort studies these offenders only comprise roughly five percent of the total sample (Howell et al., 1995). If only five percent of individuals are represented by a certain variable, this variable will be restricted by its low base-rate which reduces the maximum correlation possible with other variables and limits the statistical techniques that can be used (MacLennan, 1988). As all individuals in the current sample are serious and violent offenders, the abovementioned limitations can be addressed. The current study is retrospective and cross-sectional, which carries specific limitations with regards to the ability of analyses to identify the persistence and escalation of key behavioural indicators. Therefore, unlike Loeber and Hay's (1994) model, the current study is unable to test for specific pathways of antisocial behaviour, because these pathways require the identification of a temporal relationship between behavioural indicators, which is something the current study is unable to accomplish. However, the current study may also be a useful guide for longitudinal studies wishing to make behavioural comparisons between sex and non-sex offenders.

No study has specifically tested how juvenile sex and non-sex offenders might differ within Loeber and Hay's (1994) model. Thus, the current study is exploratory and as such only one direct hypothesis is specified: it is expected that the antisocial behaviour patterns for juvenile sex offenders will be distinctively less severe compared to non-sex offenders. This is expected because juvenile sex offenders have been found to engage in less frequent criminal behaviour and begin their offending later (see Seto & Lalumiere, 2010), which might suggest fewer behavioural problems prior to offending. It is also believed that separating sexual offenders by their distinct behavioural patterns will reduce the within-group heterogeneity that is widely known to be a characteristic of juvenile sexual offenders (see Hunter, Figuerdo, Malamuth and Becker, 2003; Freeman et al., 2005; van Wijk et al., 2005). The current study uses a series of latent class analyses to typologize offenders based on their different early behavioural patterns. These typologies will create more homogenous groups of sex offenders which may improve the ability to elucidate the differences between sex and non-sex offenders. The current study is also interested in whether separating sex and non-sex offenders into

latent classes will reveal between-group and within-group differences in relation to how the latent classes are differentially associated with specific risk factors.

Overview of Chapters. There are a total of six chapters, beginning with this introductory chapter. Chapter 2 will trace explanations of juvenile offending back to the Gluecks' pioneer study on juvenile delinquency. Chapter 2 will then examine the Gluecks' influence on recent longitudinal studies. The impact these longitudinal studies have had on developmental life course theory and empirical models of juvenile offending will also be examined. In addition, the models of juvenile offending that have been constructed from these studies will be critically examined. A specific criticism of all the models to be reviewed is that they fail to include an explanation for sexual offending. Chapter 3 will discuss the current state of knowledge surrounding juvenile sexual offenders. Key to this discussion will be the comparison between two opposing viewpoints on sexual offending. The general explanation's perspective on sexual offending will be discussed first. This perspective suggests that sexual offending is a manifestation of a general antisocial tendency, which contrasts with specialized theories of sexual offending. These specialized theories suggest juvenile sexual offending can be distinguished from other forms of offending and as such requires its own explanation. In this chapter it will be argued that the empirical research supports the need for specialized theories of sexual offending, which has implications for current models of juvenile offending. Chapters 4 through 6 will discuss the current study's methodology, results and implications for future research, respectively.

A Note on Terminology. Depending on the country of origin, different terms such as juveniles, adolescents, youth and teenagers have been used to describe young offenders. For the purpose of this study, unless otherwise specified, the use of any of these terms will refer to individuals between the age of 12 and 17, as this is the age at which individuals are held criminally responsible under the *YCJA*. Individuals who committed their offence at age 18 or older are treated as adults and as such would not be included in the current study as only offenders incarcerated in youth custody facilities have been included. At other points in the following chapters, juvenile delinquency will also be discussed. Delinquent behaviour is not necessarily criminal behaviour, often because the behaviour is committed before the age of criminal responsibility. Thus, in

the context of discussions of delinquency, this term will refer to antisocial behaviour committed as early as birth and up until the age of 18.

Chapter 2.

Juvenile Offending: Theoretical Explanations and Empirical Findings

Longitudinal Studies

<u>Early Longitudinal Studies</u>. An advantage of longitudinal research is that juvenile delinquency is most accurately measured when the behaviour of juveniles is being assessed throughout the entire age at which they can be held criminally responsible (Tracy, Wolfgang, & Figlio, 1990). This type of measurement is not possible with cross-sectional studies. Thus, longitudinal studies are considered especially valuable when examining the development, history and prevalence of offending across different ages, as well as how offending emerges, persists and desists across the life course (Tracy et al., 1990). Sheldon and Eleanor Glueck's (1950) Unravelling Juvenile Delinquency (UJD) Study of 500 juvenile delinquents and 500 juvenile non-delinquents is one of the most detailed and comprehensive longitudinal studies in its field. This study consisted of several follow-up periods where information was collected from the subjects themselves, their parents, teachers, neighbours and criminal justice and social welfare officials. The information collected pertained to the juvenile's social, biological and psychological characteristics, their family environment, school performance and work experience (Laub & Sampson, 1988). Despite this wealth of information, three key methodological limitations of the Gluecks' UJD study have been raised. First, the Gluecks were accused of being atheoretical due to their overemphasis of individual-level variables without acknowledging the role of sociological perspectives and related important risk factors such as peer affiliations and socioeconomic status. Second, the UJD study has been criticized for its failure to distinguish between risk factors that preceded delinquency and risk factors that developed after the onset of delinquent behaviour (Laub & Sampson, 1988). Therefore, despite its longitudinal design, the study failed to control for the

temporal order of various risk factors. Third, because the Gluecks used a matched-sample design of 50% delinquents and 50% non-delinquents, the study was not representative of the general population. When other scholars utilized the Gluecks' model to predict delinquency in a more representative sample, the predictive capability of the Glueck's model was underwhelming (Laub & Sampson, 1988). Despite these limitations, scholars recognized the tremendous utility of a study such as the Glueck's UJD and attempted to develop their own large scale longitudinal studies. The *Delinquency in a Birth Cohort* was one of the first large scale longitudinal studies that focused on criminal offending in North America. The study was developed in Philadelphia, Pennsylvania in response to a growing need to examine the development of criminal behaviour over the life course, statistically controlling for the regularity or irregularity of offending patterns amongst same-aged individuals. The *Delinquency in a Birth Cohort* improved upon the Glueck's methodological issues by sampling from a group representative of the overall population. Key to this study was the finding that a small percentage of the sample was responsible for a disproportionate amount of criminal and delinquent behaviour (Piquero, Farrington, & Blumstein, 2007). Since the *Delinquency in a Birth Cohort* study, several other longitudinal studies have emerged.

Recent Longitudinal Studies. Longitudinal studies such as the Dunedin Study, the Pittsburgh Youth Study (PYS), the Denver Youth Survey (DYS), the Rochester Youth Development Study (RYDS) and the National Youth Survey (NYS) have provided valuable insight regarding the development of juvenile offending. The abovementioned studies indicate that the majority of juvenile offenders engage in only minor forms of antisocial behaviour. However, like the *Delinquency in a Birth Cohort*, these studies also identified a small proportion of individuals who are responsible for the majority of serious and violent juvenile offences (Howell et al., 1995; Moffitt, Caspi, Harrington, & Milne, 2002; Loeber, Farrington, Stouthamer-Loeber, & White, 2008). Furthermore, this small proportion of individuals will typically commit their first violent offence by age eleven and their pattern of offending will continue to escalate through early adulthood (Elliott, Huizinga, & Menard, 1989). In addition to having common offending patterns, there are also common key risk factors associated with serious and violent offenders.

Studies have found common characteristics of serious and violent offenders to include school failure, poor family attachment, weak, inadequate or ineffective parenting,

low socioeconomic status, school failure, association with delinquent peers, precociousness and other deviant behaviour considered to be precursors to serious and violent offending (Elliott et al., 1989; Howell et al., 1995; Thornberry, Huizinga, & Loeber, 1995; Moffitt et al., 2002; Savage, 2009). Despite identifying similar risk factors, there is a lack of consensus as to whether the prevalence of these risk factors is equal amongst all serious violent offenders, thus requiring only a single explanation of offending (see Patterson, DeBaryshe & Ramsey, 1989; Gottfredson & Hirschi, 1990) or whether the relative importance of different risk factors varies amongst serious and violent individuals, such that multiple pathways are required to account for the heterogeneity of serious violent offending (see Loeber & Hay, 1994). Longitudinal studies' focus on the number and type of offending pathways needed to explain the criminal careers of offenders has encouraged growth in a relatively new theoretical paradigm, developmental life course theory.

Theoretical Explanations of Juvenile Offending

<u>Past Theories on Juvenile Offending</u>. There are an overwhelming number of theories that have been developed, or at least adapted, to explain juvenile offending. It is not possible to discuss in detail all these theories. Instead, a general overview of the key assumptions of these theories and their influence on current theoretical perspectives will be provided. Criminological theories tend to focus on explaining between-individual differences, such as why youth with low socioeconomic status are more likely to engage in crime than upper class youth. Strain theory, differential association theory and social control theories are concerned with these between-individual differences. These theories are described as static theories because they were influenced by cross-sectional studies that did not measure within-individual change (Farrington, 2005). Other theories such as routine activities theory and rational choice theory ignore characteristics of the offender and instead focus on the offence. Some more recent theories such as labeling theory and social learning theory have tried to account for within-individual changes. However, all of these theories have been limited by their failure to address key developmental issues related to the onset, persistence and desistence of criminal behaviour and the impact of life events at different life stages.

Essentially, the main criticism of prior criminological theories was that they lacked a developmental perspective (Farrington, 2005).

Developmental and Life Course Theory. Some of the longitudinal studies discussed above have been criticized for being atheoretical, piecing together risk factors without understanding or explaining any of the underlying causal mechanisms (Piquero, Farrington, & Blumstein, 2007). These longitudinal studies provided researchers with a wealth of information, but without a theoretical paradigm in which to approach data analysis. It was the developmental and life course approaches which provided researchers with a framework from which data analysis could be guided by (Farrington, 2005). Developmental and life course theory (DLC) attempted to address the atheoretical nature of the state of criminology by focusing on risk factors influencing three concepts relating to criminal behaviour: onset, persistence and desistance. These three concepts, which are measured at the individual level, are guided by the assumption that delinquent and criminal behaviour develops in an orderly sequence (Farrington, 2005; Piquero, Farrington & Blumstein, 2007). In addition to these three concepts, there are three related issues that have become the focus of DLC. First is the issue of how the onset of delinquent and criminal behaviour develops. Second, DLC attempts to explain which risk factors are most pertinent during which age stages of an individual's life. Third, DLC is concerned with the effect that specific life events have at different developmental stages in relation to the persistence of or desistence from crime (Piquero, Farrington, & Blumstein, 2007). These life events are referred to as transitions, which can be either positive (turning points) or negative (snares). Turning points will increase the likelihood of desistence, whereas snares increase the likelihood of persistent criminal behaviour (Sampson & Laub, 1992).

Developmental and life course theory has influenced researchers to approach explanations of delinquent and criminal behaviour with an integrative philosophy. Individual-level risk factors, family and peer risk factors, school, neighbourhood and community risk factors and situational risk factors are all relevant areas of interest as part of the DLC approach (Farrington, 2005). The more comprehensive approach of DLC has broadened the scope of empirical research, leading to what Farrington (2005) deems to be "ten widely accepted conclusions about the development of offending" (5). First, onset of offending begins between 8 and 14. Second, offending peaks in the late

teens and begins desisting between 20 and 29 years of age. Third, the earlier the onset of criminal activity the greater the likelihood of a longer criminal career with a higher frequency of offending. Fourth, the stability of crime and antisocial behaviour from childhood to teenage years to adulthood remains relatively stable within each individual. Fifth, a small fraction of individuals are responsible for a disproportionate amount of crime. Sixth, offenders are characterized by their versatility of offending; they do not specialize in a specific offence. Seventh, the offences individuals engage in are symptomatic of a general propensity for antisocial behaviour which also includes drinking, recklessness and promiscuity. Eighth, teenagers offend in groups whereas adults tend to commit crimes alone. Ninth, the motivation for offending during teenage years is diverse, whereas in adulthood offending has more of an instrumental basis. Tenth, the types of offences committed tend to follow a sequence of increasing severity (i.e. burglary before robbery) (Farrington, 2005). This current state of knowledge regarding the development of offending, particularly Farrington's (2005) fifth point, has lead researchers to focus on a specific subgroup, serious and violent offenders.

Serious and Violent Offending

Focus on serious and violent offenders can be traced back to the first longitudinal studies that identified a small group of offenders who were responsible for the majority of criminal and delinquent behaviour (Tracy, Wolfgang, & Figlio, 1990). Researchers' focus on serious and violent offenders expanded further with the emergence of DLC and its requirement that any theory rooted in the DLC paradigm must be able to explain the development of this subgroup (Farrington, 2005). With the guidance of the integrated philosophy of DLC, research has identified key risk factors relating to serious and violent offending. Before determining which characteristics or risk factors are most strongly associated with serious and violent offending, it is necessary to first determine how any individual can be considered a serious and violent young offender. Offence chronicity is often used as a measurement of whether and individual constitutes the label of serious and violent, and is discussed next.

Chronicity and Offence Seriousness. The term 'chronic' is often used in the literature when describing serious and violent youth. As a group, chronic offenders are

most likely to escalate to more serious and violent behaviour (Cale, Lussier, & Proulx, 2009). Chronicity as a description of an individual's offending pattern was first used by Wolfgang and colleagues in their analysis of the 1945 Philadelphia Birth Cohort. In this context, chronicity referred to offenders who had at least five contacts with police over the course of the study (Kempf-Leonard, Tracy, & Howell, 2011). However, this conceptualization is regarded as arbitrary (Piquero, Farrington, & Blumstein, 2007) and may also have excluded chronic offenders whose behaviour had gone undetected (Kempf-Leonard, Tracy, & Howell, 2001). In a re-analysis of the Cambridge Study on Delinquent Development, Piquero et al. (2007) developed an empirically-based measure of chronicity. Unlike the Philadelphia study's arbitrary definition of chronicity as five offences prior to age 18, Piquero et al. (2007) analyzed probabilities of recidivism after each new offence and found that the probability of recidivating increases up until an individual's fourth conviction, at which point the probability of recidivating remains stable and high (p = ~0.90). This indicates that those who have committed four offences have a high probability of persistence, which is a good indicator of chronicity. Importantly, in testing the validity of the four conviction classification scheme, the chronic offenders were more likely to have been involved in the most serious offences, such as violent offences, robbery and burglary (Piquero et al, 2007). Therefore, when discussing chronic offenders, they offend frequently, over a long duration, and are most likely to be responsible for the more serious and violent offences. This empirically validated conceptualization of chronicity can help researchers identify with greater classification accuracy the five to ten percent of individuals responsible for a disproportionate number of offences.

Risk Factors Associated with Serious and Violent Offending. Given their unique offending patterns, specific risk factors have been identified as particularly helpful in predicting serious and violent offending. Such risk factors have been divided into two broad categories: individual-level risk factors and situational or contextual risk factors (Savage, 2009). Beginning with individual-level risk factors, serious and violent offenders are often said to be highly antisocial and aggressive (Savage, 2009); however, aggression and antisocial behaviour are not identical constructs; rather, aggression is a strong predictor of antisocial behaviour (Hartup, 2005). Aggression is also seen as a stable behavioural characteristic, particularly for males (Savage, 2009), and because of

its stability it is seen as a powerful predictor of antisocial behaviour (Hartup, 2005). Many different factors have been proposed as causes of aggression. However, more recent studies analyzing longitudinal data support the conclusion that aggression is an emotional response to negative stimuli and that there is less evidence for social learning hypotheses. Thus, the development of aggression is something that is completely explained by gene-environment interaction and something that individuals learn *not* to use (Tremblay & Nagin, 2005). The stability of aggression is often related to situational risk factors, where association with criminogenic neighbourhoods, delinquent peers and criminal family members increases the likelihood of stability (Patterson, Reid, & Dishion, 1992).

Another individual-level risk factor is cognitive ability, which is related to attention deficit and low self-control, both of which have been found to be associated with persistent criminal behaviour (Savage, 2009). School performance is also related to cognitive ability. The research using data from the PYS found that frequent truancy from school was significantly related to violent behaviour and serious theft across middle to late childhood, early adolescence and late adolescence. Similar results were also found in relation to those individuals who had repeated a grade (Farrington, Loeber, Jolliffe, & Pardini, 2008). While the presence of attention deficit disorders has been identified as an important predictor of offending in serious and violent offenders (Savage, 2009), the PYS found that a lack of ADHD symptoms was stronger as a promotive factor than the presence of ADHD symptoms was as an aggravating risk factor (Farrington, Loeber, Jolliffe, & Pardini, 2008). The reason that ADHD has been found to be a predictor, but not an overly strong predictor of criminal offending, may be because it is highly comorbid with conduct disorder, which is a stronger predictor of offending (Abikoff & Klein, 1992).

The PYS also examined situational and contextual risk factors, or what are sometimes referred to as middle-level risk factors which include family welfare, housing quality and neighbourhood. Relative to the abovementioned individual-level risk factors, the effect size of the middle-level risk factors was smaller and were not always significant when examining different developmental periods (Farrington, Loeber, Jolliffe, & Pardini, 2008). Other middle-level risk factors significantly related to serious and violent offending include family factors and associations with delinquent peers. Family factors identified as being related to serious and violent offending include parenting

style, parental substance use, mental health issues, education and parental attitudes favourable to crime (Savage, 2009). Parenting style is related to a child's attachment both to their parents and others. An ineffective parenting style can often be attributed to and/or aggravated by the parent's own mental health issues. Impaired parent-child relations can lead to serious mental health issues in the child. Related to parenting style is child abuse, which has been found to have a strong association with persistent delinquency and violence (Savage, 2009). Socioeconomic status (SES) is an important mediatory predictor of adolescent offending; however, SES has less of an impact in the long term (Savage, 2009). Related to SES are the adverse effects neighbourhoods and communities have on individuals. The most serious and violent forms of crime are most likely to occur in urban, inner city neighbourhoods which are typically characterized by individuals with low SES (Savage, 2009). However, the effects of these and other middle level risk factors have been found to be significantly mediated by family process variables, namely supervision, attachment and discipline. Middle level risk factors that are not mediators nor mediated by other risk factors include residential mobility and association with delinquent peers (Laub & Sampson, 1988; Savage, 2009). In fact, an individual's association to delinquent peers has consistently been found to be one of the strongest predictors of the onset of serious and violent behaviour as well as its persistence (see Farrington, Loeber, Jolliffe, & Pardini, 2008; Savage, 2009).

There have been large-scale studies that have identified a broad range of similar risk factors related to serious and violent offending; however, primarily because this group of offenders accounts for such a large portion of overall offending, there is little agreement relating to the number of pathways required to explain the onset and persistence of offending, as well as which risk factors are predictive of these different pathways (Howell et al., 1995; Farrington, Stouthamer-Loeber, & White, 2008). Consequently, it is not yet evident whether all serious and violent offenders can be explained by the same risk factors discussed above, and if not, how many different risk factor profiles are needed to explain the heterogeneity of serious and violent young offenders.

Models of Juvenile Offending

Model Construction, Key Concepts and Definitions. Many models have been developed to explain juvenile offending. The goal in creating a model of juvenile offending is to identify the smallest number of pathways, types, categories or taxons that can best account for the heterogeneity of the sample of interest (Loeber & Burke, 2011). While the goal of these models is always the same, different models can be distinguished by how they were developed. For example, models can be developed through theoretical hypotheses, such as Moffitt's (1993) taxonomy. Conversely, models can be deduced downward from statistical analyses of existing data, such as Loeber and Hay's (1994) three pathway model. The method of classification is another way in which models of juvenile offending can differ. Pathways and taxonomies can be used to describe models of juvenile offending, but the manner in which individuals are classified to a pathway or a taxon fundamentally differs. Taxometric models classify individuals into specific categories over time and individuals remain in these categories once classified. These taxons are distinguished by quantitative differences over time. Pathway models differ in that they are concerned with successive development, which allows individuals to change pathways as they experience different life events (Loeber & Burke, 2011). Pathway models differ from taxons in that they refer to pathways as being qualitatively different from one another.

Three of the most prominent models that have been examined over the last 25 years include different versions of the single pathway model, Moffitt's (1993) dual taxonomy and Loeber and Hay's (1994) three pathway model. The current study will explore how antisocial behavioural patterns of sex and non-sex offenders might differ within Loeber and Hay's (1994) three pathway model because this model has received the greatest amount of empirical support relative to single pathway models and Moffitt's (1993) dual taxonomy. It is beneficial to test whichever model has the most empirical support because any identification of differences between sex and non-sex offenders within a less well-received model will not lend as much support to the validity of that newly identified pathway for sexual offenders. Other models must be examined in relation to Loeber and Hay's (1994) three pathway model in order to establish that this

model represents the strongest explanation of juvenile offending. In order of parsimony, empirical evidence for three different models will be reviewed.

Single Pathway Models

Robins (1966) argued that there is no difference between offenders in their likelihood of engaging in overt and covert behaviour. As such, only a single pathway is needed to explain offending. Since Robins (1966), much research has sought to further develop this one-pathway model (see Elliott & Huizinga, 1984; Patterson et al., 1989; Patterson, 1992). Patterson, Forgatch, Yoeger and Stoolmiller (1998) argue that the development of offending is rooted in one key factor, poor parental discipline. If the issue of parental discipline becomes increasingly more problematic, so too will the issue of the child's antisocial behaviour. In this model it is suggested that all offenders follow a single pathway to offending that begins in childhood with antisocial behaviour, which is then followed by early onset of offending and then chronic offending. In his single pathway model, Patterson (1992) claimed that all juvenile offenders begin engaging in overt behaviour and then shift to covert behaviour and therefore it was not necessary to distinguish between the two behaviours. However, Patterson's (1992) model has been criticized for failing to specify the inclusion of more serious violent and property crimes and failing to explain how these crimes develop (Loeber & Stouthamer-Loeber, 1998). Furthermore, this model cannot reconcile findings in the empirical literature that indicate some youth escalate to more serious forms of overt behaviour without also progressing towards more serious forms of covert behaviour. Taken together, support for Patterson's (1992) single pathway is lacking.

In their own single pathway model, Elliott and Huizinga (1984) claim that there is "no effective means for discriminating between the serious career offenders and non-serious offenders" (98; cited in Moffitt, 1993: 678). However, this claim was made in the absence of empirical evidence. More recent empirical studies have shown that even before adulthood, clear differences can be seen in patterns of delinquency and offending which amounts to overwhelming support against a single explanation of juvenile offending (Loeber & Burke, 2011). Furthermore, studies that identified a single pathway did not compare the validity of the single pathway in relation to multiple pathways

(Loeber, Wei, Stouthamer-Loeber, Huizinga, & Thornberry, 1999). Moffitt (1993) presents evidence against a single pathway model by arguing that there are clear etiological differences between two groups of offenders, the previously mentioned AL and LCP taxons. This dual taxonomy has received some empirical support (see Moffitt et al., 2002 but also Piquero & Brezina, 2006). At the very least, there is substantial evidence that a single pathway is unable to account for the heterogeneous nature of offending and also fails to account for more serious offences (Loeber & Stouthamer-Loeber, 1998).

Gottfredson and Hirschi's (1990) general theory of crime is perhaps the most renowned single pathway explanation of offending. Gottfredson and Hirschi's (1990) theory is unlike the single pathway models discussed earlier in that the general theory of crime is anti-developmental and discounts many of the issues DLC considers important (Farrington, 2005). The general theory of crime's main premise is that all crime is caused by a single risk factor- low self control. This has been one of the most contentious issues in criminology. Gottfredson and Hirschi (1990) suggest that by around age 8-10, low self-control will develop naturally unless the parents take steps to properly socialize their child. Proper socialization requires parents to effectively monitor their child, identify their child's deviant behaviour and punish such behaviour effectively and consistently. Characteristics of low self-control include the need for immediate gratification, impulsivity, self-centeredness, a preference for physical activity or activities that are risky or thrilling, a low frustration tolerance and a lack of diligence. Only individuals with low self-control engage in criminal acts, and individuals who are lowest in self-control will have the greatest likelihood of engaging in these acts. Gottfredson and Hirschi (1990) assert that any individual with low self-control is capable of committing any offence because all crimes require little skill or planning. Since any individual is capable of any offence, offenders are highly versatile; there is no offence specialization.

Studies testing Gottfredson and Hirschi's (1990) theory have shown support for the efficacy of low self-control as a predictor of criminal behaviour. Pratt and Cullen's (2000) meta-analysis reported that of the studies using measures of low self-control to predict criminal behaviour, results were consistently significant and in the expected direction. However, low self-control only accounted for 19% of the variance in

delinquent and criminal behaviour (Pratt & Cullen, 2000). This is not an insignificant amount, but at the same time falls far short of Gottfredson and Hirschi's (1990) claim that low self-control can account for 100% of the variance in criminal and analogous behaviours. As such, when considering single and multiple pathway models, the trade-off between fit and parsimony is preferable.

Moffitt's Dual Taxonomy

Description of the Model. Moffitt's (1993) first proposed her model as a dual taxonomy that explained juvenile offending through her AL and LCP taxons. In Moffitt's (1993) Dunedin Study, AL offenders were expected to represent the vast majority of juvenile offenders whereas LCP offenders were expected to comprise only 5-10% of all males in the sample. Moffitt's (1993) theoretical description of the AL and LCP taxons were outlined in a set of testable predictions. Beginning with LCP offenders, it was expected that individuals in this taxon would be characterized by signs of antisocial behaviour in early childhood. This behaviour was expected to escalate and persist through adulthood where LCP offenders were expected to have a tendency to engage in person-oriented offences. Offending by those in the LCP taxon is explained by neuropsychological perturbations such as conduct disorder and a criminogenic environment. Moffitt's (1993) AL offenders are expected to begin offending in adolescence but desist by the time they reach early adulthood. Offending behaviour in the AL taxon is explained by adolescent's attempt to bridge the maturity gap, exert autonomy from parents and mimic the antisocial behaviour engaged in by the LCP group. Unlike LCP offenders, AL offenders were not expected to engage in offences involving interpersonal violence. Instead, Moffitt (1993) expected AL offenders to have a greater proclivity for property and statutory offences. Moffitt's (1993) taxometric model was convincing in its premise, yet at that time none of these premises had been empirically tested.

Empirical Findings. There has been some support for Moffitt's (1993) taxonomy, particularly for the LCP taxon. For example, Nagin, Farrington and Moffitt (1995) found that risk factors measured by age ten consistently predicted individual's classification to the LCP taxon. While other studies have also found support for the LCP taxon (see

Piquero & Moffitt, 2008 for a review), there has been less support for the AL taxon. The same study by Nagin et al. (1995) found no consistent identification of an AL taxon. Furthermore, in their test of Moffitt's (1993) taxonomy, White, Bates and Buyske (2001) noted that childhood risk factors that were supposed to be specific to LCP offenders did not actually distinguish persistent delinquents from adolescence-limited delinquents. While Moffitt (1993) suggested AL offenders would desist during the period of early adulthood, follow-up studies by both Moffitt et al. (2002) and Piquero and Brezina (2006) found that many individuals originally classified as AL offenders continued offending in adulthood. Moreover, only 50% of the Dunedin Cohort was accurately classified using the taxometric approach (Moffitt et al., 2002). Taken together, there is concern as to whether Moffitt's (1993) description of the AL taxon can be empirically validated. Moreover, other studies question whether two taxons adequately account for the heterogeneity of juvenile offending.

Farrington, Loeber and Jolliffe (2008) argue against dichotomous explanations of juvenile offending such as the AL/LCP distinction and instead suggest that more than two onset categories are needed to explain the different types of juvenile offenders. Similarly, Sampson and Laub (2003) suggest that because random events occur across the life course, a dual taxonomy is too broad to account for the unique heterogeneity of criminal offending. Even Moffitt's follow-up studies found that two additional taxons, low-level chronics and adult-onset offenders, were needed to help explain offending behaviour over time (Farrington et al., 2008). This lack of support may be due to the rigidity of the taxometric approach. In Moffitt's (1993) taxonomy, individuals classified to either the AL or LCP taxon remain restricted to their respective taxons. Moffitt (1993) suggested that only LCP offenders would be violent offenders and that AL offenders would not commit interpersonal offences. However, studies using joint trajectory modeling indicate that in order to accurately classify individuals, models must allow individuals to simultaneously follow multiple offending trajectories as well as allow individuals to follow multiple trajectories over time to account for different life events. For example, serious and violent adolescent males can follow an offending trajectory of serious theft while simultaneously following another trajectory related to violent offending (Lacourse, Dupere, & Loeber, 2008). Though Moffitt (1993) is discussing taxons rather than trajectories, to suggest that AL offenders will not commit interpersonal offences

appears inconsistent with studies that have indicated this type of offender can go on to commit interpersonal offences throughout the lifecourse (i.e. Lacourse et al., 2008). Taken together, evidence suggests that models of juvenile offending require more than two classification schemas, whether it is in the form of taxons or pathways.

Loeber and Hay's Three Pathway Model

Description of the Model. Unlike Moffitt's (1993) dual taxonomy, which was based around a theoretical set of predictions, the three pathway model was deduced downward through meta-analyses of factor analytic studies that looked at parent and teacher assessments of child behaviour (Loeber & Stouthamer-Loeber, 1998). Loeber and Hay's (1994) three pathway model (see Figure 1) meets the abovementioned need for numerous different pathways that are contained within a model that does not restrict individuals to one pathway. Other models or explanations of juvenile offending suggest that different types of antisocial behaviour occur at random. This is in contrast to developmental models, such as Loeber and Hay's (1994) three pathway model, which emphasizes the importance of the sequence in which different behaviours develop. Specifically, more serious behaviours are likely to have a later onset and as behaviour increases in severity, the probability of an individual engaging in such behaviour decreases (Loeber & Hay, 1994). Furthermore, within the framework of this model it is suggested that not only can individuals be differentiated in terms of the developmental sequence of the severity of their behaviour, they can also be differentiated by the different types of behaviour they engage in. The three pathway model distinguishes three types of behaviour: authority conflict, covert and overt. The covert/overt distinction was originally championed by researchers who supported the abandonment of single pathway models (Loeber & Stouthamer-Loeber, 1998). Loeber and Hay (1994) make further attempts to address the heterogeneity of antisocial behaviour by expanding the overt/covert distinction to include authority conflict behaviour.

The earliest pathway of antisocial behaviour is the authority conflict pathway. In this pathway, all behaviour is measured before the age of twelve. Authority-conflict type behaviours that are engaged in after the age of 12 fall outside the operational definition of this pathway. Within this pathway individuals are expected to engage in stubborn or

defiant behaviour and then escalate to forms of authority avoidance such as skipping school. In the covert pathway, individuals begin with deceitful behaviour such as lying and theft and then progress to various forms of property damage and finally more serious delinquency such as car theft and drug dealing. Individuals in the overt pathway begin with minor aggression and then escalate first to more reactive forms of aggression such as fighting at school and then to instrumental forms of violence (Loeber & Hay, 1994). Loeber and Hay's (1994) model suggests that individuals can follow one of the authority conflict, covert or overt pathways, any dual combination pathway or the tripartite pathway where individuals engage in authority conflict, covert and overt behaviour. In total, there are seven possible pathway combinations explained by this model. Thus, this model is not so broad that all offenders are said to be explained by the same factors, nor is the model so restrictive that individuals can be assigned to only one pathway. Moreover, unlike the single pathway model and Moffitt's (1993) dual taxonomy, the three pathway model has received considerable empirical support.

Empirical Findings. The three pathway model first received support using data from the PYS. Following this, studies using data from the RYDS, the DYS, the NYS and the CYDS replicated this and other models and found that Loeber and Hay's (1994) three pathway model best explains the developmental sequence of antisocial behaviour. Moreover, this model was successfully replicated in samples of African American, Hispanic and female adolescents (Loeber et al., 2008). Support for single pathway models has been limited because such models were not validated in comparison to multiple pathway models. Unlike these single pathway models, the three pathway model has been compared to models specifying different numbers of pathways and these models indicate better fit and parsimony (Loeber et al., 1998). Furthermore, unlike Moffitt's (1993) dual taxonomy, which was based around a theoretical set of predictions, the three pathway model was constructed through meta-analyses of factor analytic studies looking at assessments of child behaviour made by parents and teachers (Loeber et al., 1998).

Specific findings from tests of the three pathway model indicate that the majority of adolescent males fit the overt pathway (Loeber and Stouthamer-Loeber, 1998). However, as adolescents age they become more likely to fit multiple pathways. For example, adolescents beginning in the overt pathway are likely to transition to a stage

where they fit both the overt and covert pathway. Adolescents beginning in the covert pathway may also transition to both the covert and overt pathway; however it is more likely that overtly aggressive juveniles escalate to covert behaviour than it is for covert juveniles to escalate to overtly aggressive behaviour (Loeber, Farrington, Stouthamer-Loeber, Moffitt & Caspi, 2001). Also, engaging in authority conflict behaviour before twelve is a likely precursor to escalation through the overt and covert pathways (Loeber et al., 2008). In relation to offending, those in the tripartite pathway have the highest rate of offending, generally, and violent offending, specifically. Those beginning in the overt pathway and escalating into the covert pathway have the next highest rate of violent offending (Howell et al., 1995). Finally, this model has been identified as being particularly valuable in explaining the most serious and violent juvenile offenders (see Loeber et al., 2008), making this model appropriate particularly for the current study given the nature of its sample. What the three pathway model has yet to consider is how sexual offenders fit within this model and whether this approach is able to explain the behavioural antecedents related to the development of juvenile sex offending. Before answering whether or not the three pathway model *can* explain sexual offending, the current study must address whether or not this model *should* consider a separate pathway for juvenile sex offenders.

Age of Onset

Late

% of Youth

Few

Overt Pathway

Covert Pathway

Violence

Moderate to
Serious
Delinquency

Physical
Fighting

Authority
Avoidance

Property
Damage

Minor
Aggression

Defiance and
Disobedience

Minor
Delinquency

Stubborn Behaviour

Early

Many

Authority Conflict (Before Age 12)
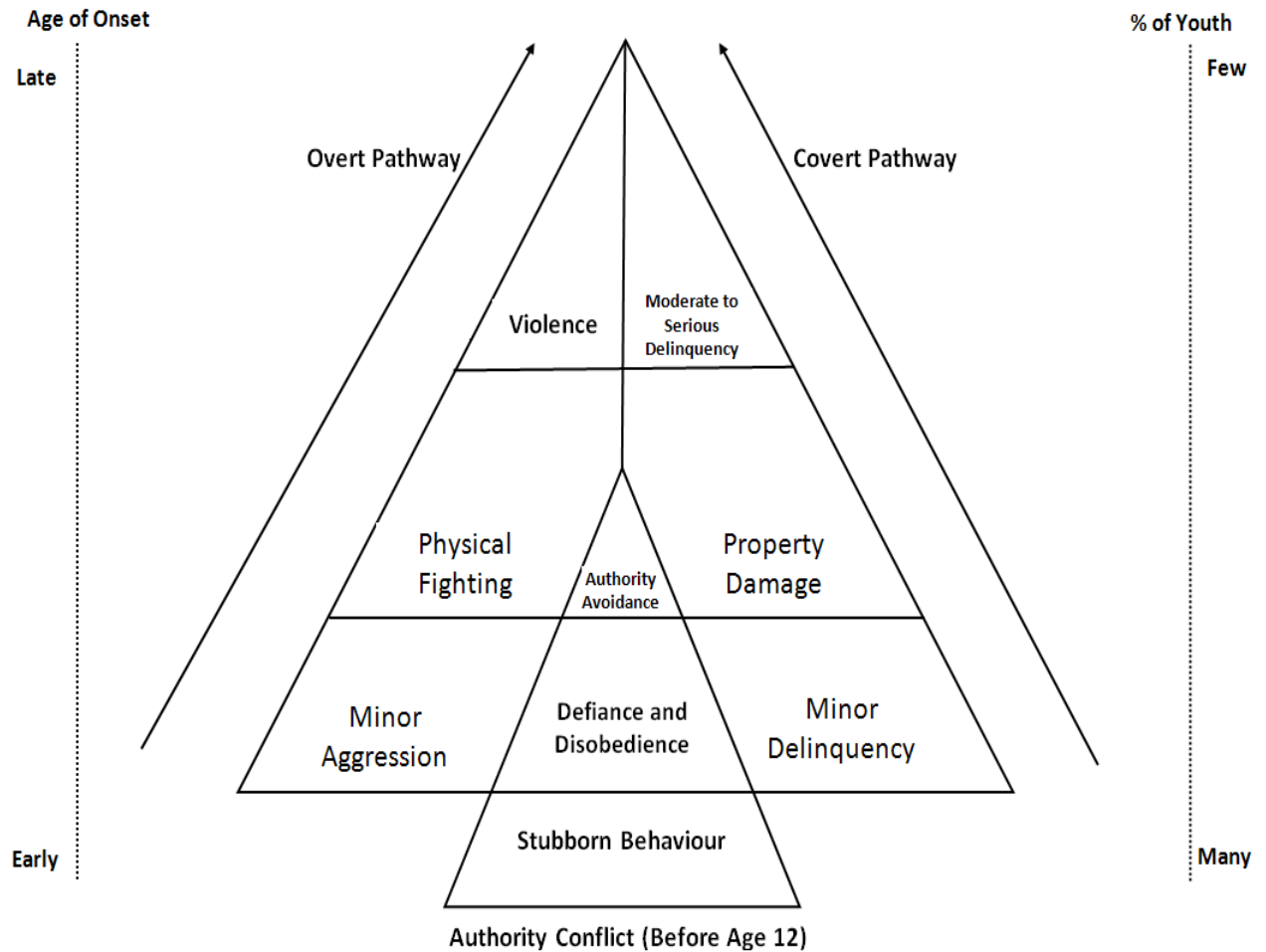
Figure 1   Description of Loeber and Hay's (1994) Three Pathway Model
Note: Adapted from "Developmental Approaches to Aggression
and Conduct problems." By R. Loeber and D.F. Hay, 1994, in
Development through life: A handbook for clinicians. Copyright
1994 by Blackwell Scientific Publications

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Chapter 3.

Sexual Offending

General Description of Juvenile Sex Offending

Focus on the development of juvenile sex offending began when Abel, Mittleman and Becker's (1985) retrospective analysis indicated that slightly more than fifty percent of adult sex offenders committed their first sexual offence in adolescence. Lemmond and Verhaagen (2002) describe seven consensus characteristics of juvenile sex offenders that have emerged from existing research. First, nearly all juvenile sexual offences are committed by males. Second, those who offend against peer-aged victims typically do so at approximately age 16. Third, those who offend against children are most likely to do so at age 14. Fourth, youth sexual offenders typically come from unstable homes where they have both witnessed and experienced various forms of abuse. Fifth, such offenders are also likely to present with serious learning difficulties and struggle academically. Sixth, few offenders engage in substance abuse. Seventh, despite a low prevalence of substance abuse amongst youth who sexually offend, approximately fifty percent of these youth report being under the influence of alcohol or drugs at the time of the offence (Lemmond & Verhaagen, 2002).

There is substantial research on the topic of sexual offending, yet the prevalence of juvenile sexual offending is very low (Seto & Lalumiere, 2010). Only two percent of all youth court cases in Canada involved a sexual offence (Canadian Centre for Justice Statistics, 1999). The prevalence of sexual offending is low even when considering serious and violent offenders. In the PYS, only 2.6% of serious and violent offenders had been convicted of rape. This is comparable to the prevalence of murder (only 2% of offenders in the PYS were convicted of murder) (van Wijk et al., 2005). Youth who do commit a sexual offence are unlikely to specialize or persist in sexual offending and are

six times more likely to non-sexually recidivate than commit a new sexual offence (Caldwell, 2002). Empirical studies that have tried to identify risk factors related to sexual recidivism have produced mixed results. For example, Boyd (1994) found that those who offend against children are most likely to sexually recidivate. However, Smith and Monastersky (1986) found that those who offended against children are least likely to sexually recidivate. Even though sexual recidivism is rare and its causes are unknown, responses to sexual offenders assume that all offences are caused by a sexually deviant trait which must be addressed by correcting sexual behaviours and attitudes (Howell et al., 1995). Sex offender registries have been created as part of this response (Caldwell, 2002). However, many argue that because juvenile sex offenders are unlikely to recidivate, sex offender registries and similar policies are needlessly restrictive (Caldwell, 2002; Zimring, Piquero, & Jennings, 2007). Furthermore, sex offender registries are argued to contribute to general recidivism because protective factors are removed due to restrictions placed on the offender (Mercado, Alvarez, & Levenson, 2008).

Explanations of Juvenile Sex Offenders

Clinicians often use classificatory schemes to identify subtypes of offenders. However, models that only consider the type of offence committed risk ignoring key differences between offenders who have committed the same offence. This risk is particularly high for sex offenders because clinical and empirical research suggests sexual offenders constitute an extremely heterogeneous group (Cale, Lussier, & Proulx, 2009). Typologies that have been created to differentiate juvenile sex offenders are often based on three factors: victim selection, offence motivation and the nature of the offence. Some of the prominent typologies are outlined in Table 1. Victim selection typically forms the basis of sex offender typologies by distinguishing between rapists and child molesters. Within both the rapist and child molester typologies, individuals can be further distinguished by their offence motivation and the severity of their sexually deviant behaviour. Clinicians are supportive of these typologies (Lemmond & Verhaagen, 2002); however, criminologists assert that because the DLC perspective and associated empirical research has not been considered, clinically-based typologies are missing key explanatory variables and including variables that are not expected to explain within-

Table 1 *Typologies of Juvenile Sexual Offenders*

Number of Typologies	Classifications
Three	Pedophilic
	Sexual assault
	Unclassified
Three	Continued delinquency
	Continued sexual offending
	No further offending
Three	Age differential between offender and victim
	Intrusiveness of offense
	Gender of the victim
Six	Child molesters
	Rapists
	Sexually reactive children
	Fondlers
	Paraphilic offenders
	Unclassified
Seven	Naïve experimenters
	Undersocialized child exploiters
	Sexual aggressive
	Sexual compulsives
	Disturbed impulsives
	Group influenced
	Pseudosocialized

Note: Adapted from "Sexual offenses and offenders: Theory, practice and policy." By K.J. Terry, 2006. Copyright 2006 by Wadsworth.

group differences (Seto & Barbaree, 1997). For example, clinical models have tried to base typologies around the absence or presence of antisocial behaviour. However, the DLC approach suggests that most sexual offenders have an antisocial background which makes distinguishing antisocial and non-antisocial individuals of limited use (Cale, Lussier, & Proulx, 2009).

Single pathway models, Moffitt's (1993) dual taxonomy and Loeber and Hay's (1994) three pathway model are guided by the DLC perspective that all criminal offences are a manifestation of a general antisocial tendency. Criminal offences progressively increase in severity and conclude with sexual offending. As such, sex offenders are not believed to be qualitatively distinct from non-sex offenders. However, all three models were developed prior to recent empirical evidence that supports the need for specialized theories of sexual offending (Seto & Lalumiere, 2010). There are now two competing perspectives that propose explanations of juvenile sex offending: general explanations and specified/specialized theories. The current study will examine whether Loeber and Hay's (1994) model should continue to assume a general explanation of sexual offending or if it is necessary to re-examine the efficacy of this model from the perspective of specialized theories on sexual offending. To make this determination, both general and specified/specialized explanations of sexual offending will be reviewed.

General Explanations of Sexual Offending

The general delinquency explanation suggests that juvenile sexual offending can be "parsimoniously explained as a manifestation of general antisocial tendencies" (Seto & Lalumiere, 2010: 529). Specifically, increases in antisocial tendency are related to increases in the probability of committing a sexual offence. This is a key assumption of developmental models of offending (Lussier, Leclerc, Cale, & Proulx, 2007). For example, Moffitt (1993) suggests that sexual offending is a manifestation of the LCP syndrome but not a manifestation of the AL syndrome. AL offenders have fewer antisocial tendencies and therefore are more likely to commit non-violent or victimless offences. Three main arguments are made in support of general explanations of sexual offending. First, proponents argue that juvenile sex offenders do not specialize in sexual offences and are actually more likely to recidivate with a non-sexual offence (Seto &

Lalumiere, 2010). Second, empirical evidence suggests that sexual offending is the pinnacle of an increasingly serious criminal career that results from a general antisocial tendency rather than a specific trait (Elliott, 1994). Third, this explanation suggests that the risk factors that predict sexual offending also predict non-sexual offending (Seto & Lalumiere, 2010). For example, Gottfredson and Hirschi's (1990) general theory of crime contends that all crime is caused by one risk factor, low self-control. Since sexual offences and all other offences are the product of the same underlying cause there is no need to differentiate the development of sex offenders and non-sex offenders. With these three arguments taken together, advocates of the general explanation would conclude that a distinct pathway outlining the behavioural patterns of sexual offenders would not be needed in Loeber and Hay's (1994) three pathway model because the behaviour of sex offenders is not expected to differ from non-sex offenders.

  <u>Empirical Comparisons of Sex and Non-Sex Offenders on Key Risk Factors</u>. The general theory of crime has been theoretically contentious since considerable research has asserted that sexual offenders differ from non-sex offenders in relation to specific risk factors. Theories have been developed with the specific intent of explaining the development of sexual offending. However, the underlying assumptions of these theories are not always empirically supported. For example, Marshall and Barbaree's (1990) theory identifies inconsistent parenting as a risk factor for future sexual offending because the inconsistent parenting style fails to promote attachment to others and confidence within the individual, putting them at risk for sexual abuse which fosters distortions about sexually appropriate conduct, leading to sexual offending. However, Seto and Lalumiere's (2010) meta-analysis found no significant differences in family attachment when comparing sex and non-sex offenders. This is contrary to Marshall and Barbaree (1990) and in support of a general explanation of sexual offending. Van

Wijk et al.'s (2005) comparison of juvenile sex offenders and juvenile violent non-sex offenders also supports a general explanation of juvenile sexual offending. This study found that behavioural problems such as Oppositional Defiant Disorder, Conduct Disorder and ADHD[1] did not significantly differ between sex offenders and non-sex offenders (van Wijk et al., 2005). Freeman et al. (2005) also found that the frequency of antisocial behaviour engaged in by sex offenders did not significantly differ from non-sex offenders. Contrary to Freeman et al. (2005) and van Wijk et al. (2005), Butler and Seto (2002) did find differences in behavioural issues when comparing sex and non-sex offenders, but differences were identified only after separating offenders based on their offence histories. Four offence-based groups were created: sex-only offenders, sex offenders with other charges, criminally versatile non-sex offenders and nonaggressive non-sex offenders. When compared to non-sex offenders, sex-only offenders were less likely to have conduct problems in childhood and were less likely to engage in future delinquent behaviour. However, sex offenders with other criminal charges resembled non-sex offenders in relation to problems with antisocial behaviour. At issue in the current study, as will be reflected in the results chapter, is that the current sample does not contain any subjects who could be classified as 'sex-only' offenders. As such, the current study is limited to a sample of sexual offenders with versatile offending patterns.

While the findings from studies by Seto and Lalumiere (2010), van Wijk et al. (2005) and Freeman et al. (2005) have been cited in support of a general explanation of juvenile sexual offending, key methodological limitations of these studies affect the validity of the general explanations hypothesis. For example, Seto and Lalumiere's (2010) meta-analysis did not examine whether certain risk factors possessed by family members of sex offenders differed from the family members of non-sex offenders. It is

[1] These behavioural disorders were identified by Ward and Beech (2006) to be of theoretical importance in relation to the explanation of sexual offending.

necessary to make this distinction because attachment to family members is indirectly related to the type of family members an individual has (Marshall & Marshall, 2000). In the study by van Wijk et al. (2005), while the prevalence of behavioural disorders was similar among offenders, the behavioural manifestations of these disorders were not considered. Seto and Lalumiere (2010) found that the types of behaviour engaged in by these two groups are different. Even though Freeman et al. (2005) look at the frequency of behaviour and not simply behavioural disorders, behaviours that are qualitatively distinct, such overt and covert behaviour, are not differentiated. Distinguishing not only quantitative aspects of behaviour but also qualitative attributes is central to identifying how offenders may differ in their engagement in antisocial behaviour (Loeber & Stouthamer-Loeber, 1998). The current study explores this theme by examining the authority conflict-type, covert-type and overt-type behaviours that are described by Loeber and Hay (1994).

Explanation for the Exclusion of a Pathway to Sexual Offending. Loeber and Hay's (1994) decision to not include a distinct pathway outlining the behaviour of sexual offenders is related to Elliott's (1994) research on how behaviour tends to follow a sequence of increasing severity (see Loeber & Farrington, 1998). Elliott (1994) asserted that sexual offending occurs at the end of a sequence of serious and violent offending. Similarly, Loeber and Hay's (1994) three pathway model is based on the onset and sequence of antisocial and criminal behavior patterns that increase in severity over time (see Loeber & Stouthamer-Loeber, 1998; Loeber et al., 1998; Loeber et al., 2008). Therefore, the three pathway model would not specify a distinct pathway for sexual offenders because, on the basis of Elliott's (1994) findings, "sexual violence represents a developmental end point or pinnacle of serious criminality" (Loeber & Farrington, 1998: 78) and therefore sexual offending is not the beginning of its own pathway, but rather the final destination of a pathway describing the development of serious and violent offending.

However, the influence Elliott (1994) has had on Loeber and Hay's (1994) three pathway model (Loeber & Farrington, 1998) may be due to a misinterpretation of Elliott's (1994) original findings. Elliott's (1994) operationalization of sexual offending is being interpreted more broadly than intended. When Elliott (1994) referred to sexual offending as the pinnacle of an offender's increasingly serious and violent behaviour he was not

referring to all forms of sexual offending. Elliott (1994) was specifically referring to rape against someone's will (see footnote 2 in Elliott, 1994) that resulted in injury to the victim or the victim being threatened with a weapon (footnote 4 in Elliott, 1994). This would exclude a broad range of sexual offences, including: rape that did not involve violence or use of a weapon, contact sexual offenses that did not involve rape, offences against individuals too young to consent (statutory offenses) and non-contact sexual offences. Taken together, because Elliott (1994) was describing a very specific form of sexual assault, it may be incorrect to conclude that all sexual offences occur at the endpoint of an offender's criminal career. If this is the case, it may be beneficial to re-examine whether Loeber and Hay's (1994) three pathway model should consider a distinct explanation of sexual offending.

Specified Theories on Sexual Offending

Specified theories contend that special explanations are needed to account for how the development of sexual offending differs from non-sexual offending. These theories focused on explaining sexual offending assert that certain risk factors are more strongly related to sexual offending than other types of offending. Furthermore, several theories have focused on the development of adolescent/juvenile sexual offending (Seto & Lalumiere, 2010). Although some of the theories that will be discussed were designed to explain adult sexual offending, because they are implicitly developmental they can be applied to explanations of adolescent sexual offending as well (Seto & Lalumiere, 2010). Two of the most prominent specified theories on sexual offending are Marshall and Barbaree's (1990) integrated theory and Seto and Barbaree's (1997) developmental model. Both of these theories have been adapted and have been used as the basis for empirical research comparing the developmental antecedents related to sexual and non-sexual offending.

Marshall and Barbaree's Integrated Theory. Similar to Gottfredson and Hirschi (1990), Marshal and Barbaree (1990) argue that in childhood, the acquisition of attitudes and behaviours conducive to prosocial actions is essential in order to delay instant gratification. Marshall and Barbaree's (1990) integrated theory traces the etiology of sexual offending. Beginning with a child's relationship to their parents, the combination

of parents' inability to socialize their child and the use of physical punishment or child neglect can influence the development of four key risk factors: antisocial behaviour, emotional detachment, poor or limited social competency and poor self-esteem. These four risk factors negatively impact an individual's ability to experience intimacy, which leads to loneliness and alienation from others, thereby impairing the individual's ability to form appropriate sexual relationships. The inability to form relationships causes hostility and aggression. During puberty, when testosterone levels increase, hostility and aggression fuse with sexual desire, leading to the use of aggressive tactics to gain sexual gratification. A criticism of Marshall and Barbaree's (1990) theory has been its failure to explain why individuals' failure to control their aggression leads to sexual offending, particularly for those who sexually offend against children despite being attracted to same-aged peers (Seto & Lalumiere, 2010). To address this and other limitations Marshall and Marshall (2000) expanded on Marshall and Barbaree's (1990) original theory on sexual offending.

Marshall and Marshall (2000) outline a pathway to sexual offending that begins with insecure attachments to others that develops as a result of a child being exposed to an anxious/ambivalent or avoidant parenting style. This insecure attachment increases an individual's low self-esteem and poor relationship skills and fosters an unhealthy need for attention. All of these factors increase an individual's vulnerability to sexual abuse. Experiencing sexual abuse is a concerning risk factor because it is associated with heightened sexualization and individuals frequently masturbate to sexually deviant fantasies as a coping strategy. Masturbation to deviant fantasies as a coping strategy creates a conditioning process that transforms fantasy into a desire to carry out deviant sexual acts, which finally results in the actual sexual offence. Sexual offences in Marshall and Barbaree's (1990) original theory were limited to offences against peer-aged victims (Seto & Lalumiere, 2010). Marshall and Marshall (2000) address this issue by specifying how the type of parenting style an individual was subject to during childhood may explain the type of sexual offences, such as rape and child molestation, that an individual will commit. For example, an anxious/ambivalent parenting style is a stronger predictor that an individual will engage in child molestation compared to an avoidant parenting style. This is more likely to be true if the anxious/ambivalent

parenting style comes from the father (Marshall & Marshall, 2000). The process in which child molestation occurs is described below.

Children exposed to an anxious/ambivalent parenting style develop low self-esteem and may become more responsive to attention from indiscriminate others, thereby increasing the likelihood that they will be sexually victimized. Individuals who experience sexual abuse as a child are more likely to perceive this sexual abuse as harmless, even positive. This distorted perception may foster the belief that if they sexually abuse a child, it will also be a harmless or even positive experience for the victim. Opportunities to sexually offend against children are created because these individuals have low self-esteem, and because of this they are afraid of rejection by peers and become more comfortable with children. Access to children combined with the desire for sexually deviant gratification facilitates the process of child molestation.

Marshall and Marshall's (2000) theory addresses the development of different forms of sexual offending, which was a criticism of Marshall and Barbaree's (1990) original theory (see Seto & Lalumiere, 2010). However, despite expanding Marshal and Barbaree's (1990) original theory, Marshall and Marshall's (2000) theory is still criticized for failing to comprehensively explain the development of sexual offending. In particular, the theory does not provide an explanation for why individuals who do not lack the ability to inhibit sexual desires or impulses still go on to commit sexual offences (Ward, Polaschek, & Beech, 2006). Marshall and Marshall's (2000) reliance on poor self-regulation to explain sexual offending is problematic considering over half of all child molesters show self-regulation in their offending patterns (Ward et al., 2006). Furthermore, despite expansion of Marshall and Barbaree's (1990) theory by Marshall and Marshall (2000), issues have been raised at both the theoretical and empirical level. At the theoretical level, it is still unclear how aggression and sexual desire come to be fused together, and the suggestion that these two do fuse together is simply speculative; no empirical studies have examined how or even if aggression and sexual desire become linked during puberty (Ward et al., 2006). At the empirical level, prior tests of the integrated theory have produced mixed results. Some studies do not support the integrated theory because a link between sexual offending and deficits in intimacy and attachment was not identified (Marshall & Marshall, 2010). Specifically, 30-40% of sexual offenders report being securely attached, which is a strong challenge to the

integrated theory's central premise that sexual offenders have deficits in attachment (Marshall & Marshall, 2010). Studies that have found a relationship between poor parental attachment and future sexual offending were limited by sample size, relied on qualitative information only and did not contain a non-sex offender comparison group (see Marshall, 1993; Smallbone & McCabe, 2003).

        <u>Seto and Barbaree's Developmental Model</u>. A criticism of Marshall and Barbaree's (1990) theory is that it is based upon untestable predictions (Seto & Lalumiere, 2010). Seto and Barbaree's (1997) developmental model of sexual offending addresses the need for more clearly defined and testable predictions. Seto and Barbaree (1997) argue that male sexual offenders use different strategies to pursue sexual relationships that are characterized by short term partnerships and low levels of commitment. Sexual offenders are indifferent to meaningful relationships, so the possibility of negative reactions from partners has no deterring effect on their use of coercive tactics as part of their mating strategy. This model is a theoretical application of Moffitt's (1993) dual taxonomy to the explanation of sexual offending. According to Seto and Barbaree (1997), sexual offenders can be categorized into one of two groups. The first group resemble Moffitt's (1993) AL offenders. These offenders are typically opportunistic and their use of coercive tactics as part of their mating strategy desists by early adulthood. These individuals will offend against their girlfriends or female acquaintances they may date. Rarely will these individuals offend against strangers, making them unlike Seto and Barbaree's (1997) second group of sexual offenders who resemble Moffitt's (1993) LCP offenders. This group is characterized by the early onset of antisocial behaviour and in addition to sexual offending, members of this group are likely to engage in substance use, property offences and non-sexual violence. In contrast to AL-type offenders, victim selection by LCP-type sexual offenders is indiscriminate. Seto and Barbaree (1997) suggest that only small minority of sexually coercive men will be classified as LCP-type offenders, which is opposite to Moffitt's (1993) suggestion that the majority of sexual offenders are LCP offenders. Seto and Barbaree (1997) emphasize that not all LCP offenders are sexual offenders. Compared to LCP non-sex offenders, LCP sex offenders have higher levels of sexual deviancy, including stronger sexual urges, higher levels of arousal and use of violent pornography (Seto & Barbaree, 1997). Seto and Barbaree (1997) did not test this theory; however

they did make several recommendations for future research. One of these recommendations was to test the validity of their model using juvenile sexual offenders. This recommendation was considered by Lalumiere, Harris, Quinsey and Rice (2005).

Like Seto and Barbaree (1997), Lalumiere et al.'s (2005) explanation of sexual offending incorporates Moffitt's AI/LCP taxonomy. However, in addition to LCP and AL-type offenders, Lalumiere et al. (2005) include psychopaths as the third group in their model. Lalumiere et al. (2005) refer to AL offenders as those with Young Male Syndrome (YMS). YMS-type individuals are described as risk taking, domineering, fearless, driven to compete for opportunities for sexual relations and use sexual coercion to capitalize on opportunities. The onset of these characteristics of YMS is typically in adolescence. By adulthood, desistence from sexual offending is likely when life events such as marriage and job opportunity increase the cost of sexually coercive tactics. For LCP-type offenders, desistence is not expected. These offenders do not experience positive life events or protective factors associated with desistence because of the negative effects of prenatal risk factors such as malnutrition and maternal substance abuse and social risk factors such as physical abuse, poverty and poor parenting. These risk factors can lead to neurodevelopmental perturbations, which when combined with low social capital place LCP offenders at a disadvantage when competing for sexual partners. This competitive disadvantage combined with sexual compulsions and above average levels of sexual arousal increase the likelihood that these offenders will rely on coercive mating strategies or will sexually offend against children to obtain their need for sexual gratification (Lalumiere et al., 2005). The third group of offenders, psychopaths, are similar to LCP offenders as both groups are expected to engage in early and persistent antisocial behaviour. However, Lalumiere et al. (2005) suggest that psychopaths have none of the neurodevelopmental perturbations characteristic of LCP offenders. For psychopaths, they use sexual coercion as part of a mating strategy that also includes manipulation, insincerity and deceit. Generally, psychopaths will only use sexual coercion as a mating strategy when other non-coercive tactics have been unsuccessful. All of these tactics are part of a psychopath's lifelong strategy to obtain sexual gratification.

A limitation of Lalumiere et al.'s (2005) model is that it is rare for the YMS, LCP and psychopathy pathways to be examined simultaneously because few studies have

data on each pathway. However, this limitation is not specific to Lalumiere et al.'s (2005) model; many empirical attempts at classifying juvenile sexual offenders using a developmental perspective have been restricted to only partial tests (Lussier, van den Berg, Bijleveld & Hendriks, unpublished manuscript). In one of these partial tests, Cale (2011) tested Moffitt's claim that most sexual offenders are LCP offenders. Contrary to Moffitt, Cale (2011) found that only 10 to 15% of adult sex offenders could be classified as LCP offenders. Cale's (2011) findings parallel claims by Seto and Barbaree (1997) and Lalumiere et al. (2005) that only a small percentage of sexual offenders are LCP offenders. Cale's (2011) study can only be considered a partial test of the Lalumiere et al. (2005) model because it did not examine the psychopathy pathway. Additionally, because Cale's (2011) sample included adult offenders, his study did not address Seto and Barbaree's (1997) recommendation that their model be tested using juvenile offenders. Lussier et al. (unpublished manuscript) address Seto and Barbaree's (1997) recommendation in their study on the offending trajectories of juvenile sex offenders. This study found two sexual offending trajectories, an adolescent-limited trajectory and a high-rate slow desisters trajectory. The high-rate slow desisters resemble Moffitt's (1993) LCP offenders. These offenders are characterized by early and persistent sexual deviancy that continues, though at a lower rate, into their 30s. However, when the non-sexual offending trajectories of sexual offenders were examined, five trajectories best accounted for the heterogeneity of offending patterns, which is contrary to Moffitt's (1993) dual taxonomy. In the Lussier et al. (unpublished manuscript) study, a comparison sample of juvenile non-sex offenders was not included. Without a comparison sample it is difficult to determine whether Lalumiere et al.'s (2005) model is specific to sexual offending.

Seto and Lalumiere's Meta-Analysis and Related Research. It has been difficult for the abovementioned theories to be empirically tested in samples of juvenile sex offenders for two reasons. First, a lack of clearly defined concepts makes it difficult for researchers to operationalization theoretically-based risk factors. Second, despite theories being constructed from a developmental perspective, the extent to which these theories can be generalized to juvenile sex offenders has been questioned (Seto & Lalumiere, 2010). Theoretical explanations specific to juvenile sexual offending typically adhere to the general explanations perspective (see Loeber & Farrington, 1998) and

thus do not outline different developmental pathways to juvenile sexual offending. Empirical studies are therefore needed that either further develop the operational measures of hypothesized key risk factors in adult theoretical models and address the validity of generalizing these risk factors to juvenile sex offenders, or expand on juvenile models of offending to incorporate specified explanations of sexual offending. Seto and Lalumiere (2010) address several of these issues in their meta-analysis of 59 studies that examined risk factors hypothesized to distinguish differences between juvenile sex and non-sex offenders.

Seto and Lalumiere's (2010) meta-analysis identified seven important differences in the profile of risk factors related to sex and non-sex offenders, suggesting that distinctive explanations of juvenile sex offending are required. First, compared to non-sex offenders, sex offenders had less extensive criminal histories and began offending slightly later. Second, sex offenders also had fewer substance abuse issues. Third, they had fewer antisocial peers, fourth, lower scores on measures of psychopathy, fifth, juvenile sex offenders were more likely to have experienced different forms of abuse, with prior sexual abuse being particularly more likely to be found in the developmental histories of juvenile sex offenders. Sixth, sex offenders were also more likely to have been exposed to violence, including sexual violence seen in forms of pornography. Seventh, in terms of psychopathology, sex offenders were significantly more likely to have atypical sexual interests and were more likely to be characterized by high anxiety and low self-esteem (Freeman et al., 2005; Seto & Lalumiere, 2010). While Seto and Lalumiere's (2010) meta-analysis has advanced the identification of the distinctive risk factors that differentiate sex offenders from non-sex offenders, the study has major limitations. The main limitation was the inability to address the heterogeneity of juvenile sexual offenders. By not controlling for within-group heterogeneity of sexual offenders, the statistical significance of potential differences between sex and non-sex offenders was likely reduced. For example, the age of the victim was not controlled for in several studies examined. The age of the victim has been hypothesized as moderating differences between adolescent sex and non-sex offenders (Seto & Lalumiere, 2010).

The study's operationalization of a sexual offence ranged from indecent exposure and voyeurism to contact sexual offences (Seto & Lalumiere, 2010). However, the type of sexual offence was not controlled for and therefore no distinction was made

between serious and non-serious sexual offenders. As well, Seto and Lalumiere's (2010) study of juvenile sex offenders included 10 studies[2] (of the 59) with individuals over the age of 18, with one study that sampled up until age 25. Another limitation was the 13 studies that used a matched-sampling technique. This technique is used for the purpose of examining differences between two or more groups in relation to specific factors while simultaneously controlling for other factors by including within each group only those individuals who measure the same or similar in relation to the variables being controlled for (for an example of the matched sampling technique see Freeman et al., 2005). Incorporating these matched-sample studies in Seto and Lalumiere's (2010) meta-analysis is problematic because actual differences between sex and non-sex offenders will be moderated. Their study therefore may have rejected potentially significant differences between sex and non-sex offenders.

The absence of a theoretical perspective for why sex and non-sex offenders may or may not differ from one another is another fundamental limitation of Seto and Lalumiere's (2010) meta-analysis. Ward and Beech (2006) has asserted it is really the causal mechanisms behind the risk factors that distinguish sexual offenders from non-sex offenders. The dominant theoretical perspective involves integrated theories such as Marshal and Barbaree's (1990) and Seto and Barbaree's (1995). In other words, Seto and Lalumiere (2010) have undertaken an important meta-analytic review of the risk factors that most likely differentiate sex and non-sex offenders. However, it is necessary to assess whether the differences between sex and non-sex offenders require revisions to models of general juvenile offending to account for how sex offenders differ from non-sex offenders.

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[2] There may have been more than 10 studies, but for 11 of the 59 studies, only the sample's mean age was provided.

Models of Juvenile Offending and their Relation to Sexual Offending

The single pathway models, Moffitt's (1993) dual taxonomy and Loeber and Hay's (1994) three pathway model all constitute major advances in theories of general of offending. These models have also served as the foundation for empirical analyses. However, none of these models hypothesized and/or defined a distinct sexual offending pathway despite empirical evidence of a number of risk factors that distinguish sexual offending from general offending (Seto & Lalumiere, 2010). Cale et al. (2009) asserted that just as the development of antisocial behaviour followed different pathways, it is equally probable and evident either a distinct sexual offending pathway or multiple pathways explain and predict sexual offending. In other words specialized theories and related specialized models are required to explain sexual offending. However, the absence of a separate pathway outlining the development of sexual offending is obviously consistent with the single pathway models, since these models are based on the assumption that all offences are simply different manifestations of the same underlying causes (e.g. Patterson et al., 1989), such as low self-control (Gottfredson & Hirschi, 1990). In contrast, Loeber and Hay (1994) specify multiple pathways to general offending, yet they hypothesize like Elliott (1994), that sexual offending was the pinnacle of progressively more serious behaviour; therefore, suggests sexual and violent offending are part of the same most serious developmental pathway. Loeber and Hay (1994) appeared also to assume that the different serious offences have the same underlying causes. Loeber and Hay's (1994) original multiple pathway model has been validated for young offenders and has been empirically validated in several studies. Loeber and Hay's (1994) three pathway model therefore will be utilized to assess the hypothesis that juvenile sex offenders differ from non-sex offenders in both risk factors and the need for a distinctive pathway model. Their model is also important since Lussier et al. (2005) asserted that prior research did not devote consideration to critical behavioural problems that likely distinguish sex offenders. Furthermore, given the considerable heterogeneity of sexual offenders, several developmental pathways are expected to be required to explain sexual offending behaviour (Smallbone & McCabe, 2003). By modeling the behaviour of sex offenders using Loeber and Hay's (1994)

model, the current study will begin to address the lack of empirical research pertaining to the antisocial behaviour patterns of sexual offenders.

Hypotheses

Seto and Lalumiere's (2010) meta-analysis suggests that the criminal behaviour of sex offenders is less frequent than the criminal behaviour of non-sex offenders. Furthermore, antisocial and criminal behaviour of sexual offenders is likely to have a later onset and to be qualitatively less violent and severe when compared to non-sex offenders. What is not known is whether there are also qualitative differences in the antisocial behaviours of sex and non-sex offenders. The current study tests Loeber and Hay's (1994) developmental model with the expectation that even prior to engaging in official criminal activity, juvenile sex offenders will have engaged in less severe forms of antisocial behaviour and that this behaviour will occur less frequently when compared to non-sex offenders. In line with Cale et al.'s (2009) finding that there is heterogeneity in the antisocial behaviour of sexual aggressor of women, it is expected that the analysis of the behaviours of sexual offenders will identify distinct behavioural patterns which will reduce the within-group heterogeneity of juvenile sexual offenders. In previous studies, failure to account for the within-group heterogeneity of sex offenders has moderated the effect size of differences between sex and non-sex offenders on certain key risk factors (see Hunter, Figuerdo, Malamuth and Becker, 2003; Freeman et al., 2005; van Wijk et al., 2005; Seto & Lalumiere, 2010). By accounting for the within-group heterogeneity of sexual offenders, it is expected that the degree to which risk factors related to sexual offending can be distinguished from risk factors related to non-sexual offending will be more apparent. By addressing differences in the behavioural patterns of sex and non-sex offenders, the current study is one of few empirical studies (see Lussier et al., unpublished manuscript) taking a developmental approach to the classification of juvenile sex offenders while comparing these offenders to non-sex offenders.

Chapter 4.

Methodology

Study Design

The current study analyzes data from the Incarcerated Serious and Violent Young Offenders Study, which has received consecutive grants from the *Social Sciences and Humanities Research Council*. Unlike the longitudinal studies discussed in Chapter 2, the current study's cross-sectional design meant that subjects were interviewed at only one time period and would provide retrospective accounts regarding their past behaviour. A limitation of the combination of a retrospective and cross-sectional design is that the current study lacked the necessary data required to properly identify true pathways. The true definition of a pathway involves the temporal measurement of two or more behaviours (Loeber & Burke, 2011). Pathway models are also concerned with successive development, which allows individuals to change pathways as they experience different life events. The current study was not able to determine if a particular behaviour, or life event, occurred before or after another particular behaviour, nor was the study able to identify the temporal period in which an individual transitioned to an additional or alternative pathway. As such, the current study is limited to the identification of patterns of behaviour, rather than behavioural pathways that are essential to Loeber and Hay's (1994) model.

Proponents of longitudinal studies are critical of cross-sectional studies because of their reliance on retrospective rather than prospective information. Critics assert that retrospective studies are inappropriate when researchers require detailed and specific information about various life events, such as the age of onset of a particular criminal offence. Piquero et al.'s (2007) re-analysis of the *Cambridge Study in Delinquent Development* (CSDD), a longitudinal study, found that when comparing the same

individual's prospective and retrospective accounts of criminal offending, retrospective reports tended to overestimate the age of onset for offences. In Piquero et al.'s (2007) analysis, subjects' retrospective accounts at age 32 were compared to prospective accounts at age 14, 16 and 18. There was at least a 14 year gap between the prospective account and the retrospective account. This number of years separating the prospective and retrospective accounts increases the likelihood that prospective accounts will be more accurate. The authors concluded that the probability of correctly reporting the age of onset decreases as the time frame between the event and reporting of the event increases. Thus, even retrospective studies can improve their validity if they are able to minimize the gap between event and reporting.

Individuals in the current sample range from age 12-18, with a mean age of approximately 16. Therefore, while considered to be a cross-sectional and retrospective study, the time frame between an event and reporting of the event does not differ much from individuals in Piquero et al.'s (2007) longitudinal study. Moreover, Jolliffe et al. (2003) note that self-reporting of delinquency in longitudinal studies is still retrospective because individuals are recalling prior events, not predicting future ones. Thus, reporting of criminal or delinquent behaviour in both longitudinal and cross-sectional studies is similarly retrospective. What typically differentiates longitudinal studies from cross-section studies is that the time frame between engaging in a given delinquent act and the reporting of such an act is longer in cross-sectional studies. However, the time gap in the current study approximates the time gap in other longitudinal studies, such as the CSDD (see Piquero et al., 2007). Therefore, the current study is able to address the prior criticism of cross-sectional studies that subjects' responses were

Sample and Procedures

The current study is based on a subsample of serious and violent offenders who were interviewed in open and secure custody facilities within British Columbia, Canada between 2005 and 2011 during the second wave of data collection as part of the SSHRC[3] funded Incarcerated Serious and Violent Young Offenders Study. Only a subsample is used because data collection and data entry for the Project is ongoing. The Project has been funded with four successive grants from the Social Sciences and Humanities Council of Canada. The purpose of this study is to collect self-report and official file information on the risk factors associated with onset of adolescent criminal activity and to determine the risk factor profiles associated with the development of serious and violent offending. Official information is collected from court and corrections files as well as from the Corrections Network (CORNET) an integrated system used for tracking all offenders in provincial institutions within British Columbia. Self-report information is collected through confidential one-on-one interviews between the youth and a trained research assistant at the graduate or undergraduate level. Permission to conduct this study was given by the Ministry of Children and Family Development, who represent the youth's primary caregiver during incarceration. Permission was also given by Simon Fraser University's Ethics Review Board.

All interviews conducted followed a standardized procedure to maintain the quality of the information collect. Before conducting the interview, the interviewer would review the participant's file information. The file review provides the research assistant with collateral information that can be used to help develop rapport with the subject as well as to help ensure that the information provided by the subject is accurate. This

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[3] The Social Sciences and Humanities Research Council has awarded four successive grants to the Principal Investigator, Raymond Corrado.

information can also be used to give the interviewer a sense of what to expect from the subject being interviewed. For example, files contain reports with information obtained from those closest to the youth such as parents and probation officers. This information gives the research assistant a glimpse into the youth's overall functioning and what to prepare for over the course of the interview.

The initial interview with the participant typically occurs over a two-day period for a total of ninety minutes. The interview was structured, requiring no inferences from the research assistants. As such, inter-rater reliability was not examined. Participation in the study was voluntary. Youth were approached on their unit within the custody centre and asked if they wanted to participate in a research study for Simon Fraser University. All participants were read and given a copy of an information sheet explaining to subjects that all information would be kept confidential by law, with the exception of the youth making a direct threat against themselves or someone else. Participants were also assured that there were no physical risks of participating in the study, though some questions may touch on uncomfortable topics, such as abuse. Youth who agreed to participate in the study were asked to sign a consent form signifying that they had been read and understood the details of the study that had been provided in the information sheet. Approximately five percent of all youth declined to participate in the initial interview. For participation in each interview session all subjects were compensated with juice and chips.

The current study includes 145 serious and violent young male offenders age 12-18. But for extraordinary circumstances, such as the individuals own protection or sentences which extend beyond the age of 17, all individuals in Canada who are incarcerated in youth custody facilities must be between the ages of 12 and 17. Of the 145 youth in this study, 51 have been charged with a sexual offence. All sexual offences involved sexual contact or attempted sexual contact. Offences such as exhibitionism were not part of the operationalization of a sexual offence. Subjects were first interviewed using a structured interview, referred to here as the D1, which was designed by the Principal Investigator, Raymond Corrado.

Measures

Using the D1, youth were asked a serious of questions pertaining to their offence history and current criminal offence as well as a wide range of risk factors including measures of self-identity, family history, peers, education, special needs, mental health concerns, substance use and victimization. For the majority of measures pertaining to the abovementioned risk factors, information included (if applicable) age of onset, frequency of the behaviour or situation over the course of the individual's life and frequency of the behaviour or situation over the last 12 months. Research assistants were granted access to the youth's case management file which contained the youth's criminal record, pre-sentence reports and information on their behaviour while in the institution. Access to the youth's file allowed research assistants to ensure that the information provided by the subject during the D1 coincided with official reports. The D1 interview contained measures of specific behaviours that are related to the authority conflict, covert and overt behaviours described by Loeber and Hay (1994). The behaviours selected to represent each behavioural type increase in severity to reflect Loeber and Hay's (1994) model (see Figure 1 in Chapter 2 for a representation of this model). Due to the study's small sample size, only eleven different behaviours were selected. The current study selected behaviours that were specific enough to operationalize the different conceptual typologies of behaviour outlined by Loeber and Hay (1994) but broad enough to include many different types of behaviour. These behaviours are described in greater detail in Appendix A and in the discussion of the current study's analytic strategy. The retrospective nature of the current study meant it did not have the necessary data requirements to determine temporal relationships between the different behavioural measures. As such, the current study is looking at the measures of behaviour as patterns of behaviour, rather than pathways.

Included in the self-report instrument were measures of various risk factors. The current study examines the association between the latent classes identified and key risk factors. Risk factors were measured based on self-reporting. All subjects were asked to report whether or not certain events happened to them, such as experiencing physical or sexual abuse, being placed in foster care, paying for sexual services and getting into trouble at school for sexually inappropriate (but not criminal) behaviour. Subjects were

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also asked to self-report whether they had addictions to drugs or alcohol and whether or not they had been diagnosed with any disorders, including attention deficit disorders, fetal alcohol spectrum disorder, depression, anxiety, conduct disorder and oppositional defiant disorder. The current study was also interested in the subject's family history. Subjects were asked if any of the members of their family had experienced physical or sexual abuse, issues with drugs or alcohol, had issues with a mental illness and whether or not a family member had a criminal record.

In addition to self-report measures, official information relating to all criminal charges a youth received prior to their D1 interview was coded. Information relating to the youth's charge was collected using CORNET, an integrated case management system tracking all individuals involved in any corrections program in British Columbia. Whenever a youth appears in court and is charged with an offence, that offence appears on CORNET. Data collected from CORNET included the number of total charges a youth incurred, the specific charge, the type of charge and total number of that type of charge, the order in which each type of charge occurred in the youth's offending career and how many charges occurred prior to each type of charge. CORNET logs were available for all 145 participants. For the purpose of this study, the type of charge was coded into one of six categories: (1) sexual offence, (2) violent non-sexual offence, (3) property offence, (4) court violation, (5) drug offence or (6) miscellaneous. While sexual crimes could include forms of indecent public acts, none of the youth included in this sample had been charged with such an offence. As such, sexual assault in this study includes only contact sexual offences or sexual offences where a weapon was used. Violent offences included differing degrees of murder and assault, unlawful confinement, robbery and uttering threats. Property offences included theft, possession of stolen property, vandalism and mischief. Court violations included any failure to comply with a court ordered disposition such as conditions of a sentence or bail supervision. Drug offences included possession and trafficking. Miscellaneous offences included possession of weapons and driving offences. Only offences committed prior to the subject's D1 interview were included in the current study in order to control for the fact subjects interviewed earlier (such as in 2005) may be more likely to have longer criminal histories by virtue of being older and thus having more of an opportunity to be charged

Number of Charges (Excluding Violations of Court Orders)
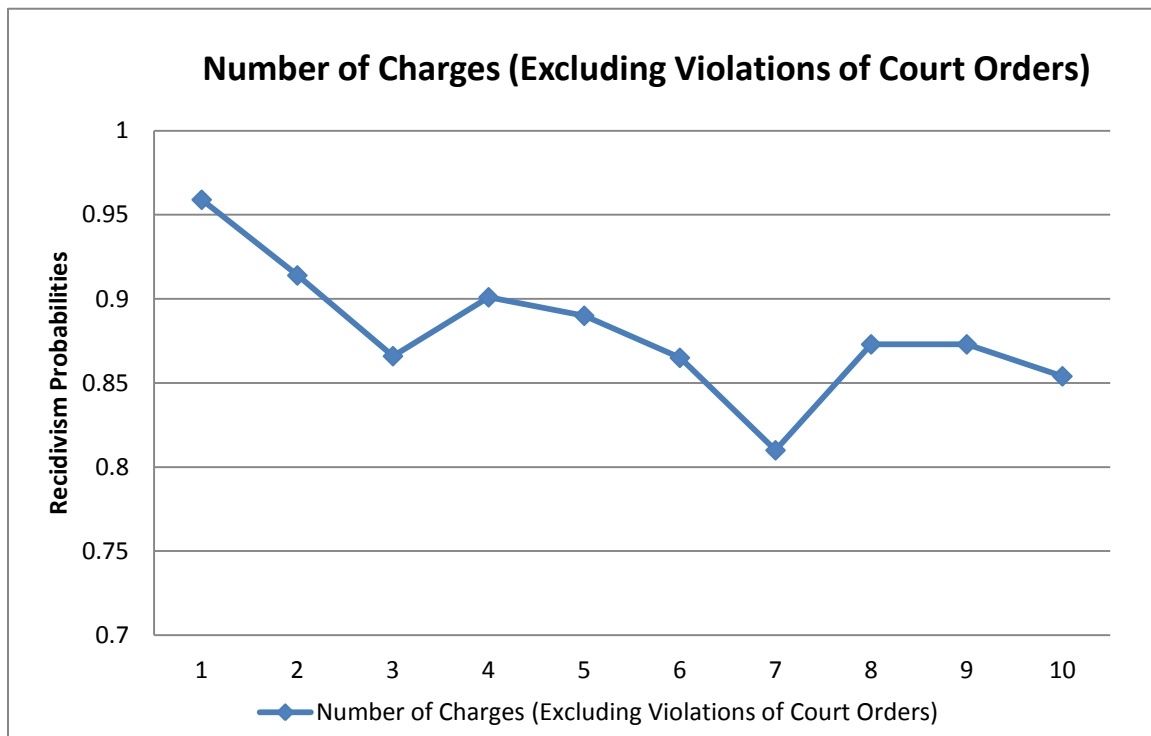
Figure 2   Recidivism Probabilities through the First Ten Charges

with an offence. The mean age of sex and non-sex offenders is very close (16 and 15.6, respectively). Thus, it is not expected that a difference in group age, and thus a difference in opportunity, would account for potential discrepancies in the number of charges against sex and non-sex offenders.

Measuring Chronicity.   By using convictions rather than charges, Piquero et al.'s (2007) standardized measure of chronicity might underestimate the number of offences individuals have committed. Plea bargaining may result in the offender pleading guilty to one offence and in return the other charges are dropped. This becomes an issue chronicity is supposed to measure frequency, yet the measure of offending (convictions) may exclude offences which the individual has engaged, thus underestimating their level of chronicity. Using charges (and excluding violations of court orders) rather than convictions may be a truer representation of offending frequency and thus a better

measure of chronicity. Another way to improve this measure is to exclude violation offences such as breach of bail conditions. But for the fact that the offender had committed an earlier criminal offence, behaviours that result in charges for breaches of court-ordered conditions are otherwise non-criminal offences.

Recidivism probabilities through the first 10 charges are presented in Appendix B. Figure 2 (see above) provides a graphical representation of this information. Figure 2 indicates that a there is a sharp increase between charge 7 and charge 8. The probabilities between charge 8 and charge 10 are quite close, which suggests a cut point at charge 8. Using the formula $\frac{q}{1-q}$, where q represents the probability of recidivism, at charge 7, each individual with 7 charges can be expected to experience approximately 4.49 additional charges $\left(\frac{q}{1-q}\right)$. If the recidivism probability is .873 (8 charges), the expected number of additional charges is 6.87 $\left(\frac{q}{1-q}\right)$. Thus, the expected number of future charges for someone with at least 8 charges is 53 percent greater than the expected number of future charges for someone with at least 7 charges $\left(\frac{q}{1-q}\right)$.

Analytic Strategy

Description of the Latent Class Analysis Method. The current study uses latent class analysis (LCA) to attempt to classify offenders based on their involvement in the authority conflict, covert and overt behaviours described by Loeber and Hay (1994). From a methodological perspective, LCA is particularly valuable when the theoretical construct of interest is comprised of qualitatively different groups of individuals, but the construct itself cannot be directly measured. LCA assigns individuals to mutually exclusive and exhaustive (non-overlapping) latent classes which represent the underlying construct. Here, the authority conflict, covert and overt behaviours represent latent constructs and are measured by several different behaviours that are considered manifestations of each construct.

Whether or not the measures used to represent the latent construct are suitable is determined by assessing model fit. There are a number of tools used to determine

adequate model fit. The appropriate number of latent classes is determined by running successive latent class models, beginning with a one-class solution and then comparing changes in penalized log likelihood values represented by Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) values (Lanza, Collins, Lemmon & Schaefer, 2007). When comparing models that specify different numbers of latent classes, reductions in AIC and BIC indicate that "the trade-off between fit and parsimony is preferable" (Lanza et al., 2007: 677). Another tool for assessing model fit is entropy. Entropy values range from 0 to 1, with higher values (defined as greater than 0.7) being favourable (Lanza et al., 2007; Nooner et al., 2010). The entropy statistic indicates the distinctiveness of each latent class based on the model's average posterior probabilities. Posterior probabilities indicate the latent class model's accuracy of each subject's assignment to a latent class. The latent class model provides two sets of parameters, latent class probabilities (γ parameters) which indicate the prevalence of each latent class in a sample and item-response probabilities (ρ parameters) which indicate the probability of a subject within a particular latent class providing a given response, typically a 'Yes' or 'No' to an observed categorical (typically dichotomous) variable (Lanza, Collins, Lemmon & Schaefer, 2007).

PROC LCA 1.2.6 for SAS 9.2 was used in the current study. PROC LCA allows the user to specify a grouping variable which can be used to measure whether the qualitative meanings of the latent classes differ across levels[4] of group membership (Lanza et al., 2007). A benefit of PROC LCA is that it is able to handle missing cases through full-information maximum likelihood, and assumes missing values are missing at random (Lanza et al, 2007). This method of handling missing data was used in the current study. In the current study, the grouping variable is a dichotomous measure of

[4] In LCA, level refers to the different categories within a grouping variable. For example, a dichotomous grouping variable will have two levels.

whether or not the youth has been charged with a sexual offence. Each latent class can be treated as its own variable using the maximum-probability assignment rule which assigns individuals to the latent class that they have the highest probability of being a member of (Lanza et al., 2007).

Measuring Antisocial Behaviour before Age Twelve. The next step was to compare associations between the latent classes and other variables of interest. However, some of the behavioural variables used to create the latent classes could be considered criminal offences. Thus, any associations made between latent classes and the youth's criminal history is potentially tautological. This tautological issue was addressed by operationalizing the behavioural variables included in the LCA as whether or not the behaviour was engaged in before the age of twelve. Youth in Canada cannot be charged with an offence before the age of twelve, thus the behaviours included in the LCA could not have resulted in a criminal charge, which avoids any tautology. Furthermore, as this study is based on a cross-sectional sample, not all individuals are the same age; some individuals are only twelve. To avoid violating LCA's assumption of local independence it was necessary to set an age cut-off so that those who were older (and would thus have more opportunity) would not appear to have more severe antisocial behaviour profiles. In addition, antisocial behaviour patterns of younger offenders differ from older offenders (Loeber & Stouthamer-Loeber, 1996). Moreover, developmental theorists note that the onset of antisocial behaviour needs to be investigated in early childhood rather than adolescence in order to identify chronic offenders (Cale, Lussier, & Proulx, 2009). Therefore, it was not only necessary from a methodological perspective but also a theoretical perspective, to code all behaviour as occurring prior to the age of 12. Taken together, the current strategy helps to avoid methodological limitations as well as theoretical contradictions that would threaten the validity of the tested hypotheses.

Eleven variables were included in the LCA (questions for each variable are provided in Appendix A). Authority conflict behaviour was measured using three variables: Getting in trouble for disturbing the classroom, getting in trouble for refusing to obey family rules and skipping school. Covert behaviour was measured using four variables: Taking items from others, stealing from a store, getting in trouble for destroying school property and taking a car without permission. Overt behaviour was

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also measured using four behaviours: hitting someone after being teased or threatened, fighting someone after being accidentally bumped in to, getting into a fist fight and forcing someone to do something they did not want to do. A greater number of measures were chosen for the overt and covert behavioural types because it was felt that there would be more variation in this type of behaviour because of the range of behavioural characteristics described in Loeber and Hay's (1994) model (See Figure 1). Consistent with Loeber and Hay's (1994) model, the variables representing different behaviour types were selected with the expectation that as the severity of the behaviour increases, the probability of an individual engaging in this behaviour will decrease.

Chapter 5.

Results

Descriptive Statistics and Preliminary Analyses

Before examining results of the LCA described above, descriptive statistics and preliminary analyses will be examined. The descriptive statistics outlined in Table 2 highlight some of the unique characteristics of sex offenders. Though the majority of non-sex offenders described themselves as Caucasian (66%, N = 62), the same could not be said for the sample of sex offenders, who were more likely to be Aboriginal. While Aboriginal youth are overrepresented in Canada's prison populations, accounting for approximately 30 percent of all youth in custody (Calverly, Cotter & Halla, 2010), the current study found that the overrepresentation of Aboriginal offenders is magnified when examining those who have committed a sexual offence, with 41% (N = 21) being Aboriginal, compared to only 22% (N = 16) Caucasian. Sex offenders had substantially fewer criminal charges (= 10) compared to non-sex offenders (= 14.86), which is consistent with Seto and Lalumiere (2010). The difference in number of charges cannot be explained by an earlier onset of criminal offending as age at first charge for sex offenders (= 14.3) was not much different when compared to non-sex offenders (= 14). The offence history of non-sex offenders was also more versatile than sex offenders. Those in the non-sex offender group were more likely than sex offenders to have been charged with a violent non-sexual offence (75.3% compared to 70.6%), a property offence (84% compared to 64.7%) and both a violent and property offence (60.6% compared to 51%). Moreover, using the measure of chronicity described in Chapter 4, 48.9% (N= 46) of non-sex offenders had at least 8 criminal charges (excluding breaches) compared to only 27.3% (N = 14) of sex offenders.

Table 2 also provides information pertaining to the characteristics of the sexual offenders' offence. Most offenders victimized a female peer outside of their family. However, about a third (37%, N = 17) of the sample of sex offenders offended against a child, defined as someone under the age of 10. Only 12.5% of the sample (N = 8) sexually offended against a male victim and 28.6% (N = 12) offended against a family member, which included non-immediate family members such as a cousin. Thirty-seven percent of sex offenders had been charged with at least two sexual offences; however, it could not be determined whether this indicated multiple victims.

Table 2	*Serious and Violent Offender Descriptive Statistics*	
	Sex Offenders (N = 51)	Non-Sex Offenders (N = 94)
Continuous Variables	Mean (SD)	Mean (SD)
Age	15.6 (1.32)	16 (1.26)
Age at First Charge	14.3 (1.38)	14 (1.48)
Number of Charges[†]	10 (8.09)	14.86 (10.9)
Categorical Variables	% (N)	% (N)
Ethnicity		
Caucasian	31.4 (16)	66 (62)
Aboriginal	41.2 (21)	22.3 (21)
Other	27.4 (14)	11.7 (11)
Asiatic	0.0 (0)	4.3 (4)
Black	7.8 (4)	0.0 (0)
East Indian/Middle Eastern	15.7 (8)	3.2 (3)
Mixed Ethnicity	3.9 (2)	4.3 (4)
Offence Characteristics		
Violent Offender	70.6 (36)	75.5 (71)
Property Offender	64.7 (33)	84.0 (79)
Violent and Property	51 (26)	60.6 (57)
Chronic Offender[††]	27.5 (14)	48.9 (46)
Sex Offence Characteristics[†††]		
Male Victim	12.5 (8)	.
Child victim	37 (17)	.
Family victim	28.6 (12)	.
Multiple charges	37 (17)	.

[†]Coded up until the time youth was interviewed

[††] Chronicity defined as 8 prior charges, excluding administrative offences (i.e. breaches)

[†††] In instances where the youth had committed multiples sexual offences, the first offence was taken

Chi-square analyses were run using Pearson's *r* significance tests (see Table 3) to examine the prevalence of the authority conflict, covert and overt behaviours within the entire sample as well as whether the prevalences of the three behaviour types differed between sex and non-sex offenders. None of the differences in the levels of association were statistically significant (at *p.* < .05), indicating that the behaviour of sexual offenders does not differ from non-sex offenders, even when the type of antisocial behaviour is distinguished. To examine whether the different types of antisocial behaviour are predictive of sexual or non-sexual offending, authority conflict, covert and overt scales were created and entered into a logistic regression analysis (Table 4). Controlling for age and ethnicity, neither of the authority conflict, covert or overt scales were significant[5] predictors of sexual offending. Furthermore, the predictive accuracy of the regression model is poor (69.7%) as it does not meet the threshold for the calculated hit rate[6]. A receiver operating characteristic (ROC) analysis was used to determine the predictive power of the model (see Appendix C). The area under the curve (AUC) value of 0.726 (95% CI: .642-.810, SE .043) is significantly greater than chance expectation of 0.5 (*p* < .05). However, the behavioural scales themselves did not lend any support to the predictive validity of the model[7]. The results of the regression analyses suggest that the type of antisocial behaviour engaged in will not differentiate sexual and non-sexual offenders. However, results from the latent class analysis do not support this finding.

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[5] A global scale representing the three behavioural scales was included, but was not significant. Furthermore, each of the authority conflict, covert and overt behaviours were entered into a logistic regression using a forward stepwise method to analyze the behavioural indicators individually; none were significant. Additionally, *t*-tests comparing mean scores of sex and non-sex offenders on all four scales revealed insignificant differences.

[6] Hit rate threshold = .648 (expected hit rate) * 1.25 = .81.

[7] When the control variables (age and ethnicity) were removed, the model did not meet the threshold for the calculated hit rate. Furthermore, the ROC curve's AUC value of .535 (See Appendix C) was not significant at *p* = .484 (95% CI: .437-.633, SE .050).

Table 3	*Prevalence (Expressed in Percentages) of Behavioural Characteristics of Sex and Non-Sex Offenders before Age 12*	
	<u>Sex Offenders (N = 51)</u>	<u>Non-Sex Offenders (N = 94)</u>
Authority Conflict		
Disturbed Classroom	54.9	56.4
Skipped School	21.6	29.8
Refused House Rules	39.2	50.0
Overt		
Angry and Fought	23.5	25.5
Teased so Hit	23.5	33.0
Fist Fight	51.0	55.3
Forced Others	9.8	6.4
Covert		
Stolen from Store	39.2	47.9
Stolen Goods	35.3	37.2
Damaged Property	23.4	23.5
Stolen Car	3.9	5.3

Pearson Chi-Square (No significant values)

Table 4   *Multivariate Logistic Regression for Prediction of Offender Type[†]*

Factor	Exp(B)	Wald
Authority Conflict Scale	0.854	0.424
Covert Scale	1.08	0.004
Overt Scale	0.988	0.177
Age	1.297	3.148
Caucasian[††]		14.573[*]
Aboriginal	0.244	10.097[*]
Other	0.18	10.792[*]
-2LL	167.582	
Hosmer Lemeshow	$X^2(7) = 5.08, p = .650$	

[†] Sex offenders as reference category

[††] Reference category

[*] $p < .05$

Conducting the Latent Class Analysis

The first step in conducting the LCA was to test for measurement invariance. This test is used to determine whether there are qualitative differences in the meanings of the latent classes across the two levels (sex offenders and non-sex offenders) of the grouping variable. To make this determination, a constrained model with measurement invariance imposed (Table 5) was compared to a model with no parameter restrictions (freely estimated) (Table 6). To select the appropriate number of latent classes, a one class solution was fitted to the data (n = 145) and then compared with successively fitted models, each specifying an increasing number of latent classes. AIC and BIC values are typically used to determine the appropriate number of latent classes. However, BIC values frequently underestimate the appropriate number of latent classes (Yang, 2006). Discrepancies between AIC and BIC regarding the appropriate number of latent classes was resolved by examining corresponding Adjusted BIC (ABIC) values. ABIC averages the highest accuracy rate for determining the appropriate number of latent classes (Yang, 2006). When comparing models, reductions in information criteria values indicate that the "trade-off between fit and parsimony is preferable" (Lanza et al, 2007: 677). In the current study, the freely estimated model indicated a three class solution was preferable, but the constrained model indicated a four class solution. Due to this discrepancy, when conducting the measurement invariance test both a three and four class model were tested.

Table 5   *Baseline models (Sex Offenders as a Dichotomous Grouping Variable[†])*

No. of Classes	G^2	DF	AIC	BIC	ABIC	Entropy
1	681	4084	703	736	701	1.00
2	434	4071	482	553	477	0.89
3	400	4058	474	584	467	0.88
4	**371**	**4045**	**471**	**619**	**461**	**0.85**
5	345	4032	471	659	459	0.89
6	323	4019	475	701	461	0.91

[†]Measurement invariance constrained across groups

Boldface type indicates selected model

Table 6   *Baseline models (Sex Offenders as a Dichotomous Grouping Variable[†])*

No. of Classes	G^2	DF	AIC	BIC	ABIC	Entropy
1	674	4073	718	784	714	1
2	408	4049	500	637	492	0.89
3	**345**	**4025**	**485**	**693**	**472**	**0.93**
4	306	4001	494	774	477	0.94
5	274	3977	510	861	477	0.93

[†]Measurement invariance freely estimated
Boldface type indicates selected model

The measurement invariance test is calculated by subtracting the G^2 value of the freely estimated model from the G^2 value of the constrained model and then comparing the difference to a chi-square distribution with degrees of freedom equal to the difference between the constrained model and the freely estimated model. This test indicates that whether a three class solution[8] or a four class solution[9] is selected, there are significant differences in the item-response probabilities of sex offenders compared to non-sex offenders. This indicates that there are qualitative differences between sex and non-sex offenders in the meanings of the behavioural latent classes. As such, a grouping variable must be included in the analysis to allow the latent classes of the sex and non-sex offenders to be constructed and interpreted separately. As mentioned above, the LCA with a grouping variable indicates that a three class solution is preferable[10] (see Table 6). In the three class solution, G^2 values are less than the model's degrees of freedom, which is an indication of good model fit (Laska, Pasch, Lust, Story, Ehlinger, 2009). Furthermore, entropy values exceeded 0.7 (0.93)[11], which indicates excellent classification accuracy (Lanza et al., 2007). Taken together, the three class solution is the best fitting model and can be considered highly accurate. Now that the appropriate number of latent classes has been determined, the qualitative meanings of each latent class can be interpreted.

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[8] χ^2 [33] = 55, p < .001.

[9] χ^2 [44] = 65, p < .05.

[10] AIC and ABIC values decrease up until a three class solution, but increase from three classes to four classes.

[11] Any value less than one indicates that accuracy of each individual's assignment to a particular latent class is not guaranteed to be perfect. However, in LCA entropy values above 0.9 are considered excellent.

Interpretation of Latent Classes

Interpretation and Naming of the Latent Classes. The probability that an individual within each latent class engaged in a specific behaviour is represented by rho (ρ) parameters, or item response probabilities. The values of these parameters are used to interpret and then name each latent class. Statistically significant differences in response probabilities are not calculated when making comparisons between each latent class within their respective offender group (sex offender or non-sex offender). With such a small sample size, the current study was only interested in identifying where differences exist and not whether these differences were statistically significant. Beginning with the latent class analysis for sex offenders, there are three latent classes to interpret. Based on the item response probabilities (See Figure 3), the three classes representing different patterns of antisocial behaviour were named Late Onset, Primarily Overt (hereinafter Overt) and Primarily Covert (hereinafter Covert). Sex offenders in the Late Onset latent class (47% of sample) were labelled as such because they are characterized by low item response probabilities for each type of antisocial behaviour (Disturbing the classroom had the highest probability at $\rho = .30$). To label this group as non-offenders or non-delinquents would be a misnomer given this is a sample of incarcerated youth. These individuals have engaged in antisocial behaviour; however, it is extremely unlikely that they have done so prior to the age of 12. Sex offenders in the Overt latent class (26% of sample) are characterized by behavioural patterns that indicate this group is more likely to have engaged in violent behaviour compared to the other two classes. For example, the probability that an offender in the overt class engaged in a fist fight is ($\rho = .98$) is higher than for those in the Late Onset and Covert latent classes ($\rho = .14$ and $.71$, respectively). Overt offenders are also the most likely to have engaged in various forms of authority conflict behaviour, particularly skipping school ($\rho = .68$) compared to individuals in the Late Onset and Covert latent classes ($\rho = .08$ and 0.00, respectively). The behavioural patterns of sex offenders in the Covert latent class (27% of sample) can be characterized by different forms of theft. For example, their probability of having committed minor theft from a store ($\rho = .98$) as well as theft from other people ($\rho = .98$) was higher than the probabilities for offenders in the Late Onset and Overt latent classes.

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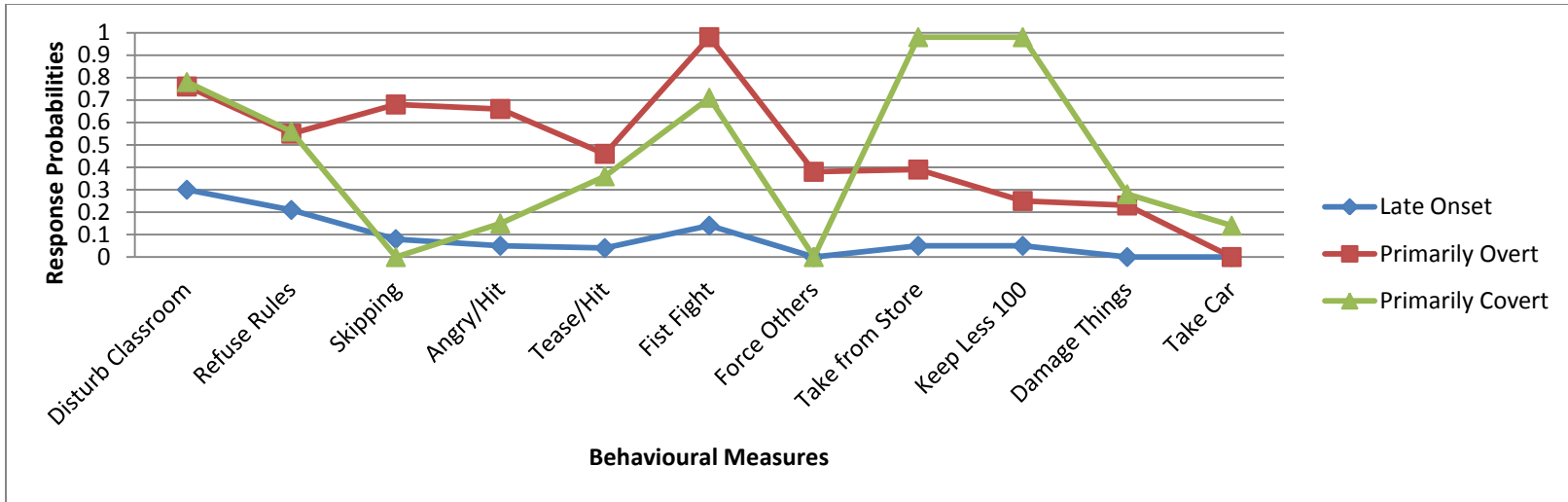
Figure 3[12]   Behavioural Antecedent Response Probabilities of Juvenile Sex Offenders
(All Behaviours before Twelve*)*

[12] See Appendix A for a full description of the variables included in the LCA.

Like the sex offender LCA, item response probabilities were used to interpret and name each latent class for the sample of non-sex offenders. The three non-sex offender latent classes have been named Late Onset, Primarily Overt (hereinafter Overt) and Primarily Covert (hereinafter Covert) (See Figure 4). Non-sex offenders in the Late Onset latent class (53% of sample) had a low probability of having engaged in any of the behaviours included in the analysis (Disturbing the classroom had the highest probability at ρ = .38). Non-sex offenders in the Overt latent class (26% of sample) can be characterized by high probabilities of having engaged in all measures of aggressive and violent behaviour. Overt offenders are also more likely than Covert offenders to commit property damage and car theft, which were used to measure more serious forms of delinquency that are typically characteristic of the covert behavioural pathway outlined by Loeber and Hay (1994). This finding suggests that Overt offenders' behavioural patterns may be versatile, which is similar to Loeber and Hay's (1994) description of offenders in the overt pathway of their three pathway model (as mentioned, however, the current study is unable to test for specific behavioural pathways). Finally, non-sex offenders in the Covert latent class (21% of sample) had the highest probabilities of having engaged in minor delinquency, represented by theft from stores and from other people (ρ = .98 and .72, respectively). Their probability of having engaged in some form of property damage was not as high (ρ = .33). None of the Covert offenders had taken a car without permission. Both the Overt and Covert offenders had similar probabilities of having engaged in behaviours used to measure authority conflict-type behaviours.
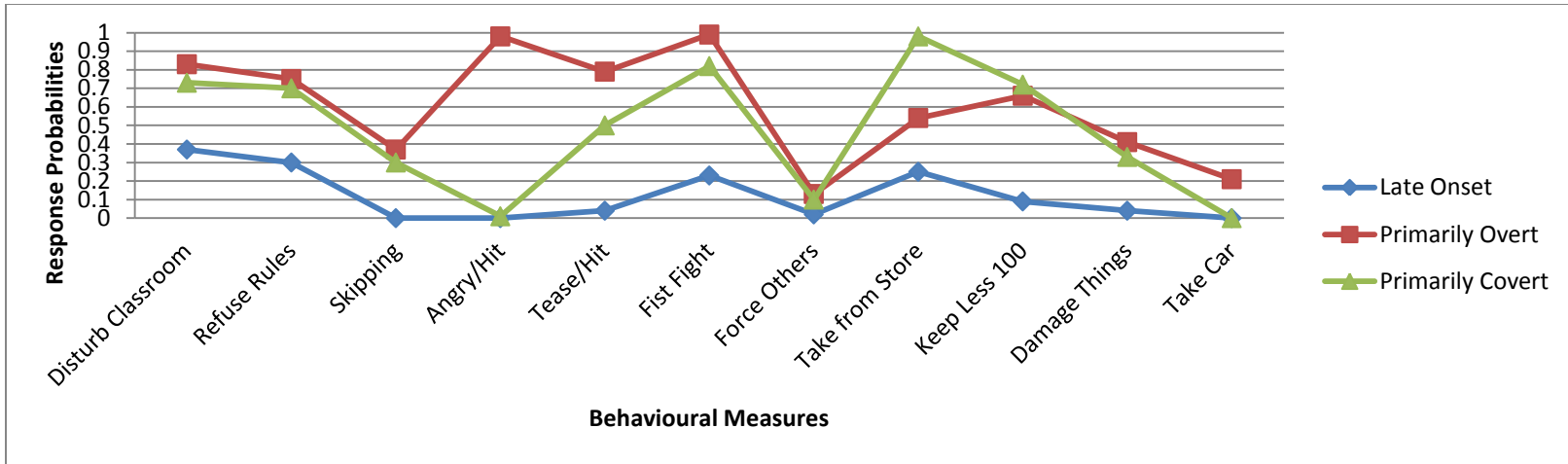
Figure 4   ***Behavioural Antecdent Response Probabilities of Juvenile Non-Sex Offenders***
(All Behaviours before Twelve)

Comparing Latent Classes of Sex and Non-Sex Offenders. The results of the
LCA indicated that the comparison between the model with measurement invariance
imposed (Table 2) and the model with parameters freely estimated (Table 3) are
significantly different. Thus, despite the latent classes of sex and non-sex offenders
having been given same name; the qualitative meanings of the latent classes are
significantly different. The differences between the latent classes of sex and non-sex
offenders are examined to understand in what manner the latent classes are qualitatively
distinct. Similar to the comparisons within each latent class, statistically significant
differences in response probabilities is not calculated. With such a small sample size,
the current study was only interested in identifying where differences exist and not
whether these differences were statistically significant. The sex and non-sex offender
Late Onset (Figure 5), Overt (Figure 6) and Covert (Figure 7) latent classes will be
compared to one another to demonstrate the degree to which they are qualitatively
distinct. The probabilities of the behaviours that most clearly distinguish the two groups
are discussed here. Compared to sex offenders in the Late Onset latent class (47% of
sample), Late Onset non-sex offenders (53% of sample) are more likely to have
engaged in minor theft (ρ= .25 compared to .05). Compared to sex offenders in the
Overt latent class (26% of sample), Overt non-sex offenders (26% of sample) are more
likely to have used aggression in response to both getting teased by others or being
knocked in to (ρ = .79, .98 and .46, .66, respectively). Furthermore, Overt non-sex
offenders are more likely than Overt sex offenders to have engaged in every behavioural
measure included to represent covert behaviour. However, compared to Overt non-sex
offenders, Overt sex offenders had a higher probability of having forced others to do
things they did not want to do (ρ= .38 compared to .13), which was the most serious
form of overt behaviour measured. Finally, in comparing the behaviour of Covert sex
offenders (27% of sample) and Covert non-sex offenders (21% of sample), non-sex
offenders had higher probabilities of having engaged in authority conflict and overt
behaviour. However, Covert sex offenders had higher probabilities of having engaged in
different types of theft.
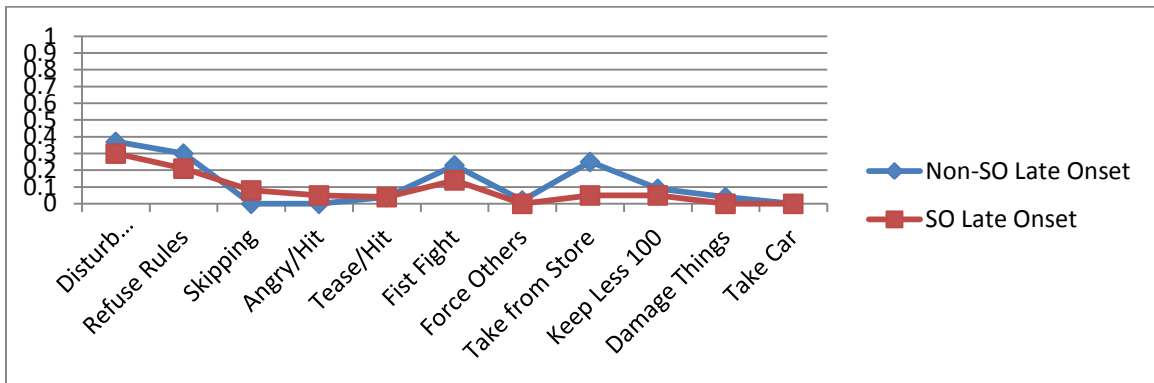
Figure 5   Late Onset Response Probabilities for Sex and Non-Sex Offenders
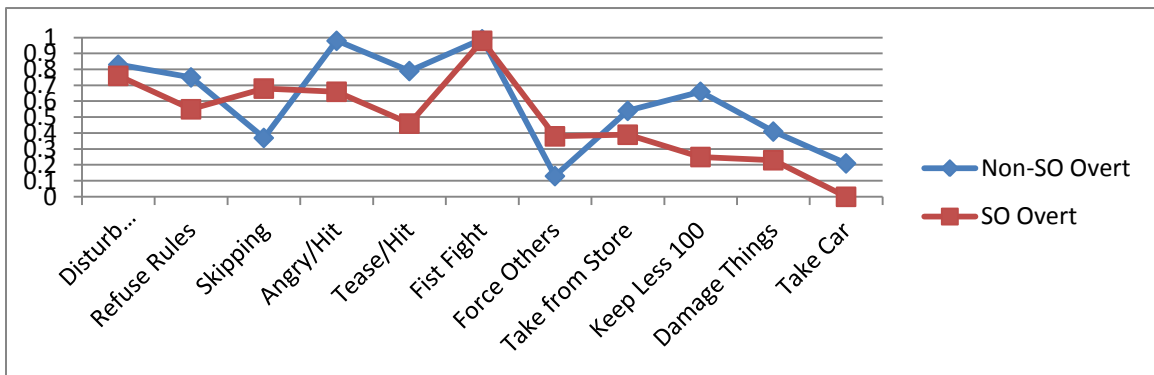
Figure 6   Overt Response Probabilities for Sex and Non-Sex Offenders
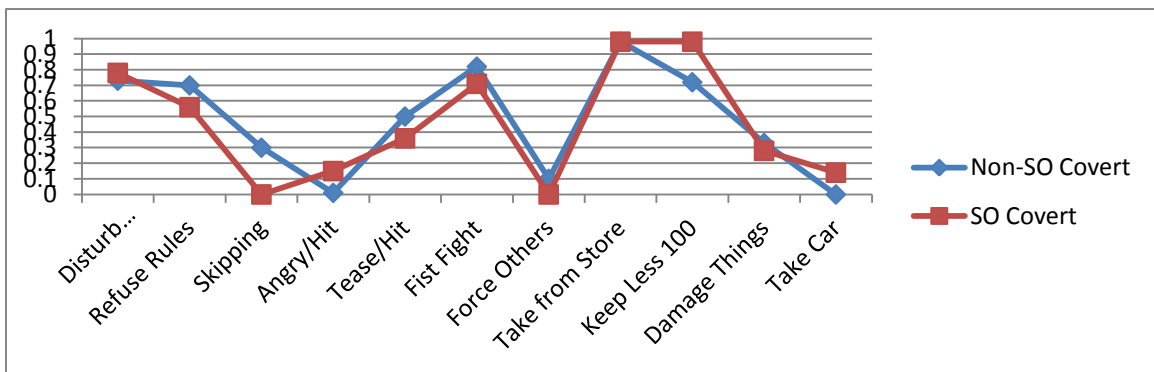
Figure 7   Covert Response Probabilities for Sex and Non-Sex Offenders

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Overall, the sex offender's group-mean probability[13] of having engaged in any given behaviour was less than the group-mean probability for non-sex offenders (.33 versus .44). Additionally, when comparing the non-sex offender Late Onset, Covert and Overt latent classes to their counterpart latent class in the sex offender group, the group-mean probabilities of each latent class were higher for non-sex offenders compared to sex offenders (Late Onset: .12 versus .08) (Covert: versus .50 .36) (Overt: .61 versus .44). Taken together, the comparison across levels of the grouping variable indicate that, compared to sex offenders, non-sex offenders generally had higher probabilities of having engaged in most forms of antisocial behaviour, and this true across all latent classes, consistent with the study's original hypothesis. Furthermore, when comparing the latent classes of sex and non-sex offenders to specific risk factors, the differences between the two groups are amplified.

[13] Calculated as — where ρ equals the item response probability and k equals the number of items

Associations between Latent Classes and Risk Factors

Table 7 presents the sex and non-sex offender latent classes and their association with various risk factors[14]. While there are many risk factors associated with serious and violent offending, the risk factors in Table 7 were selected on the basis of having been identified in the literature as particularly strong predictors of offending (Farrington, Loeber, Jolliffe, & Pardini, 2008; Savage, 2009; Seto & Lalumiere, 2010). First, within-group comparisons of the sex offenders' latent class' association with various risk factors will be compared. Next, between-group comparisons will be made between the sex and non-sex offender latent classes with respect to the risk factors in Table 7. For the sex offender latent classes, the defining feature of the Late Onset group is their victim selection. The Late Onset group were the most likely to have committed their offence against a male victim (24%), a family member (58%) and a child (45%), defined as under the age of ten. The defining feature of the Overt group is their early onset, frequency and diversity of offending. The Overt group had the highest average number of charges (13.7), were the most likely to have been charged with a property offence (77% of Overts) and violent offence (85% of Overts) and were the most likely to be identified as a chronic offender (46%). The defining feature of the Covert group is their early and deviant sexual behaviour. The Covert group were the most likely to have sexual assault as their first criminal charge (50%) and were the most likely to have been in trouble at school for engaging in sexually inappropriate behaviour (29%).

[14] PROC LCA 1.2.6 for SAS 9.2 allows individuals to be assigned to a particular latent class using the maximum-probability assignment rule which assigns individuals to the latent class that they have the highest probability of being a member of (Lanza et al., 2007).

Table 7   *Descriptive Comparisons of Sex and Non-Sex Offender Latent Classes*

	Sexual Offenders			Non-Sex Offenders		
	Late Onset (%)	Overt (%)	Covert (%)	Late Onset (%)	Overt (%)	Covert (%)
Offence Hx†	(N=24)	(N=13)	(N=14)	(N = 51)	(N=24)	(N=19)
Interviewed before age 16	46	62	36	18	38	37
First charge before age 14	29	17	29	27	67	56
Total charges (group mean)	7.6	13.7	10.8	15.2	18.7	14.6
Violent offender	67	77	71	68	83	75
Property offender	58	85	57	77	96	88
Chronic Offender	17	46	29	39	67	53
First offence = sexual assault	41	15	50	.	.	.
Victim Characteristics††						
Male victim	24	9	6	.	.	.
Child victim	45	36	28	.	.	.
Family member	58	40	8	.	.	.
Static Risk Factors						
Aboriginal	42	54	29	27	21	11
Foster care	33	62	50	49	75	78
Inappropriate sexual behaviour	13	23	29	2	25	5
Experienced abuse	50	33	40	29	71	68
Paid for sex	5	38	10	0	4	0
Dynamic Risk Factors						
Depression/Anxiety	22	46	46	24	29	21
Behavioural disorder	50	57	50	55	75	74
Substance addiction	9	18	18	35	29	42
Family Hx						
Hx of abuse	50	33	50	43	54	68
Criminal record	78	58	58	61	92	74
Mental illness	26	33	33	16	30	58
Substance use	52	67	58	59	67	79

†Coded up until the time youth was interviewed

†† In instances where the youth had committed multiple sexual offences, the first offence was taken

Next, comparisons will be made between the latent classes of the sex and non-sex offenders. Beginning with the Late Onset latent class, sex offenders were more likely to have a history of family issues, with the exception of family substance abuse. In line with being more likely to have a history of family substance abuse, non-sex offenders were also more likely to have their own substance addiction (35% versus 9%). Between Overt sex and non-sex offenders, there was not much of a difference in terms of having engaged in inappropriate sexual behaviour at school. However, non-sex offenders were more likely to have been diagnosed with a behavioural disorder (75% versus 57%). For the purposes of this study, ADHD, Conduct Disorder (CD) Oppositional Defiant Disorder (ODD) and Fetal Alcohol Spectrum Disorder[15] (FASD) were included in the operationalization of a behavioural disorder. Non-sex offenders were also more likely to have experienced abuse[16] (71% versus 33%), which may explain the similarities in inappropriate sexual behaviour. For Covert offenders, sex offenders were more likely to have been in trouble at school for inappropriate sexual behaviour (29% versus 5%). Covert non-sex offenders were more likely to have been diagnosed with a behavioural disorder (74%) than Covert sex offenders (50%) and were also more likely to have experienced abuse (68% compared to 40%).

In terms of findings consistent across all latent classes of sex and non-sex offenders, sex offenders were more likely to have paid for sexual relations and be Aboriginal. Non-sex offenders were more likely to abuse substances, have a behavioural disorder and be placed in foster care. One of the most noticeable differences between the latent classes is that non-sex offenders incurred a greater number of charges. Even the Covert non-sex offenders, who had the lowest average

[15] While FASD is a neurodevelopmental disorder, is also impairs behavioural functioning.
[16] Because of sample size, physical and sexual abuse was collapsed into one variable.

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number of criminal charges (14.6) of all non-sex offenders, had a higher average number of criminal charges than the Overt sex offenders, who had the highest average number of criminal charges (13.7) of all sex offenders. Taken together, there appear to be differences between sex and non-sex offenders both in terms of the qualitative meanings of the behaviourally defined latent classes as well as between-group differences across latent classes in terms of their associations to specific risk factors related to offending. These findings support specialized theories of sexual offending, which suggests that explanations of juvenile offending should not be generalized to juvenile sexual offenders. The implications of these findings will be discussed next.

Chapter 6.

Discussion

Differences in the Behavioural Patterns of Sex and Non-Sex Offenders

<u>Implications for Theories and Models of Sexual Offending</u>. There is currently a gap between theoretical explanations of juvenile sexual offending and models that have been developed to explain juvenile offending. Despite theoretical and empirical suggestions that the development of sexual offending differs from other forms of offending (Seto & Lalumiere, 2010), models that have been created for the purpose of explaining the development of juvenile offending do not differentiate between juvenile sex and non-sex offenders, nor do these models explain how juvenile sexual offenders fit within the context of that specific model. The purpose of the current study was to explore the abovementioned gap by examining whether the early antisocial behaviour of juvenile sex offenders differed from juvenile non-sex offenders, which may help address a key research question regarding whether the development of sexual offending differs from the development of non-sexual offending. The current study explores this research question through the guidance of Loeber and Hay's (1994) three pathway model, one of the more prominent models of juvenile antisocial behaviour. Before discussing any implications that the current study might have regarding Loeber and Hay's (1994) model, it is important to acknowledge that the current study only looked at the behavioural patterns of offenders prior to the age of twelve. In Loeber and Hay's (1994) model, overt and covert behaviour are examined up until the age of fifteen. Therefore, the current study does not intend to make any definitive statements regarding the applicability of Loeber and Hay's (1994) model to the explanation of the behaviour of sexual offenders. Moreover, because the current study examined patterns, rather than pathways, no conclusions can be made about how sex offenders may follow different behavioural

pathways when compared to non-sex offenders. Instead, this section will focus on themes and trends that emerged.

There were two particular areas of interest when examining Loeber and Hay's (1994) model. First was to explore whether the authority conflict, covert and overt behavioural patterns of sex offenders would differ from non-sex offenders and whether the antisocial behavioural patterns of sex offenders would be less severe than the behavioural patterns of non-sex offenders. The second area of interest was to explore whether there is evidence to suggest that Loeber and Hay's (1994) three pathway model should consider a pathway outlining the distinctive early behavioural patterns of juvenile sex offenders. By looking at the behavioural patterns of sexual offenders, the current study raises important theoretical and empirical questions surrounding the study of juvenile sexual offending, such as the question posed by Lussier et al. (unpublished manuscript) regarding the need to understand the different pathways juvenile sex offenders follow. The final analysis conducted in the current study was to examine how the sex and non-sex offender latent classes compared in relation to specific key risk factors. By inspecting the manner in which each latent class related to each risk factor, the current study hopes to stimulate future research regarding how the development of sexual and non-sexual offending may differ.

Comparing the Behaviour of Sex and Non-Sex Offenders and Implications for Current Theory. This study began by comparing sex offender and non-sex offenders' associations with authority conflict, covert and overt-type behaviours. Chi-square analyses and logistic regression models indicated none of the specific behaviours and none of the behavioural scales were significantly related to sexual offending. These non-significant outcomes were expected because neither analysis is able to account for the within-group heterogeneity of sexual offenders. To account for the within-group heterogeneity of sexual offenders, latent class analysis was used. LCA is advantageous because this technique can separate the sample into homogenous and mutually exclusive categories. After running separate latent class analyses for sex and non-sex offenders, each analysis indicated three distinct latent classes for both the sex and non-sex offender groups. Within each group, the latent classes were named Late Onset, due to their low probability of having engaged in antisocial behaviour, Covert, due to their

probability of having engaged in discrete forms of antisocial behaviour such as theft and finally Overt, due to their probability of having engaged in aggressive, violent behaviour.

Despite similar overall patterns of behaviour, the probabilities for the specific types of antisocial behaviour were comparably lower for sex offenders compared to non-sex offenders. Due to these differences in probabilities, results from the LCA indicated that there were significant and qualitatively unique difference in the behavioural patterns of juvenile sex offenders and juvenile non-sex offenders. Small sample size along with the exploratory nature of the current study meant that significant differences between the item-response probabilities for sex and non-sex offenders were not examined. Nevertheless, this finding supports the argument that the development of sexual offending differs from the development of non-sexual offending (Seto & Lalumiere, 2010). While the current study is exploratory, the findings from the LCA may have implications pertaining to current theoretical and empirical explanations of juvenile offending. The current study indicated that almost half of sex offenders (the Late Onset latent class) are not engaging in different forms of antisocial behaviour before age twelve. LCP offenders are expected to exhibit behavioural problems in early childhood. Additionally, Moffitt (1993) suggested that all sexual offenders would be LCP offenders. However, the current study, albeit based only on behavioural measures, has a large portion of its sex offender sample that would appear to not meet the requirements for classification as an LCP offender. This finding is similar to Cale's (2011) finding that only 10 to 15% of adult sex offenders could be classified as LCP offenders. Prior research has suggested that increases in antisocial tendency are related to increases in the probability of committing a sexual offence (Lussier et al., 2007). However, the current study suggests that the individuals who engage in the greatest amount of antisocial behaviour are not the same individuals who are committing sexual offences as juveniles. These and other findings from the current study should be interpreted with caution, as a key limitation of the current study was that it did not differentiate between types of sexual offenders. As Butler and Seto (2002) indicated, it is important to distinguish between sex-only offenders and sex offenders who also have a history of non-sexual offences. The current study did not include individuals who could be classified as sex-only offenders, but it may have been beneficial to differentiate between sex offenders who were classified as chronic offenders versus those classified as non-

chronic offenders. Consistent with Butler and Seto (2002), the behavioural differences identified in the current study may be attributed to the non-chronic sexual offenders having fewer issues with early antisocial behaviour.

Regarding whether Loeber and Hay's (1994) three pathway model should specify a pathway outlining the distinctive early behavioural patterns of juvenile sex offenders, because the current study looked at patterns rather than pathways, no conclusions can be made regarding whether Loeber and Hay's (1994) model accurately describes the development of the behavioural pathways that juvenile sex offenders are likely to engage in. However, the current study did find that, like non-sex offenders, sex offenders' behaviours could be accurately classified into either the authority conflict, covert or overt categories. The only difference between the two types of offenders is that the probabilities of each type of behaviour were higher for non-sex offenders. The offence histories for each of the latent classes of sex offenders are similar to results from prior empirical studies that tested Loeber and Hay's (1994) model. The current study indicated that of sex offenders, those in the Overt latent class were the most prominent offenders, both in terms of chronicity, versatility and overall number of charges, which is in line with prior empirical studies that tested the three pathway model (Howell et al., 1995). In terms of the nature of each latent class, Overt and Covert offenders also engaged in authority conflict behaviour and Overt offenders also engaged in some forms of covert behaviour. The different secondary forms of behaviour engaged in by Overt and Covert offenders is consistent with Loeber and Hay's (1994) assertion that offenders transition through multiple behavioural pathways. However, because the current study was unable to determine the temporal location of the overt and covert behaviour (i.e., within the Overt latent class it could not be determined whether these offenders began engaging in covert behaviour before or after overt behaviour), conclusions about transitions through different behavioural pathways cannot be made. What the results of the current study do suggest is that there is some evidence that the antisocial behavioural patterns of sex offenders do differ from the behavioural patterns of non-sex offenders, and future research should examine whether Loeber and Hay's (1994) model should outline how the behavioural pathways of sex offenders differ from non-sex offenders.

Probability Differences in the Behavioural Patterns of Sex and Non-Sex Offenders. The latent classes for sex and non-sex offenders were given the same name because even when separating sex and non-sex offenders, the types of behaviours engaged in were similar. Where the sexual offenders and non-sex offenders differed was in terms of the probabilities of the different types of behaviours. Previous research had suggested that the behavioural problems of sex offenders do not differ from non-sex offenders (Freeman et al., 2005). However, the Freeman et al. (2005) study did not differentiate between specific types of behaviour. Between-group comparisons of the latent classes of sex and non-sex offenders revealed that non-sex offenders tended to have higher probabilities of having engaged in each type of antisocial behaviour, though because of sample size, statistical differences were not examined. Past research identified sexual offenders as having a later onset of criminal offending as well as a less prevalent criminal history (Seto & Lalumiere, 2010). Therefore, it appears that antisocial behavioural patterns observed in both sex and non-sex offenders as early as age 11 can provide a good indication of what the criminal histories of these subjects will look like as juvenile offenders. However, the results of the current study also indicated that the behaviour of some sex offenders was more severe than the behaviour of some non-sex offenders. For example, sex offenders in the Overt latent class had higher probabilities of having engaged in antisocial behaviour when compared to non-sex offenders in the Late Onset latent class. Despite the antisocial patterns of non-sex offenders generally being more severe than sex offenders, the LCA identified a sub-group of sex offenders, those in the Overt latent class, whose behavioural patterns were more antisocial than the behavioural patterns of some non-sex offenders. Interestingly, despite displaying more problematic behaviour prior to age 12, Overt sex offenders had, on average, fewer criminal charges when compared to all non-sex offender latent classes. Comparing the risk factors associated with each latent class amplified the manner in which sex offenders and non-sex offenders differ.

Risk Factors Associated with Sex and Non-Sex Offenders. When comparing the sex offender Late Onset, Covert and Overt latent classes to their non-sex offender latent class counterpart, differences were identified in relation to which risk factors these latent classes were more commonly associated with. Whether or not these differences were statistically significant was not examined for three reasons: sample size, the exploratory

nature of the current study and because assignment to a latent class using the maximum-probability assignment rule means some individuals may be improperly assigned. For these reasons, simple comparisons were conducted, which revealed six findings consistent across all latent classes. First, sex offenders had a later onset of criminal offending. Second, sex offenders had a less versatile history of offending. Third, sex offenders were less likely to meet the chronic offender designation. Fourth, sex offenders were less likely to have substance abuse issues. Fifth, sex offenders were more likely to have paid for sexual relations. Sixth, sex offenders were more likely to suffer from some form of depression or anxiety. These findings are consistent with Seto and Lalumiere's (2010) comparison of sex and non-sex offenders. However, differences in the two groups' offence histories may be explained by Piquero et al.'s (2007) research, which mentions that engaging in more serious forms of criminal behaviour increases the likelihood of spending more time incarcerated, reducing opportunities to offend, reducing the probability of being labelled a chronic offender and reducing the likelihood of having a more versatile criminal history. If the offences of sex offenders were deemed more serious than the offences of non-sex offenders, then these sex offenders may have less of an opportunity to become chronic offenders because of their time spent incarcerated. However, in Canada the most common sentence handed out to juvenile sex offenders is probation (Bell, 2010). Therefore, on average the sex offenders in the current sample should not be considered to have less of an opportunity than non-sex offenders to offend.

There were also some findings that were not consistent with past research. For example, with the exception of the Late Onset profiles, non-sex offenders were more likely to have been abused. However, methodological limitations threatened the validity of this variable. Midway through the study, the researchers were prohibited from asking youth about their experiences of physical and sexual abuse, which impacted the number of responses available for this variable. In addition to sex and non-sex offender between-group differences in associations to particular risk factors, descriptive analyses also indicated within-group differences in the risk factor profiles of each latent class. Descriptive analyses indicated that the creation of homogenous latent classes of sex offenders helped not only to reduce heterogeneity in their behavioural patterns; it also decreased heterogeneity relating to associations with specific risk factors. The following

section will discuss how results from the descriptive analyses may be useful in helping future research identify which risk factors to include when looking to discover distinct profiles of sex and non-sex offenders. The identification of these profiles may be aided by future studies' use of pathway modeling to identify the authority conflict, covert and overt behavioural pathways specified in Loeber and Hay's (1994) model.

Profiles of Sex and Non-Sex Offenders Based on Latent Class

Sex Offenders. Each latent class has been examined in relation to key risk factors. This examination revealed that each latent class is uniquely associated to specific risk factors. Profiles of each of the latent classes of sex offenders will be examined, beginning with the Late Onset latent class. The Late Onset latent class' profile of risk factors was emphasized by victim characteristics. The Late Onset group were the most likely to victimize a male, a child and a family member. Victim selection is a key distinction between types of sex offenders (Seto & Lalumiere, 2010). For example, offenders against children are distinctively characterized by social deficits and fewer behavioural problems (Lalumiere, Harris, Quinsey & Rice, 2005; van Wijk et al., 2005), which supports the validity of the Late Onset group as they were the least likely to report problematic behaviour and were most likely to have been abused, which can lead to social deficits such as withdrawal and isolation (Marshall & Marshall, 2000). The Covert group's defining feature was early and deviant sexual behaviour. For 50% of these individuals, their first criminal charge as for a sexual offence. This is inconsistent with the general explanation of sexual offending which suggests that sexual assault occurs at the end of a sequence of progressively more severe criminal behaviour (Elliott, 1994; Loeber et al., 2008). The Overt latent class was distinguished by early onset, frequent and versatile offending. Overt sex offenders' similarity to non-sex offenders in relation to offending may reduce the overall variance between sex offenders and non-sex offenders, which might explain why some research found few differences between sex and non-sex offenders (see van Wijk et al., 2005). An outline of the profiles emerging from the three latent classes is provided in Table 8.

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Table 8   *Profiles of Juvenile Sex Offenders by Latent Class*

Latent Class	Typology	Description
Late Onset	Deviant Victim Preference	Child, familial and male victim
		Less antisocial behaviour
		Most likely to be abused
Covert	Sexual Deviants	Deviant sexual behaviour
		Early sexual offending
		Non-familial female peer victim
Overt	Versatile Offenders	Early onset offending
		Frequent offending
		Versatile Offending

Non-Sex Offenders. Profiles also emerged for the latent classes of non-sex offenders (see Table 9). Beginning with the Late Onset latent class, with the exception of depression/anxiety and substance addiction, individuals within the Late Onset latent class were less strongly associated with every risk factor listed in Table 7. However, this does not mean that these risk factors were irrelevant to individuals in the Late Onset latent class. Almost half (49%) of individuals had been in foster care, 55% had a behavioural disorder and 61% of individuals had a family member with a criminal record. Perhaps the defining feature of the Late Onset latent class was that there was no one risk factor that appeared to be an overwhelming characteristic of this group. Perhaps this speaks to the heterogeneity of these individuals. Alternatively, there could be specific risk factors outside the current data that better represents individuals within the Late Onset group. For Covert offenders, in relation to both themselves (42%) and their family members (79%), individuals in the Covert group were most strongly associated with substance abuse issues. Furthermore, nearly three quarters (74%) of individuals in the Covert latent class had a family member with a criminal record. Family substance abuse issues combined with a criminal record may account for Covert offenders being the most likely of any latent class to have been in foster care (78% of individuals). Finally, for Overt offenders the defining feature of this group may be their frequency of offending, as well as the existence of family members with a criminal record. Two thirds (67%) of individuals in the Overt latent class had been charged with at least 8 criminal offences (excluding court ordered violations). Almost all (96%) were property offenders and 83% had also been charged with a violent offence. Furthermore, 92% of individuals in this latent class had a family member with a criminal record. Also, 75% of individuals in this latent class had been diagnosed with some form of a behavioural disorder. This might explain why the Overt latent class had the highest probabilities of having engaged in the different types of antisocial behaviour included in the analysis.

Table 9   *Profiles of Juvenile Non-Sex Offenders by Latent Class*

Latent Class	Typology	Description
Late Onset	Non-Distinct	Later onset of criminal behaviour
		Less antisocial behaviour
		No specific risk factor associations
Covert	Substance Abusers	Substance Abuse
		Family Substance Abuse
		Foster Care
Overt	Chronic Offenders	Frequent offending
		Family Hx of offending
		Behavioural Disorders

Latent Class Profiles and Policy Implications. Based on the results of the latent class analysis, the current study has several recommendations for future research, which may lead to important implications for both preventative and responsive policy measures. Part of the value of latent class analysis is that its creation of distinct groups of offenders can lead to the development of clear policy initiatives which are specific to individuals within each latent class. For example, if individuals are seen to be engaging in a pattern of overt antisocial behaviour prior to age 12, it may represent a warning sign that these individuals are at risk of early and frequent criminal behaviour. As such, institutions such as schools, which are particularly capable of monitoring behaviour, may wish to initiate preventative policies that focus on first and foremost addressing the behaviour of Overt offenders. Relying on the family members to effectively monitor and address the behaviour of Overt offenders may be unreliable given that 92% (see Table 7) of Overt non-sex offenders have a family member with a criminal record. These policy implications should remain specific to incarcerated serious and violent young offenders. Early behavioural problems such as those measured in the current study are poor indicators of criminal behaviour in adulthood (Sampson & Laub, 2003; Cale et al., 2009). As such, results from the current study should not be generalized to adult populations, regardless of their level of involvement in criminal behaviour. Additionally, just as it is the case that not all youth offenders become adult offenders (Robins, 1966), it should not be assumed that any child engaging in overt behaviour is a risk for frequent and versatile offending in the future. A longitudinally-designed study based on a community sample that examines different types of authority conflict, covert and overt behaviours would be helpful in understanding why some youth who do engage in these behaviours in childhood and early adolescence do not go on to commit future offences.

Limitations and Future Directions

Limitations. The current study is not without limitations. From a methodological perspective, the sample size of the current study is one limitation. The small sample size restricted the latent class analysis to the inclusion of only eleven variables used to represent the three types of behavioural pathways described in Loeber and Hay's (1994) model. Many different examples of antisocial behaviours could be used to describe each of the three behavioural types, and it is possible that the eleven variables selected

did not fully represent each behavioural type. The current study attempted to address this by utilizing broad measures of antisocial behaviour in an attempt to capture the behavioural diversity of offenders. However, these broad measures meant that unique differences or patterns within this broader measure would not be identified in the analysis. The inclusion of a greater number of variables measuring different types of antisocial behaviour may help improve the specificity of the behavioural patterns of sex and non-sex offenders. A larger sample size would allow for this inclusion. This can be addressed in the future as only a sub-sample of the Incarcerated Serious and Violent Young Offenders study was used as data for this study is still in the process of being collected. Additionally, because Seto and Lalumiere (2010) found that when compared to non-sex offenders, sex offenders were significantly more likely to possess atypical sexual interests, it may be important to also examine how atypical sexual behaviours fit within the context of Loeber and Hay's (1994) model. The current study was prohibited by research ethics boards from asking youth about deviant sexual behaviours.

A larger sample size would also have allowed for significance testing when examining the relationship between latent classes and the key specific risk factors that had been selected. With a larger sample, future research could use the latent classes as independent variables to predict various measures of criminal offending. The latent classes could also be treated as dependent variables which could be predicted by the risk factors listed in Table 7. If the latent classes are used to create independent variables, it is recommended that sampling weights be used based on each individual's highest posterior probability. This is necessary because assignment to each latent class is imperfect, but sampling weights can be used to control for this limitation (see Lacourse et al. 2010; Connell, Gilreath, and Hansen, 2009). With a larger sample, another area to explore is the utility the sex offender latent classes have in predicting victim selection. Sex offenders are a heterogeneous group, and victim selection is a factor that has influences increased heterogeneity (Seto & Lalumiere, 2010). The heterogeneity of sexual offenders has made it difficult to identify which risk factors are important predictors of this offence. Latent class analysis is able to address this issue by creating homogenous groups, which is an improvement upon past typologies which typically rely on clinical inferences (Lemmond & Verhaagen, 2002). With these homogenous groups of highly correlated individuals, the ability to predict with accuracy the victims of sex

offenders may improve. However, because the current study was more exploratory in nature, its specific purpose was not to explain the relationships between the latent classes and various risk factors, but rather to provide a better understanding of the risk factor profiles of these offenders. The profiles that have been developed should provide future researchers with a theoretical framework for the testing and explanation of the relationship between antisocial behavioural patterns and other risk factors.

In addition to sample size, a second limitation of the current study is that age of onset was not distinguished within the different measures of authority conflict, covert and overt-type behaviours, although the latest age of onset possible is 11. A key principle of the DLC perspective is that the severity of delinquent behaviour progresses in sequential order (Piquero et al., 2007). For example, within covert forms of behaviour, it is expected that individuals will engage in minor forms of theft before different types of property damage (Loeber & Hay, 1994). The current study was able to include behaviours that differed in severity but was not able to determine within the latent classes that individuals engaged in minor forms of antisocial behaviour before escalating to more serious forms of antisocial behaviour. Only behaviours that were engaged in prior to the age of 12 were measured. This was done so that the current study could control for individuals in the sample who were older than others. It was necessary to measure only those behaviours that occurred prior to the age of 12 in order to control for the fact that older individuals would have more opportunity to engage in the different forms of antisocial behaviour. Since all individuals in the sample were older than 12, the issue of unequal opportunity is avoided. This helped validate the finding that the response probabilities within the latent classes decreased as the severity of the type of behaviour increased. This suggests that the behaviours that were measured were committed in the expected sequential order, which is reflective of the DLC perspective that behaviours that are considered more serious are less likely to occur (Piquero et al., 2007). However, this is not conclusive evidence when the goal is to examine behavioural pathways. The true definition of a pathway includes the temporal measurement of two or more behaviours (Loeber & Burke, 2011). In this study, the temporal relationship is inferred by the size of the response probabilities rather than measured using the actual age of onset. Thus, the current study refers to the latent classes as examples of patterns of antisocial behaviour rather than pathways. To be

more definitive in outlining the behavioural pathways of offenders, future research should examine the temporal relationship between the age of onset of each behaviour in relation to the severity of other behaviours engaged in.

As with all retrospective studies there is potential for individuals to report the correct event but in the wrong time period. In the current study, it is possible that individuals who engaged in a particular behaviour before the age of 12 reported this behaviour as occurring after the age of 12. The opposite is also possible. However, this is a limitation of any study that relies on self-report measures. The regularity in which reporting errors occur is what distinguishes the validity of all self-report studies. Proponents of longitudinal studies argue that such studies hold greater validity than retrospective studies because of their ability to minimize reporting error by reducing the time gap between the occurrence of an event and the reporting of that event (Piquero et al., 2007). Piquero et al. (2007) compared retrospective and prospective reports of delinquency in the Cambridge study and found prospective reports of the age of onset of delinquent events were much more accurate. The authors concluded by questioning the validity and even the utility of retrospective studies. However, in Piquero et al.'s (2007) comparison of prospective and retrospective data, the retrospective data examined required individuals to recall events that took place nearly 20 years prior. Not all retrospective studies have such a lengthy time gap between the event and the reporting of the event. As such, Piquero et al.'s (2007) findings should not be generalized to retrospective studies with shorter time gaps between the event and the reporting of the event. In the current retrospective study the time gap between event and reporting of the event was approximately the same, if not less, than the reporting time gap by individuals in the longitudinally-designed Cambridge study. As Joliffe et al. (2003) note, longitudinal studies that rely on self-reported information, such as the Cambridge study, fall on a retrospective continuum. For example, at age 18 individuals in the longitudinally-designed Cambridge study were required to provide a retrospective account of the age of onset of certain delinquent events (Piquero et al., 2007). In comparison however, individuals in the current study were only 16 when asked to recall the age of onset of certain delinquent events. Therefore, the current study was able to minimize the time gap between the event and the reporting of the event which will have

helped to reduce the type of recall error that is often cited as a point of concern in many retrospective studies.

Conclusions and Implications for Future Research. The current study did not distinguish between types of sex offenders based on victim selection in developing the latent classes but did find that the Late Onset latent class was most likely to select family members and children under the age of 10 as victims, which may be indicative of atypical sexual preferences. Future research could further examine how the behavioural patterns of sexual offenders fit within Loeber and Hay's (1994) model by separating sex offenders based on their victim selection. Creating more specific groups of sex offenders, such as in Butler and Seto (2002), might help to further distinguish differences between sex and non-sex offenders. This could help future studies that examine Loeber and Hay's (1994) behavioural pathway model because more distinctive groups may make identification of differences in the behavioural pathways of sex and non-sex offenders more clear.

In the current study, with regards to examining the theme of qualitative differences in the types of behaviour outlined in Loeber and Hay's (1994) model, individuals in the Late Onset latent class were unlikely to engage in any of the three types of antisocial behaviour. It is likely that Late Onset offenders simply did not engage in antisocial behaviour before the age of 12. However, a rival explanation is that there may be a fourth type of behaviour not measured by the current study which the Late Onset offenders engage in. For example, in addition to authority conflict, covert and overt behaviour, Lussier, Proulx and Leblanc (2005) added a fourth measure of behaviour, recklessness, in their measure of general antisocial behaviour. Reckless behaviour included alcohol and substance abuse and engaging in behaviours that put themselves or others at risk. The current study examined associations between substance abuse and latent classes and found that this risk factor was most strongly related to Covert offenders, however neither this measure nor other measures of recklessness were included in the latent class analysis. Whether or not the Late Onset offenders, as well as other offenders engage in reckless behaviour, and whether Loeber and Hay's (1994) model should be adapted to account for this type of behaviour should be addressed in future studies.

Finally, this was an exploratory analysis using only a sub-sample of individuals interviewed under the Incarcerated Serious and Violent Young Offenders Study. However, the current study has contributed to the empirical knowledge of both juvenile offenders generally and juvenile sex offenders, specifically. Four key themes have emerged from the current study, which should be examined further in future research. First, comparisons of sex and non-sex offenders in all latent classes revealed that on average, sex offenders were less likely to have engaged in antisocial behaviour. This finding is similar to what has been suggested in specialized theories of sexual offending (see Seto & Lalumiere, 2010), as the behavioural patterns of sex offenders have been shown to be significantly different from non-sex offenders. Second, the types of behaviours described in Loeber and Hay's (1994) model appear to account for the behavioural heterogeneity of sex offenders; the behavioural patterns of sex offenders could still be distinguished by overt and covert patterns. Furthermore, like past research has shown, the Overt latent class of offenders have the most extensive criminal histories relative to the other sex offender latent classes (Howell et al., 1995). However, it may be important to avoid generalizing the behavioural patterns of non-sex offenders n to sex offenders because significant qualitative differences were found and these differences seemed to amplify differences between sex and non-sex offenders in relation to key risk factors listed in Table 7. For example, while Overt sex offenders had the most extensive criminal history, this was only true when examining within-group differences. Overt sex offenders had a less extensive criminal history than all latent classes of non-sex offenders. This relates to the third key theme, which is that even when sex offenders are matched with non-sex offenders in terms of similar behavioural patterns, these similar groups (such as the Overt sex and non-sex offenders) appear to differ in terms of which risk factors they are more likely to be associated with. Fourth, the three distinct latent classes of sex offenders and the manner in which each of these latent classes is differentially associated with specific key risk factors highlights the importance that future research should continue to examine the ways in which sexual offenders differ from one another, making them a heterogeneous group.

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Appendices

Appendix A.

List of Variables in the Latent Class Analysis

<u>Authority Conflict Behaviours</u>:

- Have you ever purposely disturbed your classroom, for example by bothering other students, or talking when you're not supposed to?
    - o How old were you the first time you did this?
- Have you ever refused to do something your parents told you to do, for example by breaking the house rules?
    - o How old were you the first time you did this?
- Have you ever skipped out of school for the whole day?
    - o How old were you the first time you did this?

<u>Covert Behaviours</u>:

- Have you ever taken and kept something worth less than $10 that didn't belong to you?
    - o How old were you the first time you did this?
- Have you ever taken something from a store without paying for it, and then kept it?
    - o How old were you the first time you did this?
- Have you ever purposely damaged or destroyed things that didn't belong to you?
    - o How old were you the first time you did this?
- Have you ever taken someone else's automobile to go for a ride, without asking permission?
    - o How old were you the first time you did this?
-

<u>Overt Behaviours</u>:

- Have you ever got angry easily and hit someone because you were being teased or threatened?
    - o How old were you the first time you did this?
- Have you ever got angry easily and fought someone after someone accidentally knocked in to you, because you thought he/she had done it on purpose?
    - o How old were you the first time you did this?
- Have you ever been involved in a fist fight with someone?
    - o How old were you the first time you did this?
- Have you ever used physical force in order to dominate other teenagers?
    - o How old were you the first time you did this?

Appendix B

Measuring Chronicity

Table 10   *Recidivism Probabilities through the First Ten Charges*

Offence Number	Recidivism Probability
1	0.959 (139/145)
2	0.914 (127/139)
3	0.866 (110/127)
4	0.901 (100/110)
5	0.89 (89/100)
6	0.865 (77/89)
7	0.818 (63/77)
8	0.873 (55/63)
9	0.873 (48/55)
10	0.854 (41/48)

Appendix C

Roc Curves from Logistic Regression Analyses of Behavioural Scales

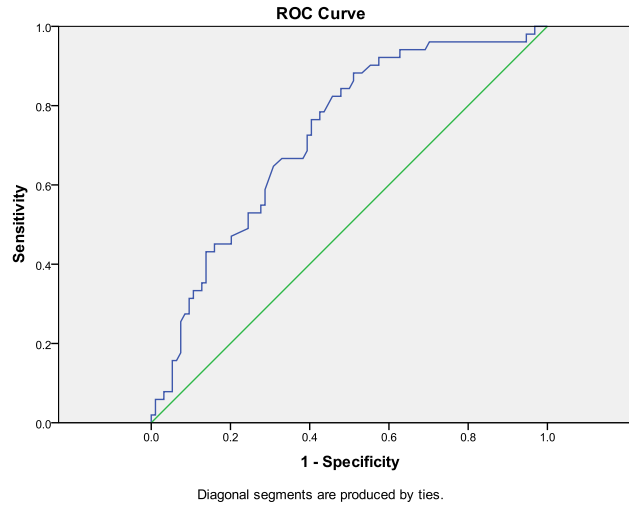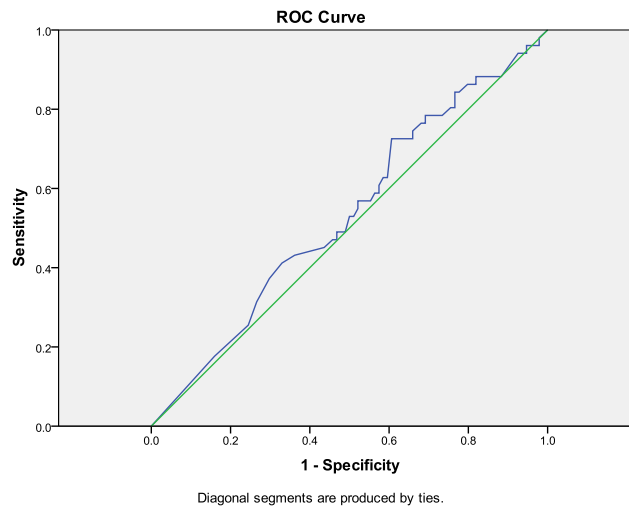*Figure 8*   Roc Curve with Ethnicity and Age as Control Variables

Figure 9   Roc Curve without Control Variables