The Successful Sex Offender:
Investigating Actual Onset and Cost Avoidance
in the Unfolding of the Criminal Career

by

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Abstract

Age of onset is an important indicator of criminal career research because it marks the origins of offending. Age of onset literature, focusing on general offending, has been based largely on official data. Little is known about sex offending initiation or cost avoidance. The present study aimed to describe actual and official onset and the gap between in a sample of first-time convicted adult male sex offenders (N = 332). The study aimed to examine the gap between actual and official onset as an indicator of cost avoidance. Actual onset, cost avoidance, and official onset were included in successive nested regression models. The findings revealed an adult onset with substantial heterogeneity in cost avoidance. On average, offenders avoided costs for 7.5 years. Early onset offenders targeting children within the family were the best able to avoid costs. Results will be discussed in terms of the criminal career and criminal achievement.

Keywords: Career Initiation; Age of Onset; Cost Avoidance; Sex Offenders; Survival Analysis; Criminal Career

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Executive Summary

Age of onset of offending is associated with the unfolding of the criminal career in terms of frequency, diversity in offending, and persistence. Research investigating age of onset has typically focused on one of two domains: (a) investigating the covariates of the age of onset of offending, and; (b) examining criminal career parameters (e.g., career length, criminal versatility, offending frequency, offending specialization) for different onset age. Criminological research has been conducted primarily with general samples of offenders and it is somewhat unclear whether findings from these studies also apply to samples of adult sex offenders. As such, little is known about age of onset as well as the gap between the actual age of onset for sex offending and the age at first conviction for a sex crime. While studying actual and official ages of onset are informative in and of themselves, the time-gap between the two measures informs about sex offenders' ability to delay the costs of crime. While criminologists have described early-onset offenders as short-sighted, impulsive, opportunistic, with a here-and-now orientation, it is unclear whether onset age is informative about differential cost avoidance. This is surprising given the important implications age of onset and cost avoidance may have on the unfolding of the criminal career in terms of understanding the role and impact of criminal propensity and life events on patterns of offending.

The aim of the current study is to examine patterns of onset and cost avoidance in a sample of federally convicted adult male sex offenders. The sample consists of consecutively admitted individuals to a federal penitentiary in the province of Quebec between April 1994 and June 2000 (N = 332). All individuals included in the sample were first-time convicted sex offenders. The dependent variables of interest include the actual and official age of onset and the actual-official onset time differences (i.e., cost avoidance). Actual age of onset was based on several sources of information (i.e., self-report, police investigation report, and victim statements) while official age of onset was based on the offenders age at conviction. Covariates included socio-demographic indicators, crime type, and victim characteristics. Actual age of onset, cost avoidance, and official age of onset were included in successive nested models using survival regression models (i.e., Cox proportional hazards).

The results revealed substantial differences between actual and official age of onset. While actual onset was typically in the early 30s, official onset was found to be between the late 30s and early 40s, indicating a substantial gap between the two measures of onset. The present study also highlighted the importance of offender type in relation to onset and cost avoidance. Indeed, official onset and cost avoidance both varied across victim age, gender, and the victim-offender relationship. Specifically, versatile offenders (i.e., individuals having offended against multiple victim type) were able to avoid conviction the longest and typically had, as a result, the latest official onset. Actual age of onset did not vary across offender type with the exception of the relationship between the victim and offender. Here, offenders targeting strangers had the earliest onset while those targeting within the family had the latest onset. These results indicate that actual and official onset may not be measurements of the same construct. Actual onset was also found to be highly informative in terms of cost avoidance. In particular, offenders with an early actual onset were the most likely to avoid conviction for longer periods.

Three important implications can be drawn from the present study. First, from a theoretical standpoint, the study highlights that the onset of sex offending in adult sex offenders is typically in adulthood. The findings depart from earlier studies suggesting that adult sex offenders are grown up juvenile sex offenders. The origin of the sexual offending of adult offenders may consist of transitory and contextual factors associated with the adult period. Second, from a more empirical standpoint, the gap between actual and official onset is quite substantial and varies significantly across offenders. Such heterogeneity between actual and official onset of offending was not random, but associated with several factors, including characteristics of the offense(s). The gap and the heterogeneity across offenders should be understood as evidence, at least in part, of differential cost avoidance. Third, cost avoidance varies across patterns of onset. Specifically, early onset offenders are able to avoid costs for longer periods than late onset offenders. This is counterintuitive to the general idea that early onset offenders are more impulsive and short-term oriented. This may suggest career specific onset decision-making patterns. These findings have practical implications as well. In particular, actuarial risk assessment tools are increasingly using official indicators of offending, including the official age of onset of sex offending to identify high-risk sex

offenders. One prior study has shown that offenders with low conventional capital (e.g., unemployed, drug user, and criminal record) who are young single males are the most likely to be convicted and the most likely to be portrayed by actuarial tools as a "high-risk" offender. The current study suggests this is particularly true for late-onset offenders. Conversely, early-onset offenders, who avoid conviction the longest, might not be detected by risk assessors. Future studies should examine the individual characteristics associated with differential cost avoidance and whether cost avoidance informs about offenders decision to persist in sex offending.

1.   Introduction

In criminology, there is a long tradition of research on the criminal career and career criminals (e.g., Blumstein, Cohen, Roth & Visher, 1986; Delisi & Piquero, 2011; Glueck & Glueck, 1940; LeBlanc & Fréchette, 1989; Petersilia, 1980; Piquero, Farrington & Blumstein, 2003; Wolfgang, Figlio & Sellin, 1972). The concept of a criminal career is generally understood as the longitudinal sequence of crimes committed by an individual offender (Blumstein, Cohen, Roth & Visher, 1986). The concept of a career, in the context of offending, has been challenged because it suggests that offenders pursue criminal activities as an occupation or a profession, which is counter-intuitive to the short-term orientation of offenders (e.g., Gottfredson & Hirschi, 1986; Gottfredson & Hirschi, 1990). Criminal career researchers rebutted this interpretation by arguing that the term "career" was only intended to describe the sequence of offending during some part of an individual's lifetime without suggesting that the offender used his or her criminal activities as a means of earning an income (Blumstein, Cohen & Farrington, 1988). Two lines of empirical research would then follow this debate over the term *career* in the context of criminological research. The first line of research aimed to describe the development of offending over time, such as the onset, frequency (annual frequency or lambda), versatility, specialization, length, seriousness and, more recently, desistance (For reviews, see Delisi & Piquero, 2011; Piquero et al., 2003). The second line of research would focus, rather, on criminal achievement and whether some offenders are more successful than others, whether in terms of earnings, avoiding detection, and so on (e.g., Tremblay & Morselli, 2000; Morselli & Tremblay, 2004). The current study is at the intersection of these two lines of criminal career research. It aims to examine patterns of onset in a sample of convicted adult offenders, but also, patterns of detection avoidance. In doing so, the study raises an important question: Are some offenders more likely to avoid and delay detection for longer periods than others after the true onset of their offending activities? It is likely to be the case depending on the type of crime committed (petty crime versus a felony). But what if we narrow it down to a

single category of crime, that is, sex crimes? Are some sex offenders more likely to avoid and delay detection for longer periods of time?

Studying the onset of sex offending in the context of detection avoidance is important for several reasons. Of most importance, the study of the criminal career of sex offenders is relatively scarce and limited to the study of the sexual recidivists. Also, it is largely believed that sex offenders begin offending during adolescence and are able to avoid detection for prolonged periods of time (Abel et al., 1987). Little research has specifically investigated age of onset or detection avoidance within sex offenders (Lussier & Mathesius, 2012). This is surprising as age of onset and detection avoidance have important implications for understanding the unfolding of the criminal career in terms of criminal propensity, life transitions into crime, and patterns of offending. Indeed, the onset of offending marks its activation and understanding its activation informs about its origins. While the onset of sexual offending has not been subject to much empirical research, there has been growing recognition of its importance for the assessment and the prediction of sexual reoffending (Lussier & Healey, 2009). In fact, indicators of onset (e.g., early versus late onset) have started emerging in actuarial tools to guide risk assessors in making prediction about the future behaviour of sex offenders. It is believed that early onset offenders are more likely to be sexual recidivists or to be re-arrested for a new sex crime following their prison release. Indicators of onset of offending have been primarily based on age at first arrest for a sex crime (or age at first conviction). The current study raises the question as to whether the official age of onset of sex offending is a good indicator of the true age of onset of sex offending? Similarly, the study aims to determine what the gap between the true age of onset and the official age of onset of sex offending is? Furthermore, is the gap between the true and official onset constant across sex offenders or does it vary according to individual characteristics of offenders?

2. Literature Review

2.1. Theoretical Importance of Age of Onset

While criminologists generally agree on the importance of accounting for the statistical association between age of onset and other criminal career parameters, theorists have opposing views about the meaning of its importance. To propensity theorists, age of onset is described as a manifestation of an underlying static propensity for criminal and deviant behaviours (Gottfredson & Hirschi, 1990; Wilson & Herrnstein, 1985). As such, an early onset is a manifestation of this underlying disposition to the same extent as committing several offences (including violent crimes), continuing delinquent activities in adulthood, and having a longer criminal career. Hence, the same factor responsible for an early onset is also responsible for more frequent, violent, and persistent criminal activity. Therefore, from a propensity perspective there is no point in explaining or theorizing the age of onset specifically, but rather, the emphasis should be placed on explaining the propensity responsible for a criminal activity pattern characterized by an early onset, high frequency and diversity, persisting in adulthood. Such a propensity has been described somewhat differently across scholars and discipline. Gottfredson & Hirschi (1990) have hypothesized that this static propensity is low self-control, which is a constellation of traits, which includes low tolerance to anger and frustration, a here-and-now orientation, impulsivity, being physical as opposed to being intellectual or verbal, as well as a general lack of concern for others. Such constellation of traits characterized low self-control individuals who start offending early, being involved in a wide array of offenses, including sex crimes, and who persist their offending well beyond the adolescence period.

The propensity approach is typical of the predominant explanatory models of sexual violence and abuse. Theories of sexual violence and abuse do not typically refer to onset of sexual offending, but rather present a model explaining the underlying propensity, along several key dimensions or traits associated with the likelihood of

committing a sex crime. Such dimensions have portrayed high propensity individuals, among other things, as: sexual psychopaths (Knight & Sims-Knight, 2003), personality disordered (Hall & Hirschman, 1992), sexists, macho and violent (Malamuth, 1998), sexually compulsive, lacking of control over their sexual urges (Lussier, Proulx & LeBlanc, 2005), sexually fixated (Finkelhor, 1994). In that regard, although not stated explicitly in their models, it is suggested that the factors responsible for the propensity of sex offending are responsible for the onset of sex offending. All things being equal, the stronger the propensity for sex crimes, the earlier we should expect offenders to initiate their sexual offending. Given the importance of the propensity models in the sex offending literature, it is not surprising that age of onset in sex offending has not been subject to much theorizing and analysis.

Criminal career researchers and developmental criminologists recognize age of onset as a boundary concept with important implications for future offending (e.g., Blumstein et al., 1986; LeBlanc & Loeber, 1998; Piquero, et al., 2003). The age of onset marks the age at first offense and is central to understanding the origins of offending. The investigation of career initiation is typically studied in one of two ways: determining predictors of onset (Farrington et al., 1990; Farrington & Hawkins, 1991; Nagin & Farrington, 1992) or by investigating the impact of early onset on criminal career parameters (e.g., persistence, desistence, frequency, specialization, etc.). Just like propensity theorists, these researchers have noted that the early onset of offending is associated with increased frequency, diversity in offending, and persistence (e.g., Blumstein et al., 1986; Farrington, 1973; Farrington et al., 1990; Farrington et al., 2003; LeBlanc & Fréchette, 1989; Loeber & LeBlanc, 1990). In particular, early onset has been informative in the prediction of chronic offending (Farrington, 1989; Farrington et al., 2003; LeBlanc & Fréchette, 1989). Criminal career researchers have also noted that the relationships between the age of onset and other criminal career parameters are far from perfect (e.g., LeBlanc & Fréchette, 1989; Loeber & LeBlanc, 1990). Put differently, not all early onset offenders become chronic, versatile adult offenders with a lengthy criminal career. For that matter, they argue that the factors responsible for an early (as opposed to late) onset might be different from those associated with the decision to persist or to escalate in offending. This suggests that onset represents a stage in the longitudinal sequence of crime committed by an offender. Such an approach has been

adopted by Moffitt (1993) who argued that different age of onset informs about different offender types requiring different theoretical explanations. Developmentalists, therefore, have used onset as an indicator to categorize or to classify offenders. Moffitt's oft-cited model differentiates a childhood-onset from an adolescent-onset. The childhood-onset model is similar to the propensity approach in that it has been described by Moffitt as a relatively fixed propensity for crime and delinquency as a result of genetic, pre/perinatal adversities and neurological deficits marking a pattern of chronic, violent, and persistent offending. In more recent studies, Moffitt and colleagues (2001) relaxed the negative outcomes associated with the childhood-onset pattern, recognizing the presence of a sub-group of individuals within that onset group, called the recovery group, with a more positive outcome in young adulthood. Moffitt (1993) also made reference to the fact that the childhood-onset group is more likely than adolescent-onset offenders to escalate to person-oriented offences, such as assault and rape. Application of Moffitt's theory to sex offending has emerged in recent studies (Seto & Barbaree, 1997; Lalumière et al., 2005; Cale, Lussier & Proulx, 2009), but their application has focused on the general onset of offending rather than on the onset of sex offending.

This omission of onset from theoretical models of sexual violence is surprising given the common belief that sex offenders begin offending early and are persistent sexual deviants (Abel et al., 1987). Marshall and Barbaree (1990) present a developmental model of sex offending in which the onset of sexual deviance (e.g., deviant sexual fantasies) and sexual offending is distinguished from its persistence. According to their integrated theory of sex offending, individuals who experience negative childhood development (e.g., poor parenting, harsh and erratic discipline) are likely to exhibit low self-esteem, hostility towards others, and have limited sociosexual relationships. For these vulnerable individuals, the transition into adolescence marks a critical developmental period. For males, the onset of puberty sets the stage for enduring sexual scripts in terms of sexual preferences and normal sociosexual behaviour. However, for a vulnerable child that is predisposed to antisocial behaviours, the release of hormones during puberty may serve to fuse their already aggressive tendencies with sexual desires and can result in distorted and enduring sexual scripts (e.g., being sexually aroused to violence or children). Importantly, the onset of sexual offending results from an interaction between these enduring vulnerabilities and

transitory situational factors (e.g., stress, intoxication, sexual arousal). The reinforcing effect (whether positive or negative) of the deviant sexual act (e.g., rape or child molestation) in combination with the development of cognitive distortions justifying the act helps explain persistence in the behaviour (see also Laws & Marshall, 1990). According to this theory, the onset of deviant sexual scripts begins in adolescence. The actual onset of the behaviour, however, is a function of transitory situation factors and could occur at any age.

Several observations can be made from Marshall and Barbaree's (1990) integrated theory which contrast with the current theoretical literature on the role and importance of onset of offending. The developmental model states that the origins of sexual offending in adults can be traced back to the period of adolescence (with risk factors already operating during childhood). To Marshall and Barbaree (1990), the origins of adult sexual offending result from an interaction between negative childhood experiences and transitory situational factors. Thus, while developmental models and the integrated theory are similar in some of the risk factors (i.e., childhood risk factors) the integrated theory also stipulates an external cause to the origins. Further, while Marshall and Barbaree (1990) talk about the onset, it is unclear whether they are talking specifically about onset of sex offending. More specifically, their model refers to onset, but it is unclear whether onset refers to deviant sexual arousal (e.g., being sexually aroused by a child), the onset of deviant sexual interests (e.g., fantasizing about sexually abusing a child), the onset of deviant sexual behaviours (e.g., masturbating to sexual fantasies involving a child) and/or the onset of sex offending (e.g., having sex with a child). It is certainly relevant to distinguish all of these aspects of onset. Indeed, as mentioned by Marshall and colleagues (Marshall, Barbaree & Eccles, 1991), one could argue that deviant sexual fantasies precede and cause sexual offending. Granted, this claim was not supported by their study (Marshall, Barbaree & Eccles, 1991). Also, Marshall and Barbaree (1990) refer to onset as a stage of the development of sexual deviance, rather than as a classification marker to distinguish different types of sex offenders. Hence, they do not make any distinctions between early and late onset offenders, a distinction commonly made in the criminological literature (e.g., Moffitt, 1993). Rather than placing emphasis on the timing of onset (e.g., child-onset, adolescent-onset), they emphasize the role and importance of the experience of the

onset, that is, whether the onset is experienced as something positive and pleasurable. Offenders with positive and pleasurable experiences are those more likely to persist in their deviant behaviour. This is important because it raises questions about the role and impact of these initial experiences, and more specifically, whether the individuals had been caught or not.

2.2. The Age of Onset of Sex Offending

Age of onset has been extensively studied in general criminal populations (e.g., Loeber et al., 1999; Loeber & Farrington, 2000; Nagin & Farrington, 1992; Tibbetts & Piquero, 1999; Tolan, 1987), but has received considerably less attention in sex crimes despite its theoretical and practical importance. As such, little is known about the age at which sex offenders initiate their criminal career and the outcome of such careers. Of the limited research conducted on this topic, researchers have conceptualized the onset of sex offending differently across studies. More specifically, early clinical studies have stressed the role and importance of using self-report data to determine the origins of offender's behaviour. Clinical researchers have argued that official crime statistics are not reliable to determine this origin because (a) more often than not, sex offenders are not caught for their crimes and (b) official statistics on crime do not inform about the origins of the interest for sexually deviant behaviours. Therefore, clinical research is often based on self-report studies on sex offenders' age of onset of deviant sexual behaviours, that are not limited to offending (e.g., age at first deviant sexual interest). Others have relied on official statistics to determine the onset of sex offending. These studies have examined sex offenders' age at first arrest or age at first conviction for a sex crime. Such an approach is generally based on the rationale that official data are more objective than self-reports because of the seriousness of the crime type involved, offenders are unlikely to be a reliable source of information about their past offenses, especially undetected ones. With these limitations in mind, we review self-report and official data studies on sex offenders' age of onset.

2.2.1.   Self-Report Studies

Studies employing self-report as a measure of onset in sexual offending typically indicate an early onset ranging between early adolescence to early adulthood. For example, Groth, Longo and McFadin (1982) investigated the sexual offense histories of 137 felons convicted of either rape (*N* = 83) or child molestation (*N* = 54). This sample was obtained from two institutions: a security treatment centre in Florida (i.e., a forensic psychiatric hospital) and a maximum-security prison in Connecticut. Across the institutions, the average sexual offense onset for a rapist was 18.8 years and 23.8 years for a child molester, demonstrating child molesters have an older age of onset than do rapists. This trend was also exhibited when comparing rapists and child molesters in the forensic psychiatric hospital to the same type of offenders in the maximum-security prison, suggesting no differences in age of onset between forensic or maximum-security prison samples. Research investigating the onset of deviant sexuality, however, demonstrates a much earlier onset. Indeed, Longo and Groth (1983) interviewed 231 adult convicted sex offenders regarding their sexual development, experiences, and behaviour, using the same sampling population as Groth and colleagues (1982) (i.e., forensic psychiatric hospital, maximum security prison). The results indicated that one third of the combined sample exhibited compulsive masturbatory activity as juveniles, one-quarter exposed their genitalia as juveniles, and just over half had persistently engaged in voyeuristic activities. This finding in which deviant sexuality begins early in adolescence and manifests itself as sexual offending in adulthood has been replicated in later studies.

Similarly, Abel, Osborn and Twigg (1993) collected data through detailed clinical interviews with a group of sexual offenders (*N* = 1,025) across three outpatient U.S. clinics (i.e., Memphis, New York City, and Atlanta). Using their interview data collected under strict conditions of confidentiality, Abel and colleagues reported detailed information about the age of onset of paraphilic interest. Of the 1,025 sex offenders,

nearly half of them (42.3%) reported an onset of a paraphilia[1] prior to age 18. The onset of pedophilia and rape, however, occurred in the late teens and early twenties (with the exception of incestuous fathers targeting females whose average onset was 27.1 years of age). In an attempt to replicate these findings, Marshall, Barbaree and Eccles (1991) examined the onset patterns in a sample of child molesters (*N* = 129) from a psychiatric outpatient facility. Their findings revealed that a substantial number of child molesters (35.1% of non-familial child molesters targeting females and 41.1% of non-familial child molesters targeting boys) had an onset of *deviant sexual fantasies* prior to age 20. These findings are in line with Groth et al. and Abel et al. in suggesting that some adult offenders have experienced deviant sexual interest for quite some time, often prior adulthood. The study findings do differ significantly, however, as Marshall et al. (1991) found that while a significant minority of their sample of child molesters report deviant fantasies prior age 20, the average onset age of the first offense was in the mid-twenties, in line with Groth's findings but much older than what Abel et al. had reported for child molesters.

While it is unclear what lead to such differences across prior studies, the following two studies are informative about a possible explanation. First, Prentky and Knight (1993) investigated the age of onset in a sample of 131 male rapists and child molesters from the Massachusetts Treatment Centre for Sexually Dangerous Persons. It is important to note that offenders sent to this clinic are the most dangerous and mentally disordered and thus are not representative of the general population of sex offenders. The findings demonstrated that 49% of sexual aggressors of women and 62% of aggressors of children reported an onset of sexual offending[2] in their juvenile years. Importantly, 17% of rapists and 32% of child molesters reported an onset of

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[1] Here, paraphilia is defined according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R). According to the DSM-III-R, to be diagnosed with a paraphilia, an individual must have recurrent, intense sexual urges, and sexually arousing fantasies involving either (1) nonhuman objects (i.e., fetishism), (2) the suffering or humiliation of one or one's partner (i.e., sadism or masochism), or (3) children or other non-consenting persons (i.e., pedophilia or exhibitionism)

[2] Sexual offense was defined as any sexually motivated assault involving physical contact with the victim

sexual offending prior to turning 14 years of age. Clearly, this is a significantly younger onset of sexual offending than previously noted. These findings are more in line with Abel et al. study findings suggesting that a sizeable proportion of adult sex offenders were previously juvenile sex offenders. Second, Terry (2008) investigated the nature and scope of child sexual abuse in a large sample of Catholic priests from 1950 to 2002 within the United States. Importantly, 97% of dioceses and 64% of religious communities responded to the request for data. The data indicated that across all priests, the age at first sexual event was 39 years. Breaking the priest group into its two constituent parts revealed an average onset of 43 years for those offending against children and 36 years for those offending against adolescents. Further, priests that offended against 10 or more victims had an onset of 31 years of age while those who offended against 20 or more victims started when they were 28 years old, indicating an earlier onset for more prolific offenders. The contrast in samples studied and findings observed between the Prentky and Knight (1993) and the Terry (2008) are informative. In particular, Prentky and Knight (1993) were investigating a sample of dangerous offenders with mental health problems (e.g., paraphilia) while Terry (2008) investigated a group of priests who are qualitatively different from prison and forensic psychiatric populations. In particular, these individuals are less likely to be suffering from mental health problems and more likely to be similar to the general population. Taken together, self-report studies suggest that the onset of sex offending in adult offenders is in young adulthood. Studies also suggest that offenders with mental health problems might disproportionally start their offending in youth, but this is unlikely to be the case for the majority of adult offenders. Further, there appears to be some differences across offenders based on the type of victim they offended against, with rapists typically starting somewhat earlier than child molesters, and child molesters starting earlier than incestuous father. This trend, however, was not found in the Prentky and Knight (1993) study which showed a higher proportion of child molesters who were previously juvenile sex offenders as opposed to rapists.

2.2.2. *Official Onset Studies*

Recent studies have examined the age at first arrest or first conviction for a sex crime in samples of adult sex offenders. Findings from these studies contrast from those obtained in self-report studies. Smallbone and Wortley (2004) investigated the criminal

activity of a sample of 207 adult males serving sentences in Queensland Australia for sexual offenses against children. The overall mean age at first conviction for a sexual offense against a child was 37 years old. This finding is more than ten years older than the conservative estimates provided by the self-report study by Mashall et al. (1991). The study conducted by Smallbone and Wortley was informative and in line with self-report studies in showing within-group differences in onset age across child molesters with incestuous being first arrested at age 40, or about 6 years later, on average, than extrafamilial child molesters. Similar results were also reported by a series of studies by Lussier, Proulx and colleagues using a sample of adult male sex offenders incarcerated in a federal prison in Quebec (Lussier, LeBlanc & Proulx, 2005; Proulx et al., 2008). Their studies found that the average age at first charge for a sex crime was 30 years old for rapists and 38 years for child molesters. The results also indicated that extrafamilial child molesters began on average at 35 years of age while intrafamilial child molesters began much later on average at 43 years of age. Within the group of rapists, the difference between the age at first charge for a sex crime between extrafamilial (e.g., stranger, acquaintance) and intrafamilial (partner, ex-partner) offenders was not significant. Taken together, studies based on correctional samples of adult male offenders provide a similar picture as the age at first arrest/charge for a sex crime occurring in the thirties, and much older for those offending against their child.

Not all study findings suggest that the official age of onset of sex offending in adult offenders occurs in the thirties. Baxter and colleagues (1984) investigated the individual characteristics of a sample of 128 sex offenders who were serving a prison sentence of two years or more who were referred to the Regional Psychiatric Centre in Ontario. From this group, rapists on average were first charged when they were 22 years old. Hebephiles (also known as ephebophiles), heterosexual pedophiles and homosexual pedophiles all exhibited an average onset around 25 years of age. The findings provided by Baxter et al. are relatively different than those previously reported when using official data. This is most likely a function of the sample. Indeed, Baxter and colleagues (1984) sampled from a forensic psychiatric center whereas Smallbone and Wortley (2004), Lussier and colleagues (2005) and Proulx and colleagues (2008) sampled from federal prisons. Thus, the earlier age of onset found by Baxter and colleagues (1984) may be a function of mental health problems, both mentally and

sexually, group of offenders. Overall, official data indicates a late adult onset of sex offending with rapists beginning earlier than child molesters. Importantly, across rapists and child molesters, extrafamilial offenders demonstrated an earlier age of onset than did intrafamilial. Collectively, findings stemming from studies having used official data challenges the notion that sex offenders are early onset sexual deviants who have been unable to control their sexual urges for long time periods, starting in adolescence. This however, should be interpreted in the context of the studies examined. Both the Lussier et al. and the Baxter et al. studies were based on Canadian police data on offending. In Canada, typically, juvenile records are destroyed after offenders turn eighteen years old. Youth offenses carry an expiry date and once that date has expired (the expiry date varies according to the severity of the offense), these charges are removed from the criminal record and cannot be accessed. When an individual has been found guilty of a subsequent crime as an adult before the end of the expiry date, the youth offenses are treated as adult charges and remain in the offender's file. With that in mind, it is unclear whether adult offenders are late-starter initiating their sexual offending in their thirties or grown up juvenile sex offenders with a very sporadic pattern of offending over time.

2.3. Covariates of Onset

While few studies have investigated the age of onset in sexual offenders, even fewer studies have investigated the covariates associated with sex crime initiation. Here, the Prentky and Knight (1993) study is highly informative as it is one of the most extensive analyses on the covariates of the onset of sex offending. Their investigation of 131 child molesters and rapists observed at the Massachussetts Treatment Center for Sexually Dangerous Persons provided information regarding juvenile delinquency and lifestyle impulsivity; aggressive and antisocial behaviour; childhood abuse and victimization; sexual development; as well as social, academic, and vocational competence. Importantly, this study investigated juvenile and adult onset of sexual offending. Across both rapists and child molesters, those with an earlier onset of sexual offending had lower levels of education, were more dependent on others, and had less success in adult relationships (e.g., fewer dates, less likely to be married). These individuals also had greater levels of delinquency and lifestyle impulsivity during their juvenile years. For example, early onset sex offenders committed more juvenile sexual

assaults, had greater levels of delinquency and antisocial behaviour, were more disruptive in school (e.g., verbally and physically aggressive to peers and teachers), and were involved in more fights. This type of behaviour for early onset sex offenders was also more likely to continue into adulthood as they had an earlier age at first adult incarceration, greater levels of unsocialized behaviour in adulthood, and a greater degree of non-sexual aggression in adulthood. Overall then, early onset sex offenders demonstrate greater levels of antisociality and delinquency when compared to late onset sex offenders. When investigating childhood abuse and victimization, group differences emerge between rapists and child molesters. In particular, early onset rapists were more likely to experience emotional neglect as a child whereas early onset child molesters experienced an earlier onset and a more severe form of sexual abuse (i.e., more likely to be penetrated). No differences across age of onset were found in child molesters in terms of their sexual fantasies and sexual behaviour and only one factor emerged for rapists – use of pornography. These insignificant group differences are likely the result of high levels of sexual pathology across all groups. Taken together, Prentky and Knight (1993) demonstrate that early onset sex offenders present greater levels of delinquency across their lives, have experienced some form of neglect during childhood, and exhibit high levels of sexual pathology.

Similar findings emerged in a study conducted by Knight, Ronis and Zakireh (2009) comparing juvenile sex offenders in a residential treatment facility to adult incarcerated sex offenders. In particular, those with an adolescent onset were more delinquent in their youth. Contrary to Prentky and Knight (1993), however, sex offenders with an adolescent onset presented more sadistic fantasies, paraphilias (e.g., atypical sexual behaviours), and more arrogant and deceitful personality traits. These findings appear to demonstrate a link between antisociality, sexuality, and onset of sex offending. In a recent study investigating adult sexual aggressors of women, Cale and Lussier (2011) found that earlier starters exhibited a higher sexual drive (e.g., difficulty

controlling their sexual thoughts) and greater mating effort[3]. Both sexuality and mating effort were also linked to an earlier onset and more severe course of general offending. Said differently, early onset sex offenders tend to exhibit an antisocial sexuality. Further, early onset sexual offenders reported an earlier onset of intercourse and sexual contact more sexual partners, and a higher frequency of sexual interactions compared to late starters. In a more direct investigation of the covariates of sex crime initiation, Lussier and colleagues (in press), using the Pittsburgh Youth Study, explored the onset of sex offending for both juvenile onset sex offenders and adult onset sex offenders. Across both groups, the findings revealed that sex offenders were more likely to be African American, coming from a low socioeconomic status, with a poorly educated mother, and to exhibit covert behaviours during childhood. When comparing the early (juvenile) and late (adult) onset sex offenders on childhood risk factors, a number of differences emerged. First, while both groups exhibited symptoms associated with ADHD, these symptoms were more closely associated with early age of onset of sex offending. Second, those with an early age of onset of sex offending were more likely to be involved in delinquent activities prior the age of ten than non-sex offenders. This finding was not found for late onset sex offenders as they were the least likely to be involved in delinquency prior to age ten. Third, early onset sex offenders were more sexually active while late onset sex offenders were more sexually promiscuous. This finding further suggests that early onset sex offenders have a higher sexual drive when compared to late onset sex offenders.

Overall, these findings indicate that early onset sex offenders have greater levels of antisociality and mating effort and are likely to come from lower socioeconomic backgrounds. This may translate into a more diverse criminal career (committing sexual and non-sexual crimes) for early onset sex offenders (e.g., commit non-sex and sex crimes). These findings also suggest that within the context of sexual offending, their high mating effort may increase the number of sex crimes they commit. Finally, given

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[3] Mating effort refers to the amount of time and energy employed to acquire sexual interactions with the opposite sex.

that these individuals have come from lower socioeconomic backgrounds they may have lower levels of education, be less likely to be employed, and to be non-Caucasian.

2.4. Cost Avoidance

In general, cost avoidance refers to the offenders' ability to delay and avoid punishment from the criminal justice system. While it is commonly understood that offenders are able to avoid the costs of crime, this topic has been largely overlooked within the field of criminology. Of the limited studies on cost avoidance, some researchers have emphasized studying the risk of apprehension (Q) associated with crime (Bouchard & Nguyen, 2010) demonstrating that who the offender knows is an important protective, or risk reducing, factor. Others have studied cost avoidance through the investigation of basic criminal career parameters such as prevalence and frequency (Chaiken & Chaiken, 1985; Kazemian & LeBlanc, 2007). These studies reveal that early onset offenders, who are employed, do not use drugs extensively, and who plan their crimes are more likely to avoid the costs of crime. On the other hand, late-onset offenders who are inexperienced are less likely to avoid the costs of crime. Overall, these studies indicate large variations in the offenders' risk of apprehension and their ability to avoid costs. Until recently, the topic of cost avoidance has been largely overlooked in sex offenders despite the widespread belief that most of them get away with their crimes. As such, little is known about cost avoidance in sex offenders.

In a recent study, Lussier and Mathesius (2012) documented the onset of sex offending and cost avoidance in a sample of first time convicted adult sex offenders. Here, cost avoidance was calculated as the difference between the offenders sentencing date and actual onset. Actual onset was coded using several sources of information (i.e., self-report, police investigation report, and victim statements). On average, offenders were able to avoid detection for 7.5 years. This delay, however, was not consistent across offenders. Indeed, some offenders were detected and convicted immediately after committing the offense while others delayed conviction for over four decades. Interestingly, actual age of onset did not inform about cost avoidance. Official age of onset, however, did inform about cost avoidance suggesting the possibility of differential investment in cost avoidance strategies across offender types. In particular,

child molesters (particularly incestual child molesters) were able to avoid costs for longer periods, on average, than rapists. Further, 20% of sex offenders had already desisted or were in the process of desisting by the time they were first charged for their sex crime. This finding suggests that for a substantial minority of offenders, self-report and official onset are not merely two indicators of the same construct. Four conclusions can be drawn from these findings. First, official onset is a poor indicator of actual onset. Second, the gap between actual and official onset is informative about the unfolding of the criminal career in terms of cost avoidance. Third, sex offenders may invest varying levels in cost avoidance with child molesters being able to avoid the costs for longer periods than rapists. Finally, for a substantial minority of offenders, the criminal justice system is not intervening until the criminal careers of these sex offenders has come to an end.

Using a non-incarcerated psychiatric outpatient sample, Langevin, Curnoe and Bain (2000) investigated patterns of sex offending in a group of clerics. While the goal of this study was to determine if cleric-sex offenders were significantly different from other sex offenders, it is informative of cost avoidance. Twenty-four clerics who were charged or accused of a sexual offense were examined at all stages of the adjudication process or, for some, across their disciplinary proceedings. The clerics were matched to a control group based on offense category (age and gender of victim), age of offender, education, and marital status. Importantly, both groups were obtained from the same database consisting of 2,125 sex offenders that had accumulated in the clinic of the first author over the past 30 years. All sex offenders were seen within the past 5 years of the study (1995-2000) for assessment purposes. The results demonstrated that on average, there was a delay in charges being laid for the clerics of 10.6 years (SD = 9.4), but only 3.7 years (SD = 4.2) for the controls. While the majority of charges were laid within the first year of the offense for both the clerics (40.9%) and the controls (47.6%) a substantial minority were not charged for a prolonged period. Specifically, for clerics, 18% of charges were laid after 10 years, with 4.5% being laid after 21 years. Compared to the control group in which only 9.6% had delays in charges over 10 years. These findings are consistent with Lussier and Mathesius (2012) and further indicate the varying degrees sex offenders avoid the costs of their crime with clerics exhibiting greater levels of cost avoidance than the control group. Langevin and colleagues (2000)

hypothesized that because the victims were primarily children and adolescence the delay in reporting may have been a function of the victim being uncertain in their expectations of adults and thus unaware they were being sexually abused. Thus, cost avoidance may have been more to do with the type of victim selected than the individual skills of the offender. Unfortunately, this study did not specifically investigate the impact of covariates on the delay in charges.

Recently, Lussier, Bouchard and Beauregard (2011) investigated the impact of victim, offender, and criminal career characteristics on cost avoidance. Here, cost avoidance was measured as the difference in time between age at actual onset (coded through several sources of information such as self-report, police investigation report, and victim statements) and age at sentencing. Thus, cost avoidance represents the ability to delay sanction. The findings, similar to Lussier and Mathesius (2012) and Langevin and colleagues (2000), revealed much heterogeneity in cost avoidance across sex offenders. While many were sentenced soon after the crime others avoided sanctioning for up to 41 years. Interestingly, offenders who presented conventional backgrounds (i.e., older, no prior convictions for a sex crime, employed, and married or in a common-law relationship), who targeted children, in particular victims within the family, and who were specialized in sex crimes were able to avoid sanctioning the longest. Further, these individuals were also the most prolific in terms of the number of victims (M = 1.8, Me = 1.0, R = 1.0-13.0), and the number of sex crime events (M = 180.7, Me = 4.0, R = 1.0-5524.0). Indeed, offenders who committed 600 or more sex crime events on a single victim were able to avoid detection for nearly 20 years. Offenders who only offended once against a victim were sentenced, on average, within 1.5 years after the offense took place. Clearly, those who are able to delay the costs of crime are extremely prolific and dangerous. Interestingly, the offenders level of education, the existence of a drug problem, the level of violence used during the sex crime, and the duration of time spent free in the community (i.e., not incarcerated) were not significant predictors of cost avoidance.

Taken together, these studies indicate substantial variations in criminal achievement in terms of cost avoidance and productivity across sex offenders. In particular, these studies indicate that those who avoid the costs of sex offending the longest are also the most prolific offenders in terms of the number of victims and the

number of sex crimes they commit against each victim. Given that offenders who target adults are typically sanctioned the fastest and those who offend only once against a victim are also sanctioned sooner, it suggests that the typical rapist is less able to avoid costs than the typical child molester. While these studies are informative, much more work remains to be done. In particular, Lussier and Mathesius (2012) investigated the differences in age of onset, however, this study did not look at the actual impact of age of onset or other covariates on the prediction of cost avoidance. Further, Lussier, Bouchard and Beauregard (2011) looked at the impact of different covariates on cost avoidance but did not investigate actual age of onset. As such, it is currently unknown what impact age of onset has in the prediction of cost avoidance.

2.5. Aim of the Study

Age of onset is a marker of chronic offending with important practical and theoretical implications. To date, age of onset research has largely been based on general criminal populations with little research investigating the age of onset in sex offenders. As such, little is known about the impact age of onset has on the criminal career of sex offenders. Of the limited research conducted, conflicting findings emerge regarding the criminal careers of sex offenders depending on whether self-report or official onset is used. These differences have primarily been treated as unavoidable methodological limitations. We argue, however, that the gap between actual and official onset has important theoretical implications and should not be attributed to a methodological issue. Indeed, this gap is informative about differential cost avoidance. Thus, the gap serves two important functions. First, the gap allows for a systematic comparison between actual and official onset to determine how similar or different these measurements are. Second, cost avoidance provides valuable information on the unfolding of the criminal career in terms of persistence and desistence.

Until recently, few studies had investigated the gap between actual and official onset in sex offending (Lussier, Bouchard & Beauregard, 2011; Lussier & Mathesius, 2012). These studies indicate clear differences in sex offenders ability to avoid sanction, which was not consistent across offenders. The study conducted by Lussier and Mathesius (2012) mapped the baseline of cost avoidance in sexual offenders. In

particular, it investigated the mean differences in cost avoidance for actual and official onset. This study did not, however, investigate the covariates on the offenders ability to avoid sanction. On the other hand, Lussier, Bouchard and Beauregard (2011) investigated the impact of multiple covariates of cost avoidance but did not include actual or official age of onset. As such, it remains to be determined what impact age of onset, while taking into account covariates, has on cost avoidance. The aim of the current study is to fill this gap by investigating what impact, if any, true early onset offending has on cost avoidance and who are these early onset offenders.

3. Methodology

3.1. Sample

The present study is based on secondary data that was collected as part of a research project investigating sexual recidivism and offending pathways in convicted adult male sex offenders. All participants were consecutively incarcerated for a sex crime and were sentenced to a Federal penitentiary in the province of Quebec between April 1994 and June 2000. All offenders were serving at least a two-year sentence for their crime. In total, 93% of individuals contacted agreed to participate in the research project. Thus, this original sample represents a quasi-population of all federally-sentenced sex offenders incarcerated in Quebec during that time period. Of the 553 participants included in the original study sample, 169 sexual recidivists were removed. Sexual recidivist is defined here as individuals who had a record for a sex crime prior their index offense. The sample was modified in order to focus on the 384 individuals who were first-time convicted sex offenders. There are several reasons for this: first, the focus of the present study is to describe the career initiation of sex offending; second, the removal of sexual recidivists allows for the examination of the heterogeneity within a group of sex offenders who are all at the same stage of their official criminal career with respect to sexual offending; third, the data does not contain detailed information on age of onset and detection avoidance for sexual recidivists included in the original study sample. From the remaining 384 participations, 20 were removed due to missing data on their criminal history ($N = 364$), 13 were removed due to missing data on their dates of offending ($N = 351$), and 19 were removed due to missing data on their onset of offending. Accordingly, the current study is based on a sample of 332 first-time convicted adult male sex offenders for which age of onset and criminal history data was available.

Table 3-1.   Descriptive Information for the Sample of Sex Offenders

Variable		Mean (SD)	Range
Age of Actual Onset		32.1 (8.8)	14.2-73.1
Age of Actual Offset		36.8 (11.2)	18.0-73.1
Age of Official Onset		39.6 (12.2)	18.7-75.2
Cost Avoidance		7.5 (9.3)	0.1-41.2
Number of sex crime events		216.9 (513.8)	1.0-5524.0
Total number of victims		2.4 (6.2)	1.0-91.0
Proportion of time free		0.76 (0.28)	0.01-1.0
Lambda of sex offending		0.22 (0.44)	0-6.1
			Prevalence %
Non-sex crime prior Actual onset	No		50.0
	Yes		50.0
Non-sex crime between actual and official onset	No		87.0
	Yes		13.0
Offenders Ethnic background	Caucasian		85.5
	Black		7.2
	Other		7.2
Offenders civil status	Single		37.8
	In a relationship		40.8
	Separated		4.2
	Divorced		16.0
	Widower		1.2
Offenders education level	Elementary		25.9
	High School		62.0
	Cegep/University		11.7
	Other		0.3
Offenders employment	No		55.2
	Yes		44.8
Victim's age	< 6		4.5
	6 and < 12		23.9
	12 and < 18		18.7
	18 and < 25		10.6
	25 and over		17.2
	Versatile		25.1
Victim's gender	Female		82.2
	Male		10.8
	Versatile		6.9
Victim-offender relationship	Biological Father		14.5
	Pseudo-incest		25.3
	Partner		12.0
	Acquaintance		19.9
	Stranger		12.3
	Versatile		16.0

Descriptive information about the sample is presented in Table 3-1. Overall, the average age of the offender at prison admission is 39.6 years old (*SD* = 12.2). However,

there were great variations across offenders age at prison admission from 18.7 years of age up to 75.2, a range of 56.5 years. The offenders were predominantly Caucasian (85.5%), in some form of a relationship (40.8%) or had been in a relationship previously (21.4%) and are moderately education (74.1% completed a minimum of high school education). The majority of the sample was not employed (55.2%) around the time of the offense.

3.2. Procedures

All data collected was conducted in line with the ethical guidelines put forth by the University of Montreal where the original study was conducted (principal investigator, Dr. Jean Proulx). Every participant signed a consent form indicating they understood the risks and benefits of the study and agreed to participate. At this point they were also informed that there would be no consequence for refusing to participate in the study or for withdrawing from the study at any point in time. In particular, their (non-) participation would not impact their risk assessment, sentence length, or their likelihood of receiving treatment or parole. Note that at the time of the interview, offenders had already been assigned a classification risk category. Further, no incentives were given to offenders for their participation in this study. All offenders who agreed to participate in the study granted access to their correctional files, which included the offenders' criminal history, details about the police investigation, and victim statements, among other things. These documents were used for the collection of information pertaining to age of onset, detection avoidance, and victim characteristics. Research assistants trained by a licensed forensic psychologist conducted the semi-structured interviews. The data gathered from each interview were entered into a computerized questionnaire. Research assistants were all graduate students in the process of completing their MA or PhD. All interviews were conducted in the Regional Reception Centre, a maximum-security institution run by Correction Services of Canada, in the province of Quebec. Federally sentenced offenders are sent to this institution for a needs assessment and risk classification. On average, offenders stay about six to eight weeks at this institution. Upon completion of the offenders' needs and risk assessment they are transferred to another penitentiary that has the appropriate services and risk needs (e.g., low, medium, or high-security). Importantly, all interviews were conducted after the offenders risk and

needs classification were established but before being sent to the institution where they would serve out the remaining portion of their sentence.

3.2.1. Measurement and Indicators of Cost Avoidance

3.2.1.1. Criminal Career Variables

Actual age of onset. Actual age of onset refers to the offender's age at the time of their first sexual offence. This variable was coded using different sources of information: self-report, victim statements, and police investigation. To date, research has typically employed self-report data as the main indicator of actual age of onset for sex crimes. This form of data relies on the offender as the main source of information. For example, in terms of age of onset of sex offending, the offender may be asked "at what age, whether arrested or not, did you first commit a sexual offence?" It is commonly known that a primary limitation to this source of information is recall bias. Specifically, memory decay (resulting from the passage of time, being intoxicated at the time of the event, etc.) may distort the accurate recall of information. To control for potential bias in the offenders reporting of their actual onset of sex offending the research assistant referred to the offender's correctional files which included victim statements and police investigation notes. These latter sources of data, however, are not without their own unique limitations as they only include information for which the offender was charged. Thus, while the current measure of actual age of onset is an improvement over previous measures in that it relies on multiple sources of information, it remains possible that undetected crimes are not accounted for. However, the simultaneous reliance on self-report and official sources of data will reduce the inherent bias in both measures. Unfortunately, it was not possible to determine how these individual sources (i.e., self-report, victim's statements, and police investigation notes) differ from one another as data was not available. The actual age of the offender was calculated by subtracting his birth date from the date of his first sex offence. In situations where the offender repeatedly targeted the same victim, the date of first offense from this sequence was used (i.e., the first victim). In situations where the offender targeted multiple victims, the date of the first victim in the sequence was used. The mean age of actual onset of sex offending is 32.1 years (*SD* = 8.8) and ranges

between 14.2 to 73.1 years of age. As can be seen, the present sample contains a wide variation in actual onset of sex offending.

Official age of onset. The official age of onset refers to the age of the offender when they were convicted and sentenced for their sex crime. This variable was coded using the offenders criminal history based on the Royal Canadian Mounted Police (RCMP) included in the offender's correction files. These correction files contain information regarding the offenders past and current criminal charges and convictions for crimes committed within Canada. The mean age of official onset of sex offending is 39.6 years of age (*SD* = 12.2), ranging between 18.7 and 75.2 years.

Non-sex offending. Two indicators were used to determine whether the offender had a criminal record for a non-sex crime. Non-sex crime is used here as all individuals included in the sample were first-time convicted sex offenders. Non-sex crime refers to whether or not the offender had been charged at least once for a non-sexual violent or a non-sexual, non-violent offense and included such crimes as theft, break and enter, assault, drug-related offenses, threat, using/carrying a weapon, etc. This variable was coded using the RCMP rap sheet included in each offender's correctional file. Because two measures of onset of sex offending were used which represent the offender at two points in time, non-sex offending was coded into two indicators. The first indicator refers to whether or not the offender had a criminal record prior the actual onset of sex offending. In total, 50% of the sample had been charged of a non-sex crime prior to their actual onset of sex offending. Also, the study included an indicator to determine whether the offender had a criminal record after the actual onset of sex offending but before official onset of sex offending. The majority of offenders included in the sample (87%) were not charged for a non-sex crime during this period. Such a finding indicates that sex crimes do not co-occur, at least not simultaneously, with non-sex crimes once the sex offending is activated.

Total number of sex crime events. Refers to the total number of different times or occasions the offender sexually abused or sexually assaulted his victim(s) during the period starting from the actual onset of sex offending up to their first conviction for a sex crime. One individual may have offended on multiple occasions against the same victim, therefore increasing the number of sex crime events. Also, one individual may have

offended against multiple victims on the same occasion (counted as one crime event). This variable was coded using self-report, victim statements, and police investigation notes. The mean number of crime events is 216.9 (*SD* = 513.8, Median = 10.0) and ranged between 1 and 5524. The gap between the mean number of crime events and the median number is quite informative of the skewed distribution in the frequency of offending for this sample (see Lussier et al., 2011 for an analysis)

Victim characteristics. The current study examined several aspects of sex offending in relation to various characteristics of the victims, that is, the number of victims, their age and gender, as well as the victim-offender relationship. The total number of victims refers to the total number of different victims that were sexually abused by the offender during the period starting from the actual onset of sex offending up to their first conviction for a sex crime. Like crime events, this variable was coded using self-report, victim statements, and police investigation notes. The average number of total victims for each offender is 2.4 (*SD* = 6.2) and ranges between 1 and 91. Clearly, there is a wide range in frequency of offending across offenders in terms of their number of crime events and the number of victims targeted. Roughly half of the sample (47.1%) offended against someone less than 18 years of age. Specifically, almost one-third of the sample (28.4%) are child molesters, opting to offend against a victim less than 12 years old while 18.7% targeted a victim between the ages of 12 and 17 years of age. Roughly one-third of the sample (27.8%) is a rapist (i.e., targeting victims over the age of 18). Interestingly, 25.1% of the sample offended against multiple age categories suggesting that sexual polymorphism (or sex crime versatility) was relatively common. The offenders in the present sample predominantly targeted female victims (82.2%, with only 10.8% targeting males and 6.9% switching between male and female victims. Contrary to popular belief, the vast majority of offenders knew their victims (71.7%). In particular, the majority of offenders targeted victims within their own family (39.8%) or their partners (12.0%) while only 12.3% targeted strangers and 16.0% offended against multiple victim-offender relationship categories.

Proportion of time free. Refers to the proportion of time (in months) the offender has spent in the community (i.e., not incarcerated) since turning 18 years old. Proportion of time free was calculated in a three step process. First, by calculating what we will refer to as (T) time. (T) was computed by subtracting 18 from the offender's age

at conviction. Second, the amount of time in years the offender spent incarcerated was subtracted from (T), resulting in an indicator referred to as time-at-risk. The duration of time spent incarcerated was determined by referring to correctional files which contained information on the dates offenders were first imprisoned as well as the length the offender was sentenced. The actual time incarcerated, however, was not included in the correctional files. The Criminal Code of Canada specifies an individual is eligible for parole after serving one-third of their sentence. However, offender's with a sentence of less than a year serve 51.5 percent of their sentence on average, whereas those sentenced between one and two years serve roughly 45.5 percent of their sentence on average (Service Correctionnel du Québec, 1993). Further, offender's with a sentence of two or more years typically serve 40 percent of their sentence (Solicitor General of Canada, 1999). To account for this a conservative ratio of 50 percent was used to estimate time incarcerated. For offenders who were convicted for another crime before completing their estimated 50 percent of incarceration, a ratio of 30% was used. Third, the time-at-risk was divided by (T) to compute each offender's proportion of time free. Time-at-risk allows controlling for the offenders opportunity to start his sexual criminal career as a result of being incarcerated for another crime type. The mean proportion of time free for offenders in the current sample is 0.76 (*SD* = 0.28). Phrased differently, the average offender spent three-quarters of their time in the community since turning an adult. The values for this indicator ranged between 0.01 to 1.0, or between 1% and 100% of time spent in the community since turning 18 prior to the index offense.

Lambda of sex offending. Refers to the total number of sex crime events relative to the time-at-risk (i.e., not incarcerated). This variable was calculated in two steps. First, the total number of sex crime events was divided by the length of the criminal career, from which the time spent incarcerated was subtracted. Time spent incarcerated, or, time-at-risk, is an estimation of the time (in years) the offender was not incarcerated. Second, a logarithmic transformation was conducted on the lambda variable created in the first step.

This variable was calculated in three steps. First, the total number of sex crime events was divided by the length of the criminal career. Second, the time spent incarcerated was subtracted by the time-at-risk by dividing the total number of sex crime events by the length of the criminal career, from which the time spent incarcerated was

subtracted and a logarithmic transformation was conducted. The mean lambda of sex offending is 8.24 (*SD* = 20.84) with a range between 0.03 and 162.23.

3.2.1.2.   Indicator of Cost Avoidance

Cost avoidance refers to the number of years passed between the offenders actual and official age of onset of sex offending. For this study, cost avoidance is specific to sex offending. In order to calculate cost avoidance, the offender's actual age of onset was subtracted from their official age of onset (age at first conviction for a sex crime). Given that the offender's age at first conviction for a sex crime was used in the calculation, cost avoidance refers to the offenders' ability to delay sanctioning. As such, the current study differs from those investigating detection avoidance (e.g., Bouchard & Nguyen, 2009; Bouchard & Ouellet, 2011), which typically use age at first arrest to operationalize their outcome variable. This raises an important distinction between cost avoidance and detection avoidance. While cost avoidance refers to the offenders ability to avoid conviction and sanction, detection avoidance refers to the offenders' ability to avoid being apprehended for a crime. This distinction is important as it is possible that many offenders are detected for a crime but may avoid the costs (e.g., trial, conviction) due to numerous factors (e.g., lack of or poor evidence, unreliable witness, mistakes in the evidence process). Consequently, the factors associated with detection avoidance are likely to differ from those associated with cost avoidance. To be clear, the present study investigates cost avoidance in sex offending. The conviction date was used because it was the only variable coded consistently across offenders[4]. Age at first conviction makes sense in the context of the study interest for examining cost avoidance, and therefore, the ability to avoid punishment. Offenders were able to avoid punishment, on average, for 7.5 years (*SD* = 9.3) and ranged from 0.1 years to 41.2

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[4]   Little is known about the gap between detection and conviction. The time gap is likely affected by whether the offender confessed, plea bargaining, whether there was a trial, etc. One study has investigated this gap in a group of child molesters, reporting the time between police report and disposition was less than 1 year in 12% of cases, but more than 2 years in 36% of cases. Importantly, case characteristics were found to be only weakly related to processing time (Walsh, Lippert, Cross, Maurice, & Davison, 2008).

years. As such, there is wide variability in cost avoidance with some offenders being able to delay sanctioning for over four decades.

3.3. Analytic Strategy

3.3.1. *Descriptive analyses*

The analyses are divided into two sections. The first section provides a descriptive analysis through the comparison of means, frequencies and the use of correlations to investigate the relationship between measures of onset and cost avoidance. Analyses of variance were conducted to determine the presence of between-group differences across sex offender type. Because of heterogeneity of variance, non-parametric tests were used to inspect for group differences in terms of actual onset, official onset, and cost avoidance. Sex offenders were categorized along three dimensions based on victim characteristics. Victim characteristics were chosen to categorize sex offenders because empirical research has consistently shown that such characteristics are associated to significant group differences in terms of prior criminal activity, general and sexual recidivism, cost avoidance, and offending trajectories (e.g., Lussier, LeBlanc & Proulx, 2005; Lussier et al., 2011). Three dimensions of victim characteristics were used to categorize sex offenders, that is, victim's age, victim's gender, and victim-offender relationship. Therefore, sex offenders were compared in terms of their age of actual onset, official onset and length of cost avoidance based on their victim's age (i.e., toddler, child, adolescent, young adult, adult) and gender (i.e., male, female), as well as the nature of their relationship (i.e., incestuous father, pseudo-incest father, acquaintance, (ex-)partner, and stranger).

3.3.2. *Survival Analysis – Cox Proportional Hazards Regression*

The second section involves the examination of the covariates of onset and cost avoidance using a series of Cost proportional hazard regression models. This section has two main goals. First, to investigate the impact that actual age of onset plays in cost avoidance and to answer the question as to whether earlier onset offenders are less skilled at avoiding the costs of crime. Second, to determine the similarities and differences in covariates of actual and official onset of sex offending to answer the

question as to whether or not the late onset offenders are also the ones who are caught and convicted later. Survival analysis refers to a group of statistical techniques (e.g., life-tables, Kaplan-Meier, Cox Regression) used for analyzing survival data (Allison, 2010). This type of data is concerned with understanding and predicting the timing of events (e.g., mortality, criminal recidivism, tenure), also known as survival time. Specifically, survival time refers to the time between the onset of some event (e.g., onset of sex offending) and the end of an event (e.g., conviction). Within the general family of survival analyses is Cox regression. Cox regression is a semi-parametric regression procedure that allows researchers to determine if the survival time is influenced by one or more covariates (Cox, 1972). This procedure is highly flexible as it allows for both continuous and categorical data to be used as covariates (i.e., predictor variables) and improves upon the other survival analyses (e.g., Life-tables, Kaplan-Meier) by allowing for multiple covariates in the equation, thus increasing explain variance. Due in part to this flexibility, it is the most highly used out of the group of survival analysis techniques (Hosmer & Lemeshow, 1999). In the context of the study, Cox regression will be used to analyze (a) time to actual onset of sex offending since birth (actual onset of sex offending); (b) time to first conviction for a sex crime since birth (official onset of sex offending), and; (c) time to conviction since actual onset of offending (cost avoidance in sex offending).

4. Results

4.1. Descriptive Analyses of Onset, Cost Avoidance and Offending Frequency

Figure 4-1 presents a graphical comparison of the cumulative percentages of actual and official onset in sex offending for the whole sample of convicted male sex offenders. Cumulative percentages are of interest because it allows comparing two different frequency distributions. As expected, there are differences between the two measures of onset. In terms of the earliest onset, 2.1% demonstrated an actual onset by age 18 and only 0.8% had an official onset prior to 18 years of age. Interestingly, the discrepancy between actual and official onset was relatively small in youth. The greatest discrepancies between actual and official onset were found for later onset ages. In total, 22.9% of the sample had an actual onset by age 25 while only 12.3% of the sample had an official onset by age 25. About 65% of the sample of adult sex offenders had an actual onset of sex offending by age 35. A comparable percentage (71%) was not reached until 45 years old for official onset, or almost a decade later. In fact, by age 35, only about 38% of adult sex offenders have been convicted for a first sex crime. By their mid-fifties, almost all sex offenders included the sample (except 6 cases) had started their sexual criminal career. Comparatively speaking, the cumulative percentage of official onset did not reach 100% until the mid-seventies. In other words, an actual onset of sex offending past the mid-fifties was quite exceptional and rare, but it is not uncommon to see older offenders be first sentenced for a sex crime well past these years.
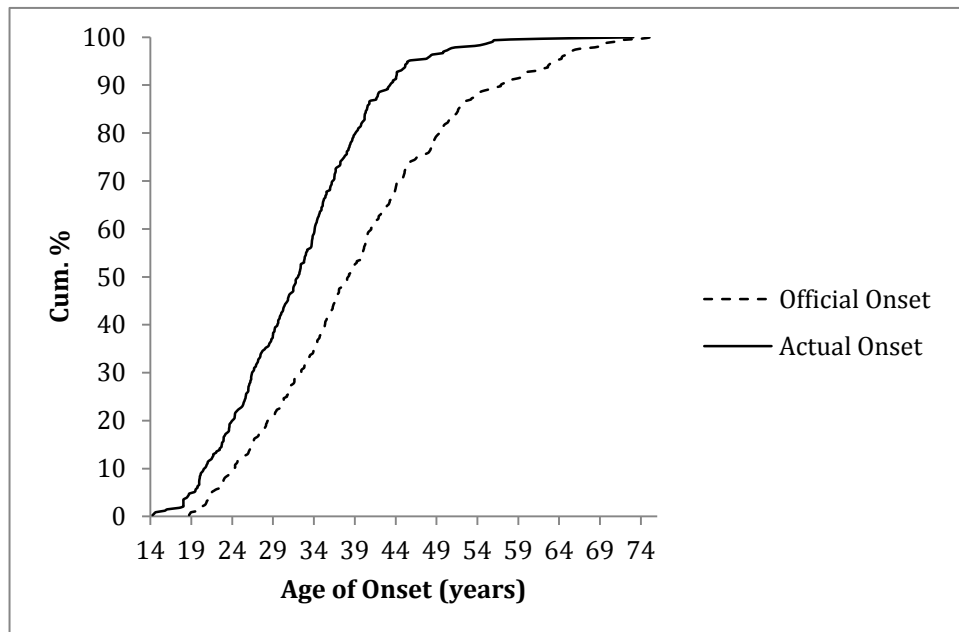
Figure 4-1   Cumulative Onset of Sexual Offending

The gap between actual and official onset was more closely examined to determine the extent to which actual and official onset differ across age of onset. Table 4-1 presents the results of the comparison between actual age of sex offending onset and cost avoidance. This table indicates a clear downward progression in average cost avoidance as actual age of onset increases. In particular, those with the earliest onset, that is, prior age 24, avoided the costs of their sex crime, on average, for roughly 8 years. At the other end of the distribution, those with the latest actual onset (i.e., past age 53) avoided conviction for an average of just over 4 years. Only one case started his sexual criminal career past age 63 and was convicted about 2 years after the onset of offending.

Table 4-1 also illustrates the proportion of offenders who avoided conviction for more than two decades per age of onset. This is informative of the link between actual onset and differential cost avoidance in sex offending. In other words, at what age did offenders most efficient at avoiding the costs of their crime actually start? The findings indicate that 16.7% of those starting prior age 24 escaped conviction for at least two decades. This proportion drops to about 10% for those who initiated their sex offending

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between age 24 and 43. A marginal group of offenders who started past age 43 escaped conviction for that same time period (roughly 4%). These results indicate that cost avoidance varies across actual age of onset and there is a clear trend demonstrating that those with an earlier actual onset of sex crimes delay conviction the longest.

Table 4-1. *Age of Onset and Cost Avoidance in Sexual Offending*

	Actual age of onset					
	< 24 Mean (*SD*)	24 and < 34 Mean (*SD*)	34 and < 44 Mean (*SD*)	44 and < 54 Mean (*SD*)	54 and < 64 Mean (*SD*)	64+ Mean (*SD*)
Cost Avoidance (years)	8.23 (11.04) *N* = 66	7.69 (9.30) *N* = 130	7.32 (8.87) *N* = 106	5.86 (6.45) *N* = 24	4.40 (2.88) *N* = 5	2.18 *N* = 1
	%	%	%	%	%	%
> 1	77.3	74.6	73.6	83.3	60.0	100.0
> 2	60.6	59.2	60.4	70.8	60.0	100.0
> 5	40.9	44.6	39.6	41.7	40.0	0
> 10	27.3	27.7	26.4	16.7	0	0
> 15	18.2	17.7	14.2	4.2	0	0
> 20	16.7	11.5	10.4	4.2	0	0
> 25	12.1	8.5	8.5	4.2	0	0

Table 4-2 presents the correlation matrix between each of the indicators included in the study. Of interest, actual onset has no significant correlation to the number of victims, lambda, the percentage of time free, the victim's age, the victim gender, or the relationship between the offender and victim. In other words, actual onset does not appear to be indicative of a pattern of chronic sex offending nor related to the type of sex crime committed. The same cannot be said for cost avoidance and official onset. Indeed, cost avoidance was significantly related to the presence of a non-sex crime prior actual onset (r = -.43, p < .001), the number of victims (r = .50, p < .001), and true lambda (r = .34, p < .001). Official onset was significantly related to the presence of a non-sex crime prior actual onset (r = -.33, p < .001), the number of victims (r = .37, p < .001), true lambda (r = .20, p < .01), and the proportion of time free (r = .14, p < .05). In other words, both cost avoidance and official onset were significantly related to chronic sex offending.

Table 4-2. Correlation Matrix with Variables Included in the Study in a Sample of Sexual Offenders

	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11
1. Offenders ethnicity (NonCaucasian)											
2. Offenders Civil Status (In a relationship)	.021										
3. Offenders education (educated)	-.030	-.053									
4. Offenders employment (employed)	-.089	.109	.062								
5. Non-sex crime prior actual onset (yes)	-.0.69	-.089	.023	-.263**							
6. Non-sex crime between actual and official onset	.020	.114	-.107	.049	-.152**						
7. Proportion of time free	.077	.062	.020	.172**	-.203**	-.480***					
8. Number of victims	-.119*	-.009	-.046	.129*	-.293***	.040	.050				
9. Lambda	-.131*	.068	-.236***	.058	-.172**	.323***	-.094	.158*			
10. Actual age of onset	-.112*	.124*	-.197***	.078	-.003	-.188**	-.084	-.009	-.070		
11. Official age of onset	-.194***	.275***	-.251**	.266***	-.328***	.066	.143*	.373***	.195**	652***	
12. Cost avoidance	-.149**	.234***	-.144**	-.274***	-.427***	.266***	.113	.498***	.336***	-.096	.692***

Note: Values represent pearson's r correlation coefficients. *p < .05, ** p < 01, *** p < .001

Ethnicity (0 = Caucasian; 1 = NonCaucasian), Civil Status (0 = Not in a relationship; 1 = In a relationship), Education (0 = Not educated; 1 = Educated), Employment (0 = Not employed; 1 = employed)

Further, actual age of onset was significantly correlated with official onset (r = .65, p < .001), but not cost avoidance (p > .05). Hence, the earlier the offender started, the earlier they were first convicted for their crime. This significant association is expected given that the official onset cannot occur prior an actual onset, unless there was a very improbable scenario consisting of (a) an individual falsely accused and convicted of a sex crime (b) who, after being released from prison, committed a sex crime. The absence of a significant linear association between actual onset and cost avoidance is interesting, suggesting that as the onset is earlier, offenders are not more likely to delay conviction. Official onset, however, was significantly correlated with cost avoidance (r = .69, p < .001) suggesting that official onset, while taping into the construct of actual onset, also incorporates cost avoidance and thus is not a pure measure of either onset or cost avoidance.

4.2. Age of Onset and Cost Avoidance

This section examined whether criminal career markers (i.e., actual onset, cost avoidance, and official onset) varied across sex offender type (Table 4-3). Researchers and clinicians typically categorize sex offenders based on their victim characteristics. Accordingly, offender type was based on three different victim characteristics (i.e., victim's age, gender, and the offenders' relationship to the victim). Kruskal-Wallis tests were conducted for each victim characteristic on each criminal career marker. Several important findings emerged from the analyses. First, actual onset did not significantly differ across sex offender type except for the victim-offender relationship (X^2 = 14.8, p < .05). Overall, the mean actual age of onset occurs in the early 30s, with the youngest average onset being for offenders who victimize strangers (28.3 years of age) and the oldest average actual onset being for those who victimize children under the age of six (35.1 years). These findings are in strong disagreement with the majority of the actual onset literature (Abel, Osborn & Twigg, 1993; Groth, Longo & McFadin, 1982; Longo & Groth, 1983), with the exception of Terry (2008), which seems to indicate that sex offenders begin in adolescence.

Second, the offenders' ability to avoid costs significantly varied across all three victim characteristics (age, gender, and relationship). In particular, those who offended against multiple age categories (X^2 = 137.7, *p* < .001), targeted both males and females (X^2 = 21.3, *p* < .001), and who targeted known and unknown victims (X^2 = 123.5, *p* < .001) were able to delay conviction the longest. More specifically, *versatile* offenders were the best able at delaying conviction. While the versatile offenders were able to delay conviction the longest, a second, more specific type of sex offender was also able to delay conviction for prolonged periods of time. For example, offenders who targeted prepubescent (< 12 years of age), male victims, within the family (either incestuous or pseudo-incestuous), were able to delay conviction for over a decade on average. Of interest, there was much heterogeneity overall in terms of sex offenders ability to avoid conviction. Indeed, while some were caught nearly right away (0.1 years) others managed to avoid conviction for up to 41.2 years. Third, official onset significantly varied across victim age (X^2 = 66.3, *p* < .05), victim gender (X^2 = 14.1, *p* < .01), and victim-offender relationship (X^2 = 71.2, *p* < .001). The earliest official onset occurred for those targeting adult (18+ years), female strangers. The latest official age of onset occurred for those targeting children (< 12 years), of both genders, and who offend across multiple victim-offender relationship categories. Official onset was typically in the late 30s and early 40s.

Table 4-3. **Onset and Cost Avoidance across Sex Offender Type**

	Actual Onset				Cost Avoidance				Official Onset			
	M (SD)	Me	R	Chi-square (df)	M SD)	Me	R	Chi-square (df)	M (SD)	Me	R	Chi-square (df)
Victim's age												
< 6 N = 15	35.1 (8.8)	35.1	16.1-49.8		11.5 (11.4)	6.3	1.9-40.9		46.6 (11.3)	45.2	28.3-68.4	
6 and < 12 N = 79	33.5 (8.5)	32.3	18.4-73.1		11.1 (8.7)	8.9	0.2-33.8		55.7 (10.7)	43.1	25.5-75.2	
12 and < 18 N = 62	32.2 (8.9)	33.4	18.0-55.9	10.1 (5)	3.6 (4.4)	2.0	0.1-23.5	137.7*** (5)	35.8 (10.2)	36.9	18.7-64.5	66.3* (5)
18 and < 25 N = 35	29.8 (8.8)	28.9	19.4-55.3		1.4 (1.4)	0.9	0.1-5.1		31.1 (8.9)	29.9	19.9-58.6	
25 and over N = 57	32.7 (8.3)	32.3	19.9-61.8		1.5 (1.8)	0.9	0.1-7.7		34.2 (8.9)	32.9	20.1-69.1	
Versatile N = 83	30.7 (9.3)	29.5	14.2-53.7		12.9 (11.7)	9.1	0.2-41.2		43.6 (13.8)	43.2	20.2-73.9	
Victim's gender												
Male N = 36	33.3 (8.9)	31.9	14.6-55.9		10.9 (11.9)	6.9	0.1-41.2		44.3 (10.2)	42.3	23.4-64.8	
Female N = 273	31.9 (8.8)	31.9	14.2-73.1	0.9 (2)	6.5 (8.4)	2.7	0.1-40.9	21.3*** (2)	38.4 (11.9)	36.8	18.7-75.2	14.1** (2)
Versatile N = 23	31.9 (9.4)	33.9	17.5-53.7		13.8 (10.9)	9.1	0.8-36.1		45.7 (14.2)	43.9	20.8-71.3	
Victim-offender relationship												
Biological father N = 48	34.5 (5.8)	34.1	22.9-48.5		10.3 (9.0)	7.3	0.5-33.8		44.8 (9.1)	43.5	28.3-70.9	
Stranger N = 41	28.3 (6.3)	28.1	18.5-43.7		1.3 (1.4)	0.9	0.1-7.4		29.5 (6.3)	29.3	20.3-44.0	
Partner N = 40	31.6 (9.1)	32.1	16.1-55.3	14.8* (5)	2.5 (5.2)	0.8	0.1-29.7	123.5*** (5)	34.0 (9.4)	32.7	19.9-55.6	71.2*** (5)
Pseudo-Incest N = 84	32.1 (8.7)	31.6	14.2-56.1		9.1 (8.4)	6.8	0.2-34.4		41.2 (10.7)	40.4	20.9-66.5	
Acquaintance N = 66	33.2 (10.6)	31.7	14.6-73.1		4.6 (7.8)	1.7	0.1-37.7		37.8 (12.4)	36.1	18.7-75.2	
Versatile N = 53	32.0 (9.6)	33.0	15.7-53.7		14.4 (11.9)	11.4	0.2-41.2		46.4 (14.6)	44.1	20.2-73.9	

*p < .05, ** p < .01, *** p < .001

4.3. Covariates of Age of Onset and Cost Avoidance

In this section, actual onset, cost avoidance, and official onset were examined using Cox proportional hazards regression (Table 4-4). Here, victim characteristics (i.e., age, gender, and relationship) were used to predict each of the three outcome variables. Separate models were run for each victim characteristic. Model 1 included only victim's age groups to determine its association with actual onset, official onset and cost avoidance in three separate models. Model 2 included only victim gender to determine its association with the same three outcomes. Model 3 allowed to examine statistical associations between victim-offender relationship and measures of onset as well as the indicator of cost avoidance. Finally, in model 4, the three set of victim characteristics were examined simultaneously to predict actual onset, official onset and cost avoidance respectively.

Actual age of onset. Overall, the Cox regression model did not reveal significant associations between victim characteristics and the age of actual onset of sex offending. Model 1 and 2 revealed no significant association between victim's age or victim gender on the actual onset for sex offending. In Model 3, however, a significant association was found between victim-offender relationship and actual onset. Specifically, offenders targeting strangers had an earlier onset than those targeting within their family [Hazard Ratio (HR) = 2.02]. These findings were also found when all victim's characteristics were analyzed simultaneously (Model 4). Overall, then, these results suggest that victim characteristics are poorly associated with the actual onset of sex offending.

Cost avoidance. Looking at cost avoidance, Cox regression models revealed several significant trends. Model 1 shows a significant association between the victim's age and the offenders' ability to avoid detection for longer periods (Model 1). Indeed, offenders targeting victims less than 18 years of age, as well as those having offended against multiple age categories (labelled as versatile offenders), were significantly more likely to avoid conviction for longer periods than those targeting victims over the age of 25. For Model 2, the findings demonstrate that offenders victimizing males are more likely to avoid conviction for longer periods than those targeting females. In terms of the

victim-offender relationship (Model 3), offenders targeting strangers (HR = 5.97), intimate partners (HR = 3.64), and acquaintances (HR = 2.03) were significantly more likely to be convicted earlier than those who offended within their family environment. Further, offenders with multiple relationship categories were more likely to delay conviction, however, this finding was not significant. The full model (Model 4) again reveals significant association between each of the three aspects of victim characteristics and cost avoidance. In particular, offenders targeting male children (or those with multiple age categories), and who are biologically related to the victim are able to delay conviction the longest while those targeting females strangers or their female partner were convicted the fastest. The fact that all three aspects, victim gender, age and offender-victim relationship each contributed to unique variance to the prediction of cost avoidance suggest that factors associated to each allowed the offender to delay costs for longer (or shorter) periods.

Official age of onset. When looking at the official age of onset, Model 1 demonstrates a significant impact of victim age on official onset of sex offending. Here, similar to cost avoidance, offenders targeting children or those with multiple age categories were significantly more likely to have a later official onset than those targeting adults (25 + years of age). There was no significant effect of victim gender on official onset (Model 2). In terms of the victim-offender relationship, offenders who were strangers (HR = 4.90), intimate partners (HR = 2.40), or acquaintances (HR = 1.44) had the earliest onset (Model 3). The full model (Model 4), revealed no significant impact of victim age or gender on official onset. Victim-offender relationship was still significant, however. Thus, in the full model, offenders targeting strangers and intimate partners had the earliest official onset. Overall, Table 4-4 demonstrates that the correlates of actual and official onset are not the same. On the other hand, the correlates of official onset are in line with the correlates of cost avoidance.

Table 4-4.   Victim Characteristics as Covariates of Onset and Cost Avoidance

Variable	Model 1 Actual Onset	Model 1 Cost Avoidance	Model 1 Official Onset	Model 2 Actual Onset	Model 2 Cost Avoidance	Model 2 Official Onset	Model 3 Actual Onset	Model 3 Cost Avoidance	Model 3 Official Onset	Model 4 Actual Onset	Model 4 Cost Avoidance	Model 4 Official Onset
Age[a]												
< 6 years	.77 (.44-1.36)	.12*** (.07-.23)	.35*** (.20-.62)							.96 (.50-1.86)	.22*** (.11-.42)	.60 (.31-1.15)
6 and < 12 years	.93 (.66-1.31)	.14*** (.10-.21)	.40*** (.28-.57)							1.14 (.73-1.78)	.28*** (.17-.47)	.66 (.41-1.05)
12 and < 18 years	1.00 (.70-1.44)	.43*** (.29-.61)	.82 (.57-1.17)							1.24 (.80-1.93)	.74 (.48-1.13)	1.35 (.87-2.11)
18 and < 24 years	1.33 (.87-2.03)	1.06 (.70-1.62)	1.37 (.89-2.09)							1.29 (.84-1.98)	1.23 (.80-1.89)	1.37 (.89-2.11)
Versatile	1.12 (.80-1.57)	.11*** (.08-.17)	.39*** (.28-.56)							1.58 (.95-2.30)	.24*** (.15-.39)	.76 (.48-1.21)
Gender[b]												
Female				1.15 (.81-163)	1.66** (1.16-2.36)	1.36 (.96-1.93)				1.09 (.73-1.63)	1.59* (1.05-2.42)	1.44 (.96-2.17)
Versatile				1.13 (.67-1.91)	.87 (.51-1.48)	.81 (.48-1.37)				1.10 (.61-1.99)	1.27 (.71-2.24)	1.14 (.64-2.04)
Victim-offender relationship[c]												
Stranger							2.02** (1.33-3.07)	5.97*** (3.83-6.44)	4.90*** (3.17-7.59)	2.02** (1.22-3.33)	2.90*** (1.70-4.95)	3.43*** (2.03-5.81)
Partner							1.16 (.76-1.77)	3.64*** (2.38-5.58)	2.40*** (1.60-3.66)	1.23 (.72-1.56)	2.30** (1.36-3.90)	1.85* (1.08-3.16)
Pseudoincest							1.11 (.78-1.58)	1.10 (.77-1.57)	1.23 (.86-1.75)	1.08 (.75-1.56)	1.18 (.82-1.69)	1.23 (.85-1.77)
Acquaintance							.95 (.65-1.38)	2.03*** (1.39-2.95)	1.44+ (.99-2.10)	.94 (.61-1.43)	1.57+ (.82-1.69)	1.25 (.85-1.77)
Versatile							1.06 (.71-1.57)	.67+ (.45-1.01)	.79 (.51-1.13)	.88 (.55-1.40)	.79 (.51-1.22)	.79 (.50-1.25)
-2 Log Likelihood / p-value	3181.73 / .409	3015.28 / .000	3122.55 / .000	3197.69 / .739	3181.65 / .000	3189.36 / .017	3184.14 / .005	3078.85 / .000	3123.13 / .000	3168.01 / .047	2984.06 / .000	3088.31 / .000

+ p < .10 * p < .05, ** p < .01, *** p < .001

[a] Reference group is 25+ years

[b] Reference group is Male

[c] Reference group is Biological Father

4.4. Individual Characteristics as Covariates of Onset and Cost Avoidance

4.4.1. Actual Age of Onset of Sex Offending

In this section, individual covariates of actual age of onset of sex offending were examined (Table 4-5). Three Cox regression models were performed to determine the individual characteristics associated with the actual age of onset of sex offending. In Model 1, only socio-demographic indicators were inspected. The model revealed that those offenders who are more educated (HR = 1.82) have an earlier actual onset than those who are less educated. In Model 2, the survival regression model included sociodemographic indicators as well as a variable measuring whether or not the offender had a criminal record prior the actual onset of sex offending. After adjusting for the presence of a criminal record, Model 2 showed that education remained significantly associated with actual onset age. The presence of a non-sex crime prior to the actual onset of a sex crime, however, was not significantly associated with age of onset ($p >$ .05). In Model 3, victim characteristics were added to the survival regression model including sociodemographic characteristics and the presence of a criminal record for a non-sex crime. It can be seen that the association between level of education and actual onset age remained. Victim characteristics had little to no impact on actual age of onset with the exception of offenders targeting stranger victims (HR = 1.87) who had a significantly earlier actual onset of sex offending.

Table 4-5.   Covariates of Actual Age of Onset in Sex Offending

Variable	Actual Onset		
	Model 1 HR (95% C.I)	Model 2 HR (95% C.I)	Model 3 HR (95% C.I)
Offender socio-demographics			
Ethnicity[a]			
NonCaucasian	1.37	1.35	1.26
	(.98-1.91)	(.97-1.89)	(.89-1.78)
Civil Status[b]			
In a relationship	.81	.80	.80
	(.63-1.03)	(.62-1.03)	(.61-1.05)
Education[c]			
Educated	1.82***	1.83***	1.81***
	(1.26-2.44)	(1.36-2.46)	(1.33-2.47)
Employment[d]			
Employed	1.00	.07	.99
	(.78-1.28)	(.75-1.25)	(.76-1.28)
Criminal Career			
Non-sex crime prior Actual Onset[e]			
Yes		.89	.87
		(.69-1.15)	(.66-1.15)
Victim Characteristics			
Age[f]			
< 6 years			.99
			(.45-2.21)
6 and < 12 years			1.38
			(.83-2.29).
12 and < 18 years			1.20
			(.75-1.90)
18 and < 25 years			.96
			(.60-1.55)
Versatile			1.27
			(.78-2.07)
Gender[g]			
Female			1.42
			(.88-2.30)
Versatile			1.30
			(.65-2.60)
Victim-Offender relationship[h]			
Stranger			1.87*
			(1.05-3.33)
Partner			1.37
			(.73-2.56)
Pseudoincest			1.24
			(.81-1.89)
Acquaintance			1.50
			(.90-2.50)
Versatile			1.44
			(.81-2.58)
-2 Log likelihood	2413.04	2412.29	2403.75
p-value	.000	.001	.024

* p < .05, ** p < .01, *** p < .001

Reference groups are: [a] Caucasian, [b] Single, [c] Non-educated, [d] Not employed, [e] Non-sex crime prior actual onset, [f] 25 + years, [g] Male, [h] Biological father

4.4.2. Cost Avoidance in Sex Offending

Using the same analytical strategy, the next set of Cox regression models were used to investigate the individual covariates of cost avoidance (Table 4-6). For the analyses, however, criminal career indicators were expanded to include the presence of a criminal record for a non-sex crime after the actual onset but prior the official onset, as well as two measures of offending frequency (number of victims and lambda of sex offending). Several important findings emerged. First, and contrary to what was found at the bivariate level, the offender's age of actual onset is significantly associated with cost avoidance after adjusting for victim characteristics, criminal career indicators, and socio-demographic factors. Specifically, offenders whose actual age onset is later in adulthood (HR = 1.04) delay conviction for shorter time periods. Phrased differently, those with an earlier onset are able to delay detection for longer periods of time. Second, findings also illustrate that offenders who are employed at the time of the offense (HR = .65) are able to delay conviction longer than those who are not. None of the other sociodemographic variables were significant covariates of cost avoidance when all other characteristics were taken into consideration. Third, only one criminal career indicator was significant in the full model – i.e., the presence of a non-sex crime prior to actual onset of a sex crime. Here the results indicate that those with a criminal record prior their actual onset of sex offending delay conviction for significantly shorter time periods (HR = 1.70). Hence, offenders who were known by the criminal justice system for other crimes were convicted sooner for their sex crime.

Fourth, the findings of the survival regression model indicate that victim characteristics remain associated with cost avoidance, even after adjusting for sociodemographics, criminal career indicators, and actual age of onset. Indeed, sex offenders targeting victims under the age of 6 (HR = .29) and between the ages of 6 and 12 (HR = .43), especially when their own children, are more likely to delay conviction longer. Interestingly, the findings also show that, after adjusting for sociodemographics and criminal career indicators, offenders targeting their (ex-)partner (HR = 3.19), their partner's children (HR = 1.10) are convicted sooner. Overall, those who are best able to delay conviction begin their offending younger at the start of their sex offending career, are employed, do not have a criminal record and target their own children prior they

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reach puberty.   Conversely, those who are convicted sooner start their sex offending later, are more likely to be unemployed and to have a criminal record, and commit their crime either against their (ex-)partner or the child of their partner.

Table 4-6. Covariates of Cost Avoidance in Sex Offending

Variable	Cost avoidance			
	Model 1 HR (95% C.I)	Model 2 HR (95% C.I)	Model 3 HR (95% C.I)	Model 4 HR (95% C.I)
Offender socio-demographics				
Ethnicity[a]				
NonCaucasian	1.39 (.92-2.09)	1.01 (.67-1.53)	.62+ (.38-1.01)	.64 (.39-1.03)
Civil Status[b]				
In a relationship	.58*** (.43-.79)	.60** (.44-.83)	.78 (.53-1.13)	.73 (.50-1.07)
Education[c]				
Educated	1.28 (.91-1.80)	1.12 (.78-1.59)	.88 (.59-1.29)	1.06 (.71-1.58)
Employment[d]				
Employed	.55*** (.40-.75)	.70* (.50-.98)	.70+ (.49-1.01)	.65* (.45-.92)
Criminal Career				
Non-sex crime prior Actual Onset[e]				
Yes		1.76** (1.24-2.52)	1.70* (1.11-2.61)	1.70* (1.11-2.62)
Non-sex crime between Actual and Official Onset[f]				
Yes		.43** (.26-.70)	.59+ (.35-1.01)	.74 (.43-1.29)
Number of Victims		.31*** (.20-.50)	.41* (.18-.95)	.45 (.20-1.04)
Lambda		.98* (.97-.99)	.99 (.98-1.01)	.99 (.98-1.01)
Victim Characteristics				
Age[f]				
< 6 years			.25* (.08-.72)	.29* (.10-.83)
6 and < 12 years			.40* (.20-.82)	.43* (.21-.86)
12 and < 18 years			.80 (.47-1.38)	.88 (.51-1.51)
18 and < 25 years			1.22 (.68-2.17)	1.28 (.71-2.31)
Versatile			.66 (.28-1.59)	.71 (.30-1.68)
Gender[h]				
Female			1.49 (.75-2.97)	1.66 (.84-3.28)
Versatile			1.28 (.53-3.08)	1.25 (.52-3.02)
Victim-Offender relationship[i]				
Stranger			2.93* (1.29-6.67)	4.22** (1.80-9.90)
Partner			2.31* (1.04-5.10)	3.19** (1.40-7.27)
Pseudoincest			.96 (.53-1.76)	1.10 (.60-2.01)
Acquaintance			1.95+ (.99-3.86)	2.48* (1.24-4.97)
Versatile			.86 (.41-1.79)	.90 (.43-1.87)
Age of Actual Onset				1.04*** (1.02-1.06)
-2 Log likelihood	1517.03	1448.59	1390.92	1378.06
p-value	.000	.000	.000	.000

+ p < .10 * p < .05, ** p < .01, *** p < .001

Reference groups are: [a] Caucasian, [b] Single, [c] Non-educated, [d] Not employed, [e] No non-sex crime prior actual onset, [f] No non-sex crime between actual and official onset [g] 25 + years, [h] Male, [i] Biological father

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4.4.3. *Official Age of Onset in Sexual Offending*

The same survival regression models examined in the preceding section were run again but this time to determine the covariates of the official age of onset of sex offending (Table 4-7).   Within the first model, offenders who were in a relationship (HR = .55) and employed (HR = .62) were significantly more likely to have a later official age of onset while those who were non-Caucasian (HR = 1.71) and educated (HR = 1.50) had an earlier official onset.   The analyses also revealed three notable additional findings.

First, the age of actual onset is significantly related to the age at first conviction for a sex crime.   The findings of the survival regression model demonstrate that the later the actual onset of offending, the later the official onset is (HR = .86).   Second, the findings of the survival regression model also show that offenders with a criminal record for non-sex crime prior their actual onset have an earlier official age of onset (HR = 1.96).   Hence, offenders who are known by the criminal justice system prior the actual onset of their offending are first convicted sooner.   The findings also show that offenders who were charged for a non-sex crime after their actual onset but prior their first conviction for a sex crime have a later official age of onset (HR = .31).   This could simply reflect that offenders who were charged for another crime after the actual onset were no longer involved in sex offending (e.g., incarcerated) or no longer a threat to commit a sex crime, which might have delayed some victims in reporting their victimization to the authorities.   As well, offenders who targeted multiple victims had an older official onset (HR = .25).   This finding is in line with those found for cost avoidance which indicates that more prolific offenders are able to delay conviction, which would produce an older age of onset.

Third, none of the victim characteristics, with the exception of the victim's age, were significantly associated with the official age of onset.   Here, offenders targeting victims less than 6 years of age had a later official age of onset (HR = .23).   The lack of significant relationships between victim characteristics and official onset is contrary to what was found for cost avoidance.   This is not meant to say that official age of onset does not vary across victim type.   But rather, that more statistically important factors operate on the age at which an offender is first convicted for a sex crime, that is, the age

at which his sexual career was initiated, his criminal background, as well as his ability to delay conviction.

Table 4-7.   Covariates of Official Onset in Sex Offending

	Official Onset			
Variable	Model 1 HR (95% C.I)	Model 2 HR (95% C.I)	Model 3 HR (95% C.I)	Model 4 HR (95% C.I)
Offender socio-demographics				
Ethnicity[a]				
NonCaucasian	1.71* (1.14-2.56)	1.44 (.95-2.17)	1.20 (.77-1.87)	1.32 (.83-2.09)
Civil Status[b]				
In a relationship	.55*** (.41-.75)	.61** (.44-.84)	.81 (.55-1.18)	.76 (.52-1.11)
Education[c]				
Educated	1.64** (1.16-2.31)	1.73** (1.23-2.45)	1.48* (1.02-2.15)	1.06 (.70-1.59)
Employment[d]				
Employed	.62** (.46-.85)	.72+ (.52-1.00)	.68* (.48-.96)	.78 (.53-1.14)
Criminal Career				
Non-sex crime prior Actual Onset[e]				
Yes		1.34 (.93-1.94)	1.22 (.80-1.86)	1.96** (1.24-3.11)
Non-sex crime between Actual and Official Onset[f]				
Yes		1.06 (.66-1.69)	1.42 (.84-2.39)	.31*** (.17-.59)
Number of Victims		.48** (.29-.77)	.74 (.34-1.64)	.25** (.10-.61)
Lambda		.99 (.98-1.01)	.99 (.99-1.01)	.99 (.98-1.01)
Victim Characteristics				
Age[f]				
< 6 years			.57 (.22-1.50)	.23* (.08-.71)
6 and < 12 years			.60 (.31-1.18)	.52 (.26-1.04)
12 and < 18 years			.97 (.55-1.70)	1.24 (.71-2.16)
18 and < 25 years			.99 (.55-1.79)	1.42 (.80-2.50)
Versatile			.76 (.34-1.71)	.92 (.37-2.24)
Gender[h]				
Female			1.46 (.76-2.82)	2.01 (.96-4.18)
Versatile			1.02 (.44-2.39)	1.63 (.67-3.97)
Victim-Offender relationship[i]				
Stranger			3.29** (1.46-7.39)	2.17 (.94-5.00)
Partner			1.71 (.74-3.98)	2.12 (.92-4.89)
Pseudoincest			1.36 (.76-2.42)	1.06 (.57-1.99)
Acquaintance			1.76 (.88-3.51)	1.46 (.72-2.96)
Versatile			1.15 (.56-2.35)	1.37 (.64-2.89)
Age of Actual Onset				.86*** (.83-.88)
-2 Log likelihood	1514.05	1492.20	1466.84	1324.73
p-value	.000	.000	.000	.000

+ p < .10 * p < .05, ** p < .01, *** p < .001

Reference groups are: [a] Caucasian, [b] Single, [c] Non-educated, [d] Not employed, [e] No non-sex crime prior actual onset, [f] No non-sex crime between actual and official onset [g] 25 + years, [h] Male, [i] Biological father

5. Discussion

The current empirical study examined actual and official onset of sex offending in a group of adult male sex offenders incarcerated in a Canadian federal prison. The study aimed to describe patterns of onset and examine discrepancies between actual and official age of onset by relying on several sources of information. Simultaneously examining actual and official age of onset allowed the estimation of cost avoidance or, phrased differently, the time an offender delayed conviction. The study also aimed to determine whether cost avoidance varies across age of onset and, in doing so, investigate whether age at first conviction for a sex crime gives any indication of the time an offender managed to delay the costs of crime. The findings challenge pre-conceived ideas about the age of onset of sex offending for offenders who have come to the attention of the authorities. It also raises questions regarding career initiation in a particular sex crime type and the importance of multiple source of information to describe career initiation. In the context of the current study, it is argued that career initiation includes an actual onset, the offender's ability to delay detection and punishment, and whether or not the offender was caught and sentenced for his crimes. All components of this career initiation provide unique and complimentary pieces to understanding offenders' criminal career and its development. The following section reviews the findings in light of previous research on sex offenders and the study of criminal careers.

5.1. Career Initiation in Sexual Offending: Actual versus Official Onset

Overall, the present study indicates that actual onset of sex offending of adult convicted sex offenders is typically in the early-to-mid 30s with only 2.1% of this sample beginning before 18 years old. This is in disagreement with previous research investigating self-reported onset that suggests a significant proportion of adult sex offenders begin during the teenage years (e.g., Abel, Osborn & Twigg, 1993; Groth,

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Longo & McFadin, 1982; Longo & Groth, 1983; Marshall, Barbaree & Eccles, 1991; Prentky & Knight, 1993).   Using a sample of sexually dangerous sex offenders in a maximum-security setting, Prentky and Knight (1993) did not report average age of onset in their study.   They did report, however, that close to 49% of rapists and 52% of child molesters were juvenile sex offenders.   The findings of the current study, therefore, challenge Prentky and Knight's report suggesting that adult sex offending almost requires juvenile sex offending.   Similarly, Groth et al. (1982), using a sample of sex offenders drawn from a psychiatric hospital and a maximum-security prison, found the mean age of onset for a sexual offense was roughly 20 years.   The average onset age found in the Groth et al. study is nearly 12 years younger than the one observed in the present study.   Groth's findings also suggest that a sizeable proportion of his sample of sex offenders had an onset in youth or in early adulthood.   The idea that adult sex offending is preceded by juvenile sex offending was challenged in a study conducted by Marshall et al. (1991).   Their investigation of a relatively small sample of child molesters (N = 129) obtained from the Kingston Sexual Behaviour Clinic showed that extrafamilial child molesters had an average self-reported onset age of 25 years old while intrafamilial child molesters reported an onset age of 33 years old.   Unfortunately, the Marshall et al. study did not report the percentages of offenders with an onset age prior 18 years old. That said, Marshall et al., (1991) findings are more in line with those observed in the current study than those reported earlier by Groth and colleagues.

The discrepancies found between the actual onset age for sex offenders included in the study and those reported in earlier investigations may be explained by sampling differences. Indeed, the self-reported studies which disagree with the current results were based on samples of sex offenders from maximum-security psychiatric hospitals or maximum security prisons.   Offenders sent to these institutions are referred to those because of their mental disorders (e.g., a paraphilia, sexual disorder) or because of their higher likelihood of sexual recidivism.   Such samples are qualitatively different from those drawn from general prison populations (current study) or those stemming from outpatient clinics (Marshall's study).   In other words, there is much heterogeneity across sample types in terms of onset age.   This conclusion is further exemplified in the study conducted by Terry (2008) with a sample of 4,392 priests with allegations of sexual abuse.   This group is interesting because they are less likely to show the same extent of

mental health problems as those offenders found in the maximum-security samples or the same antisocial/criminal tendencies as those found in the prison population. For this sample of priests, the average age at first sexual offense was 39 years; approximately a 7-year later onset than the one found in the present study and fifteen years later than the one reported in the Groth et al. study. Another possibility explaining the discrepancies between the current study findings and those observed in studies based on samples drawn from maximum-security institution is the fact that the current study excluded all sexual recidivists, focusing on first-time sex offenders. Sexual recidivists may include a more significant proportion of offenders who were juvenile sex offenders or had an earlier age of onset of sex offending. Indeed, sexual recidivists typically exhibit an earlier onset of sexual offending than do non-sexual recidivists (e.g., Hanson & Bussière, 1998; Lussier & Healey, 2009). While the statistical association between age of onset and sexual recidivism reported in earlier studies is not strong, it could certainly have affected the observed prevalence of juvenile sex offending in the current study. Taken together, these results suggest that the age of onset is linked to sex offenders' individual characteristics. More specifically, adult sex offenders with serious mental health problems might start earlier (psychiatric samples), with a substantial proportion initiating their sexual criminal career in adolescence, followed by those with a more general criminal/antisocial tendency (prison samples), then followed by the more general population (priests samples).

It is interesting to note that, to my knowledge, earlier investigations on the onset of sex offending in adult sex offenders have never discussed the context in which sex offending is initiated, and whether such context is age-graded. While the current study did not examine the context of sex offending onset for different age groups, it is interesting to speculate about the context characterizing the periods where most adult sex offenders initiate their offending. The majority of offenders (42%) included in the sample had an actual onset between 25 and 35 years of age. The typical life events during this period include, but are not limited to, securing a steady job and a regular income, purchasing a residence, marriage, and having children. This corresponds well to the average socio-demographics and victim characteristics of the present sample in that the majority of offenders were in some form of intimate relationship and were targeting children within the family context, either their own children or the children of

their partners.   This time period is one characterized by several major life-transitions, potential stress, but also a period which includes access to many suitable targets, whether the individuals' partner or spouse (or ex-partner), his children, the partner's children, his children's friends, neighbours, babysitter, etc.   The interaction between significant life transitions that may be the cause of important stress and negative emotional states, may impact the behaviour and the interactions that the individual may have with his immediate environment.

In that context, the study of Proulx, Perreault, and Ouimet (1999) is informative. Using a small sample of extrafamilial child molesters (N = 44), Proulx and colleagues (1999) found that 61% of the offenses occurred in the aggressor's home and half of the victims were well known to the offenders.   Prior to the sex crime, many of the sex offenders were in stressful situations.   For example, 27% were experiencing some form of marital discord (e.g., separation, arguments), 25% were experiencing feelings of loneliness and nearly half of the sample was experiencing low self-esteem at the time of the sex crime event.   The Proulx et al. (1999) study also showed that a substantial proportion of these offenders were also disinhibited and thus, less likely to be in control over their sexual urges.   In particular, nearly 30% of the offenders were under the influence of substances and nearly 20% were intoxicated prior to the sex crime.   The Proulx et al. study did not clarify the proportion of offenders included in their sample who were first-time sex offenders, but we can reasonably think that the majority of the sample was[5].   Therefore, the findings may suggest that offenders may be having issues with a more stable adult-life transition at the time of their onset of offending, and such life transitions may become a source of stress, interpersonal conflict, and identity change that may lead to self-esteem issues.   By opposition, few offenders (1%) began their sexual criminal career after reaching their mid-fifties.   At this age, men are likely to have grownup children who are either living in the house as young adults or have moved away and are thus no longer suitable targets.   Overall, these findings raise the possibility that

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[5]   The Proulx et al. (1999) study is based on a sub sample of the original study sample which was also used for the current study.

career initiation in sex crimes in adulthood may occur in a context that includes a combination of situational crime opportunity factors, stressful life events, and a disinhibited and motivated offender.   Offenders with mental health problems may be more reactive to such transitions and stressful life events, which could explain their earlier onset found in prior studies (e.g., Groth et al, 1982).

Importantly, the present study found that actual onset did not vary across sex offender type with the exception of offenders targeting stranger victims who began offending the earliest at around age 28.   Said differently, based on the current study findings, early onset offenders do not differ in terms of victim selection (victim's age, gender, and the offender-victim relationship) compared to late onset offenders.   It has been suggested in the past that the onset of paraphilia was somewhat age-graded (Abel et al., 1993).   It is unclear, however, from these studies how onset was operationalized, or more specifically, what the age of onset was referring to.   Was onset operationalized as the age at first deviant sexual interests, the age at first deviant sexual fantasies, the age at first deviant sexual urges, or the age at first sexual crime? The discrepancies found between Abel et al. and the current study findings could suggest that the interest for certain deviant behaviours (or the thought of such behaviours) could be age-graded but not the acting out of such interest.   Hence, factors that are external to the motivation of specific behaviour may be important in the activation of the sexual criminal career and relatively similar across types of sex crimes.   Such factors are likely to be situational and could include disinhibitors (e.g., alcohol, drugs, cognitive distortions), stress (e.g., losing a job), and the availability of a suitable target.   This idea of an external motivator was also raised by Marshall et al. (1991) who argued that the majority of child molesters (78%) they interviewed did not experience deviant sexual fantasies prior their first offense.   Rather, they argue, deviant sexual fantasies tend to follow the initial offense of child molesters.   In particular, their study findings showed that approximately one-third of the interviewed child molesters reported that the onset of deviant sexuality followed the initial offense, indicating the sex crime may lead, for some individuals, to the emergence of deviant fantasies.   This hypothesis could not be tested in the present study because age of onset of deviant sexual interest was not included in the study. Thus, the finding that actual age of onset does not vary across offender type is important because it does suggest that there are no significant variations in the proportion of early

versus late onset across offenders, or that some types of adult sex offenders are more likely to have been juvenile sex offenders.

Sex crime initiation as measured through official onset, on the other hand, demonstrates an average onset in the late 30s and early 40s, a finding in line with previous research (e.g., Adler, 1984; Lussier, LeBlanc & Proulx, 2005; Proulx, Lussier, Ouimet & Boutin, 2008; Smallbone & Wortley, 2004).   The study findings are in line with those reported by Lussier et al. (2005) as well as Proulx et al (2008) using a prison sample of adult male sex offenders.   They reported a mean official age of onset of about 34 years of age for the total sample.   Similar findings have been reported elsewhere. Using a sample of 207 adult child molesters incarcerated in a penitentiary in Queensland, Australia, Smallbone and Wortley (2004) found a mean official age of onset of 37 years, only three years older than what was reported in the current study. Smallbone's sample, study, and findings, therefore, are similar to those of the current study.   Different results have been observed with a sample drawn from a mental health facility.   In an investigation of a small sample (N = 128) of federally sentenced sex offenders (i.e., rapists, hebephiles, child molesters) referred to the Regional Psychiatric Centre in Ontario, Baxter and colleagues (1984) found that the average age of official onset was in early adulthood, ranging between 18 to 22 years of age. As with actual onset, these earlier results are likely a function of a more severely disordered group of offenders.

Contrary to what was found for actual onset, the study findings showed that the official onset age varies across offender type.   The current study examined three aspects of victim characteristics that are typically used to categorize sex offenders, that is, victim's age and gender, as well as victim-offender relationship.   For victim's age, offenders targeting adults had the earliest age of onset, beginning on average at thirty years of age, and those targeting children exhibited the latest age of onset, beginning by the mid-forties.   Hence, the victim-age and offenders official onset age suggest that child molesters come to the attention of authorities later than sexual aggressors of women.   This is not surprising given that children may take longer to report the crime to someone, including the police, for several reasons such as: they were not aware or did not understand at the time of the abuse that they were the victim of a crime; they were abused by someone in a position of trust/authority; they were afraid to hurt the family

member responsible for the abuse or afraid that talking about it could negatively affect the whole family (e.g., Lussier et al. 2011).   Such factors are less likely to affect adult victims and the reporting of sex crimes committed by sexual aggressors of women.   It is not surprising, in that context, that child molesters were in their mid-forties at the time of their first conviction for a sex crime as opposed to early thirties for sexual aggressors of women.   By their mid-forties, the victims of child sexual abuse are well into their teenage years, if not young adulthood.   Indeed, the average age for disclosure of childhood sexual victimization is 18 years of age (Lamb & Edgar-Smith, 1994).   Accordingly, unless someone has witnessed the sexual abuse or suspects it is occurring and informs the authorities, it will take, on average, many years until the child has reached an age at which they are able to reveal the abuse.   By that time, they have developed an intimate, trusting relationship with someone close they can talk to about their abuse.   They are also in a better developmental position to understand their victimization.

As for victim's gender, offenders victimizing females demonstrated the earliest official onset (i.e., late thirties) while those targeting males as well as those having offended against both genders showed the latest onset in the mid-forties.   This result could be an "artefact" of the absence of adult male victims for this sample.   For this sample of offenders, female victims refer to both girls and women, while male victims include almost exclusively boys[6].   Hence, factors explaining the later official onset of offenders targeting children may also explain why offenders having offended against males had a later onset age.   It is possible, however, that the later age of onset of sex offending for those targeting male victims is the result of male victims not reporting the offense until much later than would a female.   This delayed reporting could be the result of shame associated with homosexuality and having been involved in homosexual behaviours.   Indeed, numerous stereotypes make the possibility of shame a plausible reality for male victims.   Such myths about male sexual assault include the following: "*if the victim had an erection, they were consenting*" (Gonsiorek, 1994) and "*the victim must have been a homosexual or was giving signals that suggested he was a homosexual*"

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[6] Only 1 offender in the present sample targeted an adult male

(King, 1992).   These myths combined with the underlying hostility towards homosexuality, more especially so at that time[7], reduced the likelihood of male victims wanting to come forward.   There are at least two possible explanations for why versatile offenders (targeting males and females) have a later age of onset.   First, versatile offenders were more likely to be victimizing children, as such, the later age of onset may be a function of children being less likely to report.   Second, offenders with no fixed preference for gender may be more opportunistic, seeking low-risk offending opportunities that provide sexual gratification across different contexts.   These low-risk opportunities would directly translate into a lower probability of being detected and convicted.

Finally, in terms of the victim-offender relationship, offenders who target stranger victims had the earliest age of official onset, late 20s, while those who offended against their own child or the child of their partner were first convicted in their early-to-mid 40s. There are a number of possible explanations for this.   First, a close relationship between the victim and offender may make the victim afraid that the offender will be given a severe sentence (Fox & Scherl, 1972).   This is particularly true for intimate partner violence or when the offender is the biological father.   In such situations, an additional possibility may be that the offender is financially providing for the victim.   Thus, the reporting of the abuse may remove financial security for the victim and create added stress.   Second, in cases where the victim is well acquainted with the offender it may cause the victim to blame themselves, similar to male victims (Schwendinger & Schwendinger, 1980; Weis & Borges, 1973).   Third, given that the sexual abuse is occurring within the family, the possibility of witnesses is greatly reduced and those who may have witnessed it (i.e., other family members) may be motivated to "keep it within the family" for a number of reasons (e.g., public shame and humiliation on the family). Fourth, the victim may fear that they will not be believed because the offense may not fit

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[7]   Keep in mind that these offenders were incarcerated between 1994 and 2000. If, on average, they remained undetected for close to eight years (even more so for child molesters), it means that, typically, the crimes started somewhere between in the 1980s. Thirty years ago, taboos about homosexuality were more significant and important than what they are today.

with the perception of the offender. This may be especially true if the offender does not represent the stereotypical "profile" of a sex offender and instead is an upstanding citizen with a steady job, who is employed, with no alcohol or drug problems and appear to be the "stand up" father or husband. Fifth, those victimized by strangers are more likely to come forward to file a complaint to the police, perhaps because they have no emotional attachment to their aggressor, but also perhaps because they are more likely to be physically injured during the assault[8] (Bachman, 1993; Gartner & Macmillan, 1995). Thus, early onset offenders target female adults who are strangers while later onset offenders victimize children of both genders with no specific relationship to the victim. Overall, the finding that official age of onset varies across the type of offender, or, more specifically, the type of victim targeted, suggests the offender's ability to delay conviction is at least in part based on whether and when the victim chooses to report the crime. This delay in reporting would directly result in a delayed conviction. As such, these findings are relevant to the literature on detection avoidance revealing the type of victim is an important factor in whether the offender is arrested for their crime. Further, these findings also suggest that factors outside of the offender's skills in crime are relevant to both detection avoidance and cost avoidance.

The present findings demonstrated a gap of about 7 years on average between actual and official onset. This gap is quite substantial when considering that the quality of police evidence is one of the most important factors influencing offenders' decision to confess their crime during their interrogation (Deslauriers-Varin, Lussier & St-Yves, 2009). Keeping in mind that only offenders caught for their crimes were included in the study, seven years is a long period that can affect law enforcement's ability to build a strong case against an offender. Also and importantly, the gap found between actual and official onset was not constant across type of offender. The gap between actual and official onset is the largest for those offenders who have versatile victim types in

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[8] For example, Ouimet and Proulx (1994) found a positive relationship between the distance travelled from the offender's home and the level of abuse used. This positive association suggests there is less of a likelihood that the offender known's the victim and, subsequently, must use more force to get the victim to comply

terms of victim age, gender, and type of relationship to the victim.   For example, offenders targeting multiple age groups exhibit a gap of roughly 12.9 years between actual and official onset.   Those targeting both genders as well as multiple victim-offender relationships reveal roughly a 14-year gap.   On average then, versatile offenders are able to avoid conviction for over a decade.   It is possible to raise the hypothesis that individuals offending against different victim types may be more driven by low-risk opportunities than by sexual preferences.   There is, however, a second type of offender who also demonstrates significant cost avoidance, the incestuous father and pseudo-incestuous father.   Specifically, sex offenders who victimize a child within their family setting are able to delay conviction for nearly a decade.   This is especially problematic, because in such cases, the offender has daily access to his victim, favouring re-victimization over long periods of time[9].

Not all offenders demonstrated the same ability in cost avoidance.   Sex offenders targeting adults are typically sentenced within less than two years after the actual onset of the offense.   Similarly, those targeting strangers or their partners are convicted and sentenced within 3 years after their actual onset of offending. Accordingly, sex offenders targeting adults, most typically females, whether a stranger or their partner, are the ones most likely to get convicted sooner after the onset of offending. The stranger rapist was most likely to be convicted immediately after onset as they were involved in the lowest number of sex crime events.   This suggests, as other have raised (Lussier et al., 2011), that if stranger rapists are not caught in the act or immediately after the act, they might never be caught and convicted.   Keep in mind that this sample excluded undetected sex offenders.   The idea that some stranger rapists are caught immediately while others may never be caught suggests the ability to avoid detection and conviction involves factors outside of the type of crime selected, in particular, the offenders individual skills (e.g., cleaning up the crime scene) in committing crime (Beauregard & Bouchard, 2010).   The (ex-)partner rapist was also likely to avoid

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[9]   Further analyses not shown here have revealed that incest and pseudo-incest offender has the highest mean number of completed crime events (over 300, on average)

conviction for a shorter period of time, as opposed to child molesters, but their offending was more substantial than that of stranger rapists[10]. The findings showed that their number of crime events was higher than that of stranger rapists having offended close to 70 times against their victim before getting caught. As in the case of incest and pseudo-incest offenders, close proximity between the offender and the victim, as provided by the family setting, favours re-victimization.

5.2. Covariates of Age of Onset and Cost Avoidance

Previous empirical studies with general populations of offenders have shown that age of onset is an important correlate of chronic offending (Farrington & Loeber, 1998; LeBlanc & Fréchette, 1989). Little is known, however, about the factors associated with the actual age of onset of sex offending and whether those factors, along with the age of onset, are linked to cost avoidance and the official age of onset of sex offending. The criminological literature typically describes early onset offenders as impulsive, opportunistic, short-sighted with a here-and-now perspective on things, with a low tolerance to frustration. The current study was not set out to examine individual traits of early onset offenders, but rather, to look at the onset of sex offending in the context of cost avoidance and the ability to delay detection. While the criminological literature is informative about individual traits of early onset offenders, it is unclear how these traits influence detection avoidance in the context of sex offending. The current study, therefore, aimed to examine cost avoidance across onset age. If early onset offenders are impulsive, opportunistic, and short-sighted, we could reasonably expect them to show poor offense planning, to leave significant incriminating evidence at the crime scene, to increase the victim's desire and willingness to report the incident to someone that could lead to a police investigation, etc. In other words, we could expect that early

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[10] Further analyses not shown here demonstrated that the number of crime events committed by the (ex-)partner was higher than that of stranger rapists having offended close to 70 times against their victim before getting caught.

onset adult offenders, or those individuals starting their sexual criminal career earlier, would be less skilled at delaying detection for significant time periods.

The present study, therefore, represents one of the first attempts to investigate who the earlier onset offenders are, whether these earlier onset offenders are more likely to get caught sooner after the act, and whether these offenders are first convicted for a sex crime at a younger age? For the most part, sociodemographic characteristics of offenders were associated with their age of onset and ability to delay conviction. Two results are of interest with respect to the onset of sex offending. First, more educated offenders tend to commit their first sex crime earlier than less educated offenders. Also, findings highlighted a trend suggesting that more educated offenders were also first convicted for a crime earlier. The latter finding is expected given actual age of onset of sex offending is significantly associated with official age of onset. In fact, when controlling for actual age of onset, education is no longer significantly predictive of official onset. In other words, more educated offenders initiate their sex offending career earlier and because they start earlier, tend to be caught and convicted earlier than less educated offenders. This result is counterintuitive to the general idea that less educated offenders tend to be early starters. It is difficult to draw firm conclusions about factors that could be responsible for this finding given that education level is rarely analyzed in the sex offending literature. It could be that more educated adults, those with at least a high school diploma, may have more access to criminal opportunities and vulnerable victims that are conducive to a sex crime. More educated offenders are perhaps in a better position of getting themselves into a position of trust that would allow them to take advantage, sexually speaking, of someone. Whether an employer in a position of authority over an employee, or someone in a position of trust and in charge of children (e.g., school teacher, sport coach, priest). More educated offenders, therefore, may have an edge over less educated offenders, in that parents may be more likely to trust them and to influence their child in trusting them as well. Hence, opportunities conducive to sexual abuse may come sooner to more educated offenders which may explain their earlier onset

One of the key covariates of onset of sex offending and cost avoidance examined in the current study was the presence of a criminal record. This sample was composed only of first-time convicted sex offenders, but as their record shows, the majority of them

had a criminal record for a non-sex crime prior their first conviction for a sex crime. While it was beyond the study objectives to do a detailed analysis of their non-sexual criminal career, the current study explored the possibility that non-sex offending somehow contributed to the onset of sex offending and the offender's ability to delay detection. The current study demonstrated that the criminal record of an individual matters with respect to the age of onset as well as the ability to delay conviction in a specific crime type such as sex offending. The findings indicate that the presence of a criminal record for a non-sex crime was not significantly related to the actual onset of offending, but was related to the official onset or age at first conviction for a sex crime. About half of this sample had a prior record for a non-sex crime prior starting their sexual criminal activities. Yet, the presence of a criminal record did not accelerate the actual onset of sex offending. It did, however, accelerate the age at first conviction for a sex crime. Said differently, those offenders with a criminal record did not start their offending sooner but were caught faster than those without a criminal record. Of importance, a criminal record for non-sex crime, was also significantly related to the offender's ability to delay conviction.

Taken together, early-onset adult offenders with no criminal record, who offended against children under 12 years old, especially their own, delayed conviction for longer time periods. These results are in agreement with the findings of the Lussier et al. (2011) study which showed that offenders with a more conventional background and targeting children within their family setting were avoiding conviction longer. These findings challenge the notion put forth by propensity theorists that view the early onset offender as an impulsive risk taker, who does not plan ahead and who tends to disregard the more long-term consequences of their behaviour (Gottfredson & Hirschi, 1990). Indeed, the ability to delay conviction for prolonged time periods suggests that a certain degree of planning and investment was made by the offender. The investments may have included victim grooming, cleaning up the crime scene, or convincing the victim they should not report the event. Such investments are not uncommon to sexual offenders. For example, Beauregard and Bouchard (2010) investigated 220 rape events to determine the factors involved in forensic awareness. Forensic awareness refers to the offender's attempts to hide evidence through the process of adapting their modus operandi and taking additional steps (e.g., forcing the victim to shower after the

sexual assault) to reduce their likelihood of being apprehended.   Their findings revealed that over half of the rape events involved some form of forensic awareness, and thus, some form of investment in cost avoidance, most of which involved the offender concealing their identity.   Of interest, offenders demonstrating victim selection revealed greater levels of forensic awareness compared to offenders with no victim selection, indicating that those who plan their crime in advance are more likely to avoid detection and conviction.   Further, offenders who were under the influence of drugs or alcohol exhibited lower degrees of forensic awareness, suggesting situational factors may impact the offender's crime scene behaviour reducing their ability to employ any crime specific knowledge or skills they might have.   The current study findings that early-onset sex offenders are able to delay conviction longer suggests they may have initiated their sexual offending earlier because they were confronted with a low-risk opportunity that they could take advantage of[11].   In other words, their low self-control might have played in their favour.   Indeed, within the context of predatory offenses, a combination of risk-taking and impulsivity with opportunistic behaviour allows offenders to capitalize on such opportunities.   What may appear as unprepared and unplanned may actually be effective and efficient opportunism.   Further, offenders presenting a more conventional background, that is those employed, without a criminal record, may be less likely to arouse suspicion if sexual abuse allegations were to be raised.   Even if such suspicions were to be raised, the more conventional image of these individuals may protect them in many ways, among other things, by raising doubts about the veracity of the allegations made against them and by re-focusing the attention on the victim's reputation and sexual behaviour.   The role and impact of a criminal record was further highlighted by the multivariate models.   A criminal record accelerated conviction after controlling for sociodemographic factors and victim characteristics, both of which included indicators related to cost avoidance.   In other words, irrespective of the offender's education and employment status as well as the type of victim he offended against, a criminal record accelerated conviction.   This may further stress that police investigators and

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[11]   It is important to note that such offending does not preclude the notion that the sex offender may have gone to elaborate efforts to set up these low-risk opportunities.

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prosecutors take a case more seriously if the offender is known by the criminal justice system, even for unrelated offenses.

5.3. Limitations

While informative, the findings should be interpreted within the context of its limitations.   First, we did not investigate age of onset for general offending.   Thus, it is possible that the early onset offenders found in the present study were not early onset offenders for general crime.   As such, the present conclusions do not represent a direct test of previous theories concerning the role of age of onset.   Second, while multiple sources of information (i.e., self-report, victim statements, police investigation) were used to code actual age of onset, data was not available on these individual sources. Therefore, the present study was unable to compare the extent to which actual age of onset varies across these sources of information.   It is possible that actual age of onset may be earlier in self-report than those from victim statements and police investigation notes.   While the true extent of any possible bias cannot be determined, the reliance on three separate indicators should minimize the overall bias.   Further, previous studies relying on only one indicator (i.e., self-report) are subject to the same limitation but without any correction for the inherent bias through the use of multiple sources.   Third, all sex offenders in the current study were caught and convicted for their sex crime(s), we did not have access to any sex offenders who successfully avoided detection by the authorities.   Accordingly, the findings are informative in terms of the offenders' ability to delay conviction, but not necessarily their ability to escape or delay detection.   In other words, certain offenders may be more likely to delay detection and conviction, but consistently be caught, while other offenders may be less likely to get caught.   It is possible that the offender who escapes detection may be qualitatively or quantitatively different (e.g., level of forensic awareness) from those who have not escaped detection, differences which our study could not capture.   Accordingly, the present results may not generalize to those who have never been caught for their sex crime.   Future research using a prospective longitudinal design with community samples may be informative in shedding light on this matter.   Fourth, the current study did not include any indicators directly measuring the offender's skills (e.g., cleaning up the crime scene, wearing a mask) in cost avoidance.   As a result it is unknown how these factors may have

contributed to the differential cost avoidance found in the current study.   Further, it is unknown what relative impact the offender's skills and the victim/opportunity selected have on cost avoidance.   Future studies should address the link between individual skills and differential cost avoidance.   In particular, future research should investigate the role of pre-crime factors (e.g., victim selection), crime event factors (e.g., forensic awareness), and post-crime factors (e.g., convincing the victim to not report the offence), while controlling for offender type, in explaining differential cost avoidance.

Fifth, the marker of cost avoidance (i.e., age at first conviction), may have been influenced by factors outside the scope of the present study.   Specifically, given that conviction comes at the end of the judicial process, factors related to judicial processing time may have influenced the age at conviction (e.g., plea bargaining, case characteristics, presence of a trial).   Little is known, however, about judicial processing time.   Of the limited research conducted on this topic, Walsh and colleagues (2008) demonstrated that the time between law enforcement report and disposition was under 1 year in 12% of cases, but over 2 years in 36% of cases.   It should be noted that while cost avoidance can be operationalized in other ways (e.g., age at first arrest, age at first charge), which may have reduced this potential bias, the date the offender was convicted was the only indicator that was consistently coded across all offenders.   Sixth, the time-at-risk variable was not a perfect indicator of the amount of time the offender was actually at risk for two reasons.   First, it did not control for time spent on the streets for those who began prior the age of 18.   Second, an estimate of the actual amount of time spent incarcerated (based on the sentence length and the average length served) was used rather than the actual time spent in prison. This is because data was not available for the actual time spent incarcerated.   As a result, it is possible that the variable may be under or over reporting the amount of time the offender spent in the community.   Given that time at risk was also used to calculate lambda it is also possible that the lambda may have been artificially inflated or deflated.   Two important points should be considered in relation to this limitation.   First, only 2.1% of offenders began prior to the age of 18.   Phrased differently, for 97.9% of offenders who began offending at or beyond 18 years of age we have complete information for time-at-risk.   Thus, the level of bias resulting from a lack of data prior age 18 is likely minimal.   Second, while actual incarceration time could not be determined, the calculation used was in line with

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the correctional and conditional release statistics in Canada provided by the Solicitor General.   As such, the approximation of time spent incarcerated is likely reflective of the average offender.

6. Conclusion.

The present study examined patterns of onset and cost avoidance in a group of adult male sex offenders incarcerated in a Canadian prison. Currently, little is known about onset or cost avoidance in sex offenders as few studies have investigated these topics. As such, the current study sought to close this knowledge gap. The study had two aims. First, to describe patterns of onset and to examine the similarities and differences between actual and official onset. Second, to determine the impact of age of onset on cost avoidance. The present study simultaneously examined two measures of onset, actual and official, and found substantial differences between the two. Actual onset indicated that adult male sex offenders initiate their sexual criminal career in their early thirties. The study findings clearly depart from earlier clinical studies that depicted adult sex offenders as grown up juvenile sex offenders. In fact, a marginal group of sex offenders included in the sample initiated their sex offending prior age 18. Further, official data showed that their first conviction for a sex crime is typically in the late thirties for most sex offenders, that is, almost a decade after the actual onset of offending. The gap between actual and official onset suggests they are not merely two measures of the same construct. This conclusion is reinforced by the analysis of the covariates of actual and official onset of sex offending and the observations that the covariates significantly differ across onset measures. Of importance, while victim characteristics were not significantly related to actual onset of sex offending, it was for official onset. Victim's age, gender and relationship to the offender was associated with the age at first conviction, suggesting that the type of sex crime committed carries different risks of conviction. The type of offenses committed by a sex offender may speak of the type of risk he is willing to take. Such conclusions could only be drawn by differentiating actual from official onset of sex offending. This finding stresses the need to use multiple sources of information when investigating criminal career parameters.

The current study indicated a clear benefit to early onset offenders in terms of their ability, whether due to their own skill or the opportunity selected, to avoid

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conviction.   Indeed, the early onset offenders avoided conviction the longest, with one in ten offenders avoiding conviction for over 25 years.   This finding raises potential issues for contemporary criminological theories and demonstrates a clear need for theories to specifically address cost avoidance.   For example, to propensity theorists, the early onset offender is an impulsive, short-sighted, and opportunistic individual.   Detection avoidance, however, suggests some planning, some degree of sophistication in the modus operandi, and some rational thinking about the crime event itself.   The existence of cost avoidance also raises concerns regarding current policies in Canada and the United States.   For instance, if certain types of offenders (e.g., child molesters) are able to avoid conviction for prolonged periods of time, and are offending during this period as suggested by previous research (Lussier et al., 2011), the criminal justice system will not intervene for the first time until a significant number of sex crimes have been perpetrated, and for some, when they have already completed their criminal career and have desisted (Lussier & Mathesius, 2012).   Further, with the advent of repressive policies targeting sex offenders, more specifically in the US, the unintended side effect could be an increase investment in detection and cost avoidance strategies by sex offenders making them even less likely to be caught or convicted (Langlais, 2008).   Given that the offenders included in the study committed their crimes two even three decades ago, it is unclear how the current criminal justice context has influenced offenders' investment in detection and cost avoidance strategies.   It is also unclear how current criminal justice policies might have influenced victims' willingness to come forward to report a sexual abuse to the police, especially in the context of incest.   While these results have been informative, much more work remains to be done to better understand sex crime initiation and cost avoidance in sex offenders.   First, it would be instructive to investigate the age graded life-circumstances and their impact on the onset of sexual offending.   Indeed, it is likely that factors related to onset are not constant across the offender's life, but rather change systematically as they develop and experience new life stages (e.g., marriage, parenthood).   Second, the role that deviant sexual fantasies play in the onset of sex offending should be investigated.   Specifically, do deviant sexual fantasies precede, co-occur, or follow the initial sex crime? Does the type of deviant sexual fantasy impact the type of sex crime? What factors predict, if any, the onset of deviant sexual fantasies? Third, while few studies have investigated cost avoidance in sex offending, even fewer have studied the impact of incarceration on

detection and cost avoidance.   Does incarceration make offenders more careful the next time they commit a sex crime? Do they learn from their mistakes? Or, perhaps with a previous incarceration the criminal justice system is quicker to identify them.   Forth, the impact of cost avoidance on persistence and desistence should be investigated.   It is possible that offenders who are able to avoid detection and conviction are more likely to persist and less likely to desist.   Such findings would have important implications for both theory and criminal career research.

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