Persistent or Temporary Offending? The Differential Contributions of Antisocial
Attitudes, Associates, and Personality to Adult Criminality

Tamara L. Jensen

In Partial Fulfillment of the Requirements of a Master's Degree in Psychology

Carleton University

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Research is presented from prospective studies of adolescents and concurrent/retrospective studies of adults with regard to age of onset of antisocial behaviour. Existing evidence suggests the differential criminogenic contributions of antisocial attitudes/associates and antisocial personality to late-onset and early-onset offending, respectively. In an attempt to address potential confounds in previous studies of adolescent samples, the objective of the present study was to examine the relative contributions of these constructs to differential patterns of offending among a sample of $N = 126$ adult male inmates drawn from a medium security federal institution. Psychopathic personality was more evident among early-onset offenders in adolescence and adulthood. Results also emphasize the criminogenic role of antisocial associates in criminal behaviour across the lifespan, regardless of age of onset. Methodological limitations of the retrospective design are addressed, and implications for future research and practice are described.

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Persistent or Temporary Offending? The Differential Contributions of Antisocial Attitudes, Associates and Personality to Adult Criminality

Antisocial behaviour is manifested in a variety of ways and to differing extents, not only between individuals but across a particular individual's life course. Whereas some individuals display remarkable stability in their antisocial behaviour, the vast majority of antisocial behaviour appears to be temporary or situational (Farrington, 1995; Stattin & Magnusson, 1991). Individual differences between persistent and situational offenders are found across the lifespan, with the latter form of temporary or situational antisocial behaviour being especially common during adolescence (Farrington, 1995; Moffitt, 1993a). A substantial increase in antisocial behaviour during this period of the life course, mirrored by a similar decrease in offending into adulthood, is referred to as the age-crime curve (Loeber, Stouthamer-Loeber, Van Kammen & Farrington, 1989; Wolfgang, Figlio & Sellin, 1972). Although there is widespread agreement about this normative pattern of offending over age, explanations for the existence of the curve have been various and conflicting. In recent attempts to explain the age-crime relationship, advances in developmental criminology and criminal psychology have brought forth several perspectives of note: Gottfredson and Hirschi's (1990) general theory of crime, Moffitt's (1993a, 1993b) developmental taxonomy of adolescence-limited and life-course persistent offenders, and Quinsey and colleagues' (Quinsey, Skilling, Lalumiere, & Craig, 2004) more recent taxonomy of juvenile and life-course persistent offenders. Whereas the first perspective (Gottfredson & Hirschi, 1990) emphasizes the role of low self-control in the persistence of criminal behaviour, Moffitt's (1993a) life-course perspective highlights the relevance of early neurocognitive and personality disadvantages, the importance of age of onset with regard to antisocial behaviour, and the

role of antisocial peers in the etiology of antisocial behaviour. Quinsey and colleagues (2004) propose that in addition to individuals who limit their offending behaviour to adolescence, there are two distinct types of individuals who persist in their offending behaviour across the life-course: those whose antisocial behaviour is the result of early neurocognitive difficulties and an aversive environment, and those whose antisocial behaviour represents an adaptive life-history strategy that was beneficial in ancestral environments. The purpose of the present study is to investigate the merits of these proposed taxonomies of differential offending behaviour across the lifespan, with specific regard to the respective contributions of antisocial attitudes and associates, and psychopathic personality.

A criminogenic need is a dynamic feature (e.g., employment, antisocial associates, antisocial attitudes) of an offender that, when changed, is associated with changes in the probability of criminal conduct (Andrews & Bonta, 2003). One of the most well evidenced findings among antisocial populations is the criminogenic relationship between antisocial peers and antisocial behaviour (Agnew, 1992; Warr, 1993). Support for this relationship is consistent across various fields, including child psychology (Patterson & Dishion, 1985; Vitaro, Brendgen & Tremblay, 2000), adult psychology (Gendreau, Little, & Goggin, 1996), and criminological research (Agnew, 1991). Moreover, the interaction between antisocial peers and antisocial attitudes has also been found to predict antisocial behaviour, and antisocial attitudes alone have a direct and significant relationship with antisocial behaviour (Mills & Kroner, 2004). The criminogenic effects of antisocial attitudes and associates have been well-documented, most notably among adolescent offender populations (e.g., McDermott & Nagin, 2001; Agnew, 1991; Warr & Stafford, 1991). However, recent meta-analyses confirm that

antisocial attitudes and associates are also among the best predictors of criminal behaviour among adult offenders (Gendreau, Goggin, & Law, 1997; Gendreau, Little, & Goggin, 1996). Taken together with recent emphasis on the differential roles of antisocial attitudes and associates in the etiology of offending trajectories (e.g., Moffitt, 1993a, Patterson, Capaldi, & Bank, 1991; Patterson & Yoerger, 1993; Patterson, DeBaryshe, & Ramsey, 1989; Simons, Wu, Conger, & Lorenz, 1994) the consistency of these findings mandates a consideration of the functions of these constructs with regard to the development of criminal behaviour.

Similarly, an increased understanding of the etiology, course and prognosis of psychopathy in offenders has been the focus of much recent research, and has clear relevance for an investigation of the offending taxonomies proposed by both Quinsey and colleagues (2004) and Moffitt (1993a, 1993b). As measured by the widely used Psychopathy Checklist-Revised (PCL-R; Hare, 1991), the psychopathic personality is consistently associated with antisocial behaviour, with psychopathic individuals comprising between 15 and 25 percent of prison populations (Hare, 1996). Psychopathic offenders are more likely to be arrested at an earlier age, to commit more offenses, to have poorer release outcomes, and to employ more threats and violence (Hare & McPherson, 1984; Kosson, Smith, & Newman, 1990; Wong, 1984). Thus, although psychopathic offenders comprise a smaller proportion of prison populations relative to nonpsychopathic offenders, a vast majority of antisocial behaviour can be attributed to these individuals. Further, the variety and severity of the crimes committed by psychopathic offenders warrants efforts to increase knowledge with respect to the etiology of psychopathy, early identification of psychopathic individuals, and effective methods of intervention for psychopathic offenders.

Taken together, the purpose of the present study is to explore recently proposed perspectives and taxonomies as they apply to adult offenders. Specifically, adult offenders will be categorized as either “early-onset” or “late-onset” offenders according to when they began exhibiting antisocial behaviour. The same offenders will be assessed on measures of psychopathy, current antisocial attitudes and antisocial behaviour. Retrospective data will also be obtained as to offenders’ childhood and adolescent antisocial associates and antisocial behaviour. The aim of the current study is to contribute to an understanding of the etiology of antisocial behaviour and the respective contributions of psychopathic personality, antisocial attitudes and antisocial associates with regard to age of onset of antisocial behaviour. This research will have practical relevance for the differential treatment of offenders according to when they first began exhibiting antisocial behaviour and the degree to which psychopathic personality, and antisocial attitudes and associates, are likely to contribute to their offending behaviour.

A life-course perspective

In their general theory of crime, Gottfredson and Hirschi (1990) have described the age-crime curve as invariant and as having no apparent sociological foundation. This assertion has since led to debate over the variability or invariability of the curve and to explorations of possible causes for the age-crime relationship. The general theory of crime proposes that individuals with low self-control tend to ignore the long-term consequences of their actions, including repercussions of criminal acts (Gottfredson & Hirschi, 1983). Indeed, research suggests that people with low self-control have a greater propensity to commit criminal acts, and that criminal acts appeal to those with low self-control because they provide immediate and easy gratification of personal desires (Andrews & Bonta, 2003; Paternoster & Brame, 1998; Vazsonyi, Pickering, Junger, &

Hessing, 2001). As summarized by Andrews and Bonta (2003), people with low self-control tend to be impulsive, short-sighted, risk taking, physical or non-verbal as opposed to mental, non-committed, unskilled, and insensitive. As such, some support exists for the role of low self-control in the etiology of antisocial behaviour.

In a study by Vazsonyi and colleagues (Vazsonyi et al., 2001), low self-control explained between 10 and 16 percent of the variance in predicting different types of deviance. However, when total deviance was considered, self-control explained only 20 percent of the variance, implying that criminogenic factors must be considered in addition to low self-control. In contrast to dynamic criminogenic needs, self-control can be considered a relatively stable personality trait. Hirschi and Gottfredson (1994) propose that self-control should be conceptualized as a “latent trait”, or a stable individual difference that is associated with deviant conduct. As such, its presence and contribution to criminal behaviour are conceivably unaffected by dynamic life events such as commitments to work, marriage, family, and friends. Consequently, a control theory of crime predicts that a particular individual’s criminal propensity for deviance, and the crime rate in general, should decline with age regardless of whether such life events have occurred. Thus, in the general theory of crime (Gottfredson & Hirschi, 1990), a natural decline in criminal behaviour is attributed to maturation and to the development of self-control with age.

Whereas the general theory of crime (Gottfredson and Hirschi, 1983; 1990) identifies the personality characteristic of low self-control as the key variable in the onset and persistence of offending behaviour, a more recent life-course theory proposed by Moffitt (1993a) has attempted to explain the age-crime curve by a combination of genetic/neurological and social learning theories situated within a maturational model.

Moffitt's (1993a) developmental taxonomy proposes two types of offenders: the adolescence-limited (AL) offender, who confines his or her offending behaviour to the adolescent years and who is likely to engage in antisocial or offending behaviour when doing so is likely to be profitable for the individual, and the life-course persistent (LCP) offender, who begins displaying antisocial behaviour at a very early age and whose disposition for such behaviour infiltrates multiple life domains. Whereas AL offenders are able to desist from offending when alternative prosocial behaviours are more rewarding, the prognosis for LCP offenders is bleak.

In their attempt to reconcile approaches that assert (a) that antisocial behaviours had adaptive benefits in ancestral environments, (b) that antisocial behaviour during youth is heritable, and (c) that delinquency is caused by the interaction of neurological pathology and deficient social environments, Quinsey and colleagues (2004) have proposed a taxonomy consisting of three groups of antisocial individuals. In partial agreement with those proposed by Moffitt (1993a), Quinsey and colleagues posit that the peak in the age crime curve can be attributed to not two, but three, groups of delinquent individuals: (a) those who initiate antisocial behaviour in adolescence and who desist by early adulthood (a group consistent with Moffitt's AL offenders); (b) those whose antisocial behaviours are associated with neuropathology resulting from prenatal, perinatal, and/or early postnatal difficulties, perhaps in combination with family and social adversity (consistent with Moffitt's proposed LCP offenders); and (c) those who show no neurodevelopmental pathology, comprising a discrete taxon that is different in kind from other antisocial individuals, including the former group of LCP individuals. In order to reconcile differences in terminology across the proposed typologies and taxa in the literature, those individuals identified in the present study as having begun exhibiting

antisocial behaviour during adolescence will be referred to as “late-onset offenders”, whereas those who began behaving antisocially in early childhood and who have persisted in their antisocial behaviour into adolescence and throughout adulthood will be referred to as “early-onset offenders”. This classification is consistent with typologies proposed by Patterson and colleagues (Patterson et al., 1991; Patterson & Yoerger, 1993; Patterson et al., 1989), Simons and colleagues (1994), and Quinsey and colleagues (2004), and is conceptually consistent with the AL and LCP typologies proposed by Moffitt (1993a).

Late-onset offenders. Fortunately, the most common course of antisocial behaviour is that of discontinuity or desistence. Approximately one-third of males are arrested in their lifetime for a serious criminal offense, whereas fully four-fifths of males have some sort of police contact for a minor infringement (Farrington, Ohlin, & Wilson, 1986). The vast majority of these contacts occur during the adolescent years, discontinuing as the individual enters adulthood. This phenomenon helps to explain the adolescent peak in the age-crime curve, reflecting a temporary increase in the number of people involved in criminal behaviour, not a temporary acceleration in the offense rates of individuals (Farrington, 1983). Those who are late starters with regard to their antisociality are typified by this lack of continuity in their antisocial behaviour. Sporadic, crime-free periods in the midst of these offenders’ criminal activity are not uncommon; these offenders also lack consistency in their antisocial behaviour across situations, which is reflected in the increased likelihood of disagreement among different reporters (e.g., self, parent, and teacher) when asked to complete rating scales or clinical interviews regarding antisocial behaviour (Loeber, Green, Lahey, & Stouthamer-Loeber, 1990; Loeber & Schmalting, 1985). For example, an adolescent-limited offender may

participate in antisocial activities such as shoplifting with his peers outside of school, but may exhibit entirely prosocial behaviour in the classroom.

Moffitt (1993b) proposes that there is no biological basis for this “adolescence-limited” antisocial behaviour. Rather, the origin of this behaviour is said to lie in a youths’ best efforts to cope with the widening gap between physical and social maturity. This gap in maturity is said to be the consequence of modern trends toward earlier achievement of physical and sexual maturity (e.g., Wyshak & Frisch, 1982), and later assumption of adult responsibilities such as financial independence and marriage. Evidence for a lack of biological etiology comes from behavioural genetic studies that show childhood aggression and adult crime are heritable, whereas the same is much less true for juvenile delinquency (Edelbrock, Rende, Plomin, & Thompson, 1995). Quinsey and colleagues (2004) note that although Moffitt uses the term biological in this context, she likely means genetically caused, for in an ultimate sense, biology likely plays some role in adolescent-onset antisocial behaviour.

From an evolutionary perspective, variations in delinquency across the lifespan can be explained as manifestations of inter-male competition that is ultimately rooted in reproductive rivalry (e.g., Ellis & Walsh, 2000; Kanazawa & Still, 2000). Indeed, adolescence is a time when males compete for access to valued resources and status – what Wilson and Daly (1985, 1993) refer to as the “young male syndrome” of risk taking and violence. Quinsey and colleagues (2004) propose that the proximal cause of adolescent antisocial behaviour is hormonal, and they note that the age-crime curve can be mapped almost perfectly on to a testosterone output curve. An evolutionary perspective offers that delinquent behaviour among late starters may reflect either a display of competitive abilities or increased risk taking as the result of losses and gains of

competition (Quinsey et al., 2004). Lalumiere and Quinsey (2000) propose that delinquent behaviour may act to signal qualities that are hard to fake; fighting, committing robberies, and breaking rules can be seen as displays of qualities such as physical strength, bravery, and willingness to take risks. These and other types of delinquent behaviour may be “honest displays of good genes” (Quinsey et al., 2004, p. 97); indeed, dominant males and gang leaders appear to reap many reproductively relevant benefits, including access to mates (e.g., Mazur, Halpern, & Udry, 1994; Palmer & Tilley, 1995).

Consistent with the view that adolescent delinquency offers access to valued resources and status, Moffitt (1993a) proposes that adolescent-onset antisocial behaviour is learned from antisocial models who are easily mimicked, and that this behaviour is sustained by means of reinforcement principles of learning theory. As such, delinquency is a form of “social mimicry” of the antisocial behaviour of early-onset youths, in that the antisocial precocity of persistently antisocial youths is an asset coveted by these late starters (Moffitt, 1993a). Importantly, although late starters regard early starters as models for antisocial behaviour and early starters regard themselves as magnets for other youths, neither of these separate perceptions requires reciprocal liking between individuals (Moffitt, 1993a). For example, in a study by Agnew (1991), time spent with delinquent peers was found to be a stronger unique predictor of self-reported delinquency than the interaction between peer attachment and peer crime. A contemporaneous study by Warr and Stafford (1991) employed data from the National Youth Survey regarding participants’ responses to specific questions about both the attitudes and behaviours of peers. Survey responses from a national probability sample indicated that a youth’s knowledge of their friends’ delinquent behaviour was 2.5 to 5 times more important for

self-reported delinquency than were friends' attitudes. Moreover, the effect of peer delinquency was direct, and was not mediated by influencing the respondents' attitudes to be more like those of their deviant peers (Warr & Stafford, 1991). The authors interpreted their findings such that peer effects are best viewed in terms of imitation or vicarious reinforcement, consistent with a social mimicry hypothesis. Further, delinquent groups have frequent membership turnover and the interactions between group members are characterized by reciprocal antisocial behaviour (Cairns, Cairns, Neckerman, Gest, & Gariépy, 1988).

An important question arising from this conceptualization of late starting offenders asks why every teenager does not become delinquent. Life-course theorists account for this by suggesting that adolescents who commit no antisocial behaviour at all have some combination of (a) delayed puberty, (b) access to roles that are respected by adults, (c) environments that limit opportunities for learning delinquency, (d) personal characteristics that exclude them from antisocial peer networks, or (e) all four (Moffitt, 1993a). Whereas an adolescent who exhibits no deviant behaviour at all is a statistical rarity, the vast majority of adolescents who display antisocial behaviour will desist from their deviance.

According to life-course theorists, this desistence is a result of late-onset offenders being responsive to changing reinforcement contingencies. With the progression of age, more acceptable, legitimate and tangible adult roles are made available to teenagers. With legitimate access to the adult privileges these delinquents coveted as teens, the consequences of antisocial behaviour become threatening or punishing as opposed to rewarding. In other words, late-onset offenders have something to lose by persisting in their antisocial behaviour beyond the teen years. Consistent with

this perspective, an evolutionary theory offers that desistance from antisocial behaviour is expected to occur most frequently as the result of a shift from mating effort to commitment to a marital partner and parental investment (Kanazawa & Still, 2000), and an associated decrease in testosterone. Importantly, this shift in investment involves a reduction in interactions and competition with peers (Quinsey, 2004).

In addition, whereas early-onset offenders are subject to the forces of contemporary and cumulative continuity discussed below, late-onset offenders are relatively exempt from these effects. Without a lifelong history of deviance, the effects of repeated antisocial behaviour have had less time to accumulate and lead to widespread deviance in the late-onset offender's life. Additionally, antisocial personality disorder and cognitive deficits play little to no role in the delinquency of late-onset offenders (Moffitt et al., 1993b). Indeed, recent empirical evidence supports the position that adolescents who desist from antisocial behaviour in adulthood are physiologically different from persistently antisocial delinquents. Raine, Venables, and Williams (1995, 1996) found that adolescents who desisted from crime in adulthood had higher electrodermal and cardiovascular arousal and higher electrodermal orienting than a group who committed crime in adulthood. Consequently, a less detrimental developmental history and the more positive personality traits of late-onset offenders are thought to allow these individuals the opportunity to explore various prosocial pathways in life (Moffitt, 1993a). As such, deviant behaviour for the late-onset offender is temporary and instrumental in that it provides the offender with a "mature status" and its accompanying privileges. When the adolescent reaches an age at which society confers mature status (generally taken to be 25 years of age; Cote & Allahaar, 1994), this antisocial behaviour will no longer be functional and thus will be abandoned.

Early-onset offenders. In contrast to the temporary nature of late-onset offending discussed above, early-onset offenders exhibit antisocial behaviours across the lifespan, thought to reflect an underlying deviant disposition regardless of the individual's developmental stage (Moffitt, 1993a). An individual's disposition or temperament describes his or her usual way of responding to environmental stimuli, forming the biological basis for certain personality traits that remain relatively stable throughout life (Halverson, Kohnstamm, & Martin, 1994; Rothbart & Ahadi, 1994). Research on childhood antisocial behaviour and conduct disorder has documented a steep incline in antisocial behaviour between ages 7 and 17 years, mirroring the steep decline often described in discussions of the age-crime curve (Loeber, Stouthamer-Loeber, Van Kammen, & Farrington, 1989; Wolfgang, Figlio, & Sellin, 1972). Combined with support from developmental psychology studies of childhood aggression (Pepler & Rubin, 1991) and research on conduct disorder (e.g., Kazdin, 1987), criminal psychologists' studies of self-reported delinquency and official crime suggest that manifestations of antisocial behaviour begin very early in the life course and remain present thereafter (Moffitt, 1993a). This continuity across the lifespan is mirrored by a cross-situational consistency: early-onset offenders are likely to lie at home, steal from stores, cheat at school, fight in bars, and embezzle at work (Farrington, 1991; Loeber, 1982; Loeber & Baicker-McKee, 1989; Robins, 1966, 1978; White, Moffitt, Earls, Robins, & Silva, 1990).

Moffitt (1993a, 1993b) proposes that the etiological roots of antisocial behaviour in early-onset offenders lie in factors such as disruption in the ontogenesis of the fetal brain, inherited differences in neuropsychological functioning, and neo- or postnatal disruption of neural development caused by deprivation of nutrition or stimulation, or by

exposure to teratogens or physical trauma (Moffitt, 1993a). In several studies, Moffitt and colleagues have found evidence that neuropsychological deficits are linked to childhood onset antisocial behaviour and the persistence of such behaviour over lengthy periods of time (e.g., Moffitt, 1990; Moffitt & Henry, 1989; Moffitt & Silva, 1988). According to Moffitt and colleagues, continuity in antisocial behaviour among these children results from a child-environment interaction, in that children with cognitive and temperamental disadvantages generally are not born into supportive environments (e.g., poverty, inconsistent or erratic discipline). Further, because characteristics of parents and their offspring tend to be correlated, the parents of children born at risk for antisocial behaviour often inadvertently provide their children with criminogenic environments (Sameroff & Chandler, 1975).

From this early disadvantage, the pairing of a vulnerable or difficult infant with an adverse environment sets the stage for a persistent pattern of antisocial behaviour. A transactional process of negative parent-child encounters follows, and parents are tasked with dealing with a difficult child. It has been found that a young child's problem behaviours can affect his or her parents' disciplinary actions as well as subsequent actions with adults and peers (Bell & Chapman, 1986; Chess & Thomas, 1987). In other words, "the child acts; the environment reacts, and the child reacts back in a mutually interlocking evocative interaction" (Caspi, Elder, & Bem, 1987, p. 308).

From the life-course perspective, early individual differences in temperament and cognitive abilities may initiate a snowballing effect of cumulative continuities in behaviour, while individual differences themselves may continue from childhood to adulthood, influencing behaviour across the lifespan in a proximal manner (Moffitt, 1993a). This continuity is likely to occur when the individual carries with him or her the

underlying problematic traits from childhood into adulthood, such as high activity level, irritability, poor self-control, and low cognitive ability (Moffitt, 1993a).

According to Moffitt (1993a), two sources of continuity of antisocial behaviour deserve emphasis. The first source is the failure to learn conventional prosocial alternatives to antisocial behaviour. The causal sequence of this restricted behavioural repertoire is said to begin early in life and to exist through each subsequent stage of development. Research supports that children with poor self-control and aggressive behaviour are often rejected by peers and adults (Coie, Belding, & Underwood, 1988; Dodge, Coie, & Brakke, 1982; Vitaro, Gagnon, & Tremblay, 1990). In turn, children who have learned to expect rejection are likely in later settings to withdraw or strike out preemptively, precluding opportunities to affiliate with prosocial peers (Dodge & Newman, 1981; Dodge & Frame, 1982; LaFrenier & Sroufe, 1985; Nasby, Hayden, & DePaulo, 1980).

The second source of continuity proposed by Moffitt (1993a) involves being ensnared by the consequences of antisocial behaviour. Characteristics that typify the early-onset offender, such as poor self-control, impulsivity, and the inability to delay gratification increase the risk that antisocial youth will make irreversible decisions that close the doors of opportunity for prosocial behaviour. These snares are thought to diminish the probability of future success by eliminating opportunities for breaking the chain of cumulative continuity (Cairns & Cairns, 1991; Wilson & Herrnstein, 1985).

The life-course perspective emphasizes the constant process of reciprocal interaction between personality characteristics and environmental reactions to them. The original underlying disposition is elaborated on during development, becoming a syndrome that remains conceptually consistent but is reflected by new behavioural

components (Caspi & Bem, 1990). For the early-onset individual, the likelihood of change is greatly diminished as this antisocial disposition infiltrates multiple domains of his or her life.

Several researchers (e.g., Moffitt, 1993a, Moore & Rose, 1995; Raine, 1993, Robins, 1966) have concluded that early-onset antisocial behaviour reflects pathology. An early-onset pattern of offending is characterized by its statistical rarity (approximately 5% in males; Robins, 1985) and by its stability across time and in diverse situations. This pattern of behaviour is maladaptive in that antisocial behaviour is a high-probability response even in situations where it is clearly inappropriate or disadvantageous for these individuals (i.e., it fails to change in response to changing circumstances; Tremblay, 1991). In addition, this persistent pattern of offending displays comorbidity with psychological problems such as mania, depression, and anxiety (e.g., Cloninger, Bayon, & Prybeck, 1997; Fergusson & Woodward, 2000; McGlashan et al., 2000).

As such, research suggests that some early-onset, persistent antisocial behaviour is the result of some sort of neuropsychological or brain disorder due to any variety of prenatal, perinatal, and/or postnatal difficulties (Moffitt, 1993b). Neurodevelopmental pathology is thought to contribute directly to antisocial behaviour by interfering with learning prosocial skills and emotional regulation (Moffitt, 1993b); indirectly, neurodevelopmental pathologies are thought to put an individual at a disadvantage in inter-male status competition (Quinsey et al., 2004). In addition to this accumulation of evidence for an association between neurodevelopmental pathology and early-onset persistent antisocial behaviour, Quinsey and colleagues (2004) present evidence for the existence of a discrete group of early-onset persistent offenders whose antisocial behaviours are thought to reflect a genetically caused adaptive life history strategy, rather

than a pathological condition. The authors define a life-history strategy as a “genetically organized pattern for allocation of time, energy, and other resources to survival, growth, and reproduction during different periods of an organism’s life” (Quinsey et al., 2004, p. 101). Using taxometric analyses, which provide an empirical method for determining whether discrete taxa underlie continuously distributed trait scores, two studies (Harris, Rice, & Quinsey, 1994; Skilling, Harris, Rice, & Quinsey, 2002) have provided evidence that some men who exhibit life-long antisociality comprise a discrete taxon, differing from other persistent offenders in kind, not just in degree. These studies of adult male offenders demonstrated that a single natural class underlies scores on a measure of psychopathy (PCL-R; Hare, 1991) and a measure of antisocial personality disorder (criteria for Antisocial Personality Disorder in the Diagnostic and Statistical Manual-IV; American Psychiatric Association, 1994). Subsequent analyses suggested that the optimal classification of taxon membership can be achieved by a combination of items from these adult antisociality measures and from indications of aggressive and antisocial behaviour evident in childhood, including impulsivity, callousness, irresponsibility, lack of remorse, conning and manipulative, early behaviour problems, violent adult behaviour, lying, parasitic lifestyle, sexual promiscuity, elementary school maladjustment, criminal history, separation from parents before age 16, and running away from home. Quinsey and colleagues (2004) note that none of these taxon indicators are reflective of neuropathology, with the possible exception of impulsivity.

Further, if persistent antisociality is indeed a discrete class that begins early in life, this taxon should be demonstrable among children. Using a community sample of 1,111 boys approximately 12 years of age, Skilling, Quinsey, and Craig (2001) applied taxometric analyses to several measures of antisocial behaviour. These measures were

similar in content to the DSM-IV criteria for Conduct Disorder (APA, 1994), the Psychopathy Checklist – Youth Version (PCL-YV; Forth, Hart, & Hare, 1990), and the Child and Adolescent Taxon Scale (CATS; Quinsey, Harris, Rice, & Cormier, 1998). A discrete class of boys (9% of the total sample) who were already engaging in serious antisocial behaviour was identified in childhood as consisting of taxon members. Indicators of this taxon include criminal versatility, stealing with or without confronting a victim, need for stimulation, frequent lying, bullying or threatening, suspension from school, destruction of others' property, physical cruelty to people, conning and manipulative, poor behavioural controls, and irresponsibility (Quinsey et al., 2004). As in adult studies, only one item (poor behavioural controls) arguably reflects neuropathology. These findings from both adult and childhood studies support the view that there is a discrete group of persistent offenders who are qualitatively different from other persistent offenders. As such, it is conceivable that the developmental pathway leading to persistent offending behaviour may be different for these offenders (Quinsey et al., 2004).

From this taxometric evidence, Quinsey and colleagues (2004) posit a nonpathological, adaptive interpretation of the development of persistent antisociality among these taxon members. From an evolutionary perspective, adaptations are characteristics shared by a group of organisms that arose because of their natural or sexual selection benefits in ancestral environments. According to Quinsey and colleagues (2004), the antisociality of taxon members can be seen as an adaptive life-history strategy because there are characteristics associated with this group of individuals that could conceivably contribute to an individual's fitness and/or survival under a wide variety of conditions. Antisocial traits such as relative fearlessness and risk taking, while

potentially problematic within kinship groups, could provide important advantages in competition between groups (Quinsey et al., 2004). Short-term mating tactics, selfishness, unreciprocating and deceitful social strategies, and an aggressive and risky approach to achieving social dominance are hypothesized elements of this adaptive life-history strategy. In a study of maximum security forensic psychiatry patients in England (Morrison & Gilbert, 2001), self-report methods revealed that primary psychopaths (defined as highly antisocial individuals who are lacking in social anxiety, low self-esteem, social withdrawal, and moodiness) viewed themselves as socially dominant and that this perception of dominance was strongly and positively related to a tendency to respond aggressively to interpersonal provocation. This group of primary psychopaths is considered to be a part of the discrete taxon of persistently antisocial offenders described by Quinsey and colleagues (2004).

The statistical rarity of these individuals (Hare, 1993) is consistent with an evolutionary perspective; it is likely that the majority of ancestral humans were cooperative and mutually supportive, but that a niche existed for an alternative cheating strategy in which one could take advantage of others. If many people were cheaters, this strategy would lose effectiveness because of the difficulty in finding cooperators to exploit, and the increased vigilance that would likely be employed by cooperators (Quinsey et al., 2004). This type of frequency-dependent selection suggests that if this form of life-course persistent antisociality reflects a stable polymorphism (the existence of multiple genotypes), these individuals would be part of a genetically discrete class (Quinsey et al., 2004). Thus, this view of early-onset persistent antisociality as an adaptive life-history strategy is consistent with the fact that these individuals display traits quite different from other individuals, and these traits are evident in childhood.

In contrast to the typology of early-onset persistent offenders described by Moffitt (1993a), there is some support for the hypothesis that taxon members show few (if any) signs of neurodevelopmental problems. For instance, adults with psychopathic disorders show fewer signs of neurodevelopmental instability than other violent offenders. Coid (1993) found that indicators or correlates of neuropsychological abnormality, such as perinatal trauma, developmental delay, and a history of seizures, did not correlate with a DSM diagnosis of antisocial personality disorder, but did correlate with schizoid and schizotypal personalities. In addition, Schulsinger (1972) found that psychopaths (described as men with a consistent pattern of “impulse-ridden or acting-out behavior” without psychosis or neurosis) did not differ from matched controls (with no mental disorder) on a composite measure of obstetrical complications. Consistent with this finding, Lalumiere, Harris, and Rice (2001) reported that psychopathic violent offenders scored lower on a measure of obstetrical complications than nonpsychopathic offenders.

Studies using fluctuating asymmetry (FA) have also provided support for the lack of neurodevelopmental difficulties found among taxon members. Fluctuating asymmetry refers to an individual’s random deviations from perfect bilateral anatomical symmetry, thought to be increased by genetic stress (Manning, Koukourakis, & Brodie, 1998). Absolute FA is generally calculated as the difference in length between the left and right side of a trait (e.g. digit length). Fluctuating asymmetry is a way to assess whether an organism has experienced instability in its development, and reflects “the imprecise expression of underlying developmental design due to developmental perturbations” (Gangestad & Thornhill, 1997, p. 72). High FA has been linked with higher resting metabolic rates (Manning et al., 1998), schizophrenia (Mellor, 1992), birth prematurity (Livshits & Kobylansky, 1991), mental retardation and developmental delay (Naugler &

Ludman, 1996). Lalumiere and colleagues (2001) found that psychopathic offenders were lower in FA than other violent criminal offenders; indeed, FA levels of adult psychopaths were similar to healthy, noncriminal psychopaths.

If neurocognitive difficulties and their subsequent disadvantages are not etiologically relevant to the development of antisocial behaviour among taxon members, it is conceivable that the development of taxon members would be different and affected by different factors than the development of other persistently antisocial individuals. For example, the quality of parenting seems to increase the vulnerability of those early-onset persistently antisocial individuals described by Moffitt (1993a, 1993b) as neurologically impaired, whereas taxon members might not be influenced by this environmental factor. Wooton, Frick, Shelton, and Silverthorn (1997) found that children aged 6 to 13 years who were classified as callous and unemotional (factors linked to psychopathy by Frick, O'Brien, Wooton, & McBurnett, 1994) differed from other children with regard to the impact of ineffective parenting on their conduct problems. Specifically, the number of conduct problems was not linked to the effectiveness of parenting among callous/unemotional children, whereas it was negatively linked among other children.

Whether the result of early neurodevelopmental pathologies or a reflection of an adaptive life history strategy, the prognosis for early-onset offenders is bleak, with high rates of problematic behaviours such as drug and alcohol addiction, unsatisfactory employment, unpaid debts, homelessness, drunk driving, violent assault, multiple and unstable relationships, spousal assault, neglected or abused children, and psychiatric illness (Sampson & Laub, 1990). Although epidemiological research suggests that regardless of age, less than 10 percent of males warrant an "official" antisocial designation (Moffitt, 1993a), the extensive personal, interpersonal, and societal damage

that results from persistent offending reaffirms the necessity of early identification and effective intervention for these individuals.

In studies of life-course theories of crime, researchers often examine factors that may be related to the stability and change of offending over the lifespan, the defining characteristics of early-onset persistently antisocial offenders, and the capacity to alter the expression of deviant behaviour through positive life experiences and the natural process of aging and maturation. Reanalyzing the seminal data of Glueck and Glueck (1950), Sampson and Laub (1990) hypothesized that childhood antisocial behaviour would predict problems in adult development and that the adult social bonds of work and family would contribute to changes in antisocial behaviour over the lifespan. The authors defined childhood antisocial behaviour according to (a) official delinquency status as per the Glueck and Glueck (1950) study, (b) a scale of self-parent, and teacher reports of delinquency, and (c) temper tantrums as habitual responses to difficult childhood situations, as defined in the Glueck and Glueck study (Sampson & Laub, 1990). In their reexamination of the data for 500 delinquent and 500 non-delinquent males from childhood to age 32, the authors found that childhood behaviour predicts adolescent and adult criminality. Conversely, positive life experiences such as finding a suitable mate and job satisfaction can have the effect of inhibiting criminal behaviour in adulthood (Sampson & Laub, 1990). A later study found that desistance from crime was facilitated by the development of quality marital bonds and that this influence is gradual and cumulative over time (Laub, Nagin, & Sampson, 1998). These studies suggest that an individual's criminal propensity can change over the life course, and that the factors responsible for the persistence or desistance in criminal behaviour are identifiable.

In comparison with the general theory of crime, the life-course perspective has been interpreted as downplaying the relationship between age and crime by focusing on the role of life events in an individual's criminal propensity. In other words, the life-course perspective examines the formative period of childhood while recognizing that individuals can change through their interaction with key social events as they age (Sampson & Laub, 1992). In a comparison of the general theory and life-course theory of crime, Bartusch and colleagues (Bartusch, Lynam, Moffitt, & Silva, 1997) employed data from 536 males aged 5 to 18 years in the Dunedin Multidisciplinary Health and Development Study. The authors examined the contribution of a two-factor life-course theory (childhood antisocial behaviour and adolescent delinquent behaviour) versus a one-factor model of self-control. Evidence from this study supports the two-factor life-course theory, suggesting that criminal propensity is predicted by such factors as low verbal ability, hyperactivity, and a negative/impulsive personality style (Bartusch et al., 1997). In adolescence, the best predictor of antisocial behaviour was association with delinquent peers (Bartusch et al., 1997). Although this study was not longitudinal in design, these findings are congruent with predictions made by Moffitt (1993a) according to a developmental taxonomy of early-onset and late-onset offenders.

Further support for the life-course perspective comes from McDermott and Nagin's (2001) study of 835 males drawn from the National Youth Survey, ranging in age from 11 to 24 years. The authors distinguished three offender groups based on their offending trajectory (no offending, adolescent-only offending, and constant offending) according to several key time-varying factors: measures of self-control, negative parent labels, delinquent peers, and family structure. The strongest predictors of criminal behaviour were negative parent labels and association with delinquent peers, whereas the

weakest predictors were measures of self-control (as indicated by measures of moral beliefs and attachment to convention) and family structure (indicated by time spent with family and a two-parent family). Taken with the evidence presented by Bartusch and colleagues (1997), support exists for a life-course theory of crime over a general control theory, with specific support for risk factors such as antisocial attitudes and interaction with antisocial peers during adolescence, as well as the role of an antisocial disposition early in life.

Antisocial attitudes and associates

Attitudes can be defined as an individual's relatively enduring thoughts and feelings about particular people, objects, or events (Simourd, 1997). The theory of reasoned action proposed by Ajzen and Fishbein (1980) assumes that people are rational, information-processing individuals who usually consider the consequences of their actions before choosing whether or not to engage in a given behaviour. The behavioural intention, or the individual's relatively subjective probability of engaging in a specific behaviour, is thought to be the most proximal antecedent to that behaviour (Ajzen & Fishbein, 1980). The construct of attitudes has received much empirical attention and has played an integral role in correctional theory, research, and practice. In general, antisocial or criminal attitudes are broadly defined as attitudes, values, beliefs, or rationalizations supportive of criminal conduct (Simourd, 1997). In the context of the theory of reasoned action, criminal attitudes can be functionally represented as the "attitude toward the behaviour" and the "subjective norm" components of the model that are the immediate antecedents to an individual's behavioural intention (Simourd, 1997). In short then, criminal attitudes represent a combination of an individual's favourable or

unfavourable assessment of performing a specific antisocial act, and his or her perception of the relative social pressures to perform or not perform the act.

Early studies with adult offenders identified the contribution of antisocial attitudes to the etiology of criminal behaviour. In these studies, prisoners reported attitudes of self-justification, loyalty, belief in luck, the tendency to exaggerate society's faults, negative views of legal institutions and authority, and positive views of antisocial others (Gendreau, Grant, Leipziger, & Collins, 1979; Mylonas & Reckless, 1963). More recent meta-analytic reviews also confirm the importance of antisocial attitudes, locating them among the top four predictors of adult criminal behaviour (Gendreau, Little, & Goggin, 1996). The role of antisocial attitudes has been examined from a variety of theoretical perspectives. According to Differential Association (DA) theory (Sutherland, Cressey, & Luckenbill, 1992), criminal behaviour is learned through association within social groups and is transmitted through the development of attitudes that are favourable toward antisocial behaviour.

In addition to the construct of antisocial attitudes, the criminogenic role of antisocial associates has received increased empirical attention within most theories of criminal behaviour. Control theorists such as Gottfredson and Hirschi (1990) attribute association with antisocial peers to low social control, and strain theorists such as Agnew and White (1992) assert that a delinquent peer group is one societal structure that contributes to interpersonal strain (i.e., feelings of deprivation of access to normative social groups) and in turn, this strain contributes to antisocial and criminal behaviour, or opposition to the dominant social culture. Learning theorists assert that the influence of antisocial peers results from the modeling of antisocial behaviour and the reinforcement of antisocial attitudes among a peer group (Andrews & Bonta, 2003). As mentioned

above, the central tenet of DA theory is that antisocial behaviour is caused primarily by means of favourable definitions of crime that result from associations with delinquent others (Sutherland & Cressey, 1978). In a study by Warr and Stafford (1991) the authors tested DA theory by examining whether attitudes act as the mechanism of transfer for delinquent behaviour. Results suggest that peer behaviour has a greater magnitude of effect compared to peers' attitudes in the prediction of delinquent behaviour (Warr & Stafford, 1991). Further, when peer behaviour/peer attitude congruence was investigated, it was peer behaviour that consistently contributed to the prediction of delinquency. In other words, it appears that is it what peers do, and not what they think, that influences delinquent behaviour.

As can be seen from the studies reviewed thus far, the majority of research investigating antisocial associates involves adolescent samples. However, the role of antisocial associates has also been confirmed among adult offender populations. In a seminal meta-analytical study of the predictors of adult recidivism, Gendreau and colleagues (Gendreau, Little, & Goggin, 1996) found that when effect sizes were weighted to account for the component studies' sample sizes, the construct of antisocial associates had the greatest effect size. A follow-up study that specifically investigated associates (Goggin, Gendreau, & Gray, 1998) found that apart from looking at family influences or a general risk scheme, few studies of adult offenders have examined the contribution of antisocial associates in the prediction of adult criminal behaviour. In one of the few studies examining antisocial associates among adult offenders, Alarid and colleagues (Alarid, Burton, & Cullen, 2002) compared DA and social control theories. In their sample of young adult offenders with an average age of 20 years, the single variable of criminal friends consistently produced the greatest standardized beta coefficient.

With regard to psychopathic offenders, Simourd and Hoge (2000) found that in a sample of adult male violent offenders, psychopathic offenders showed greater mean scores than nonpsychopaths on total Level of Service Inventory-Revised (LSI-R; Andrews & Bonta, 1995) scores, as well as on the Companions and Attitude/Orientation subcomponents of the LSI-R. Psychopathic offenders in this sample also showed higher mean scores on the Pride in Delinquency scale (PID; Shields & Simourd, 1991b) and lowering the cutoff to 25 points on the PCL-R yielded an association with higher mean scores on the Law, Courts, and Police and Identification with Criminal Others subscales of the Criminal Sentiments Scale-Modified (CSS-M; Simourd, 1997). However, in their study of violent and sex offenders, Mills and Kroner (1997) found no relationship between CSS scores and recidivism or release failure. Additionally, results suggest that sex offenders who were previously incarcerated were more likely to have a history of diverse criminal and antisocial behaviour, which may reflect more deeply entrenched criminal attitudes (Mills & Kroner, 1997). As such, research on the criminogenic needs of psychopathic offenders is conflicting and inconsistent, warranting continued investigation into the relative contributions of antisocial attitudes and associates in the etiology of antisocial behaviour by this subset of offenders.

Whether measuring antisocial attitudes and associates in violent or nonviolent offender populations, many researchers have neglected to differentiate samples according to age of onset of antisocial behaviour. However, studies by Jeglum-Bartusch and colleagues (Jeglum-Bartusch, Lynam, Moffitt, & Silva, 1997) and Moffitt and Caspi (2001) suggest that late-onset offenders are differentially associated with delinquent peers and a tendency to endorse unconventional values. Similarly, in their investigation of a late- versus early-starter model of antisocial behaviour proposed by Patterson and

colleagues (Patterson et al., 1991; Patterson & Yoerger, 1993; Patterson et al., 1989; Patterson, Reid, & Dishion, 1992), Simons and colleagues (1994) found that for late starters only, quality of parenting predicted affiliation with deviant peers, which in turn was associated with criminal justice involvement. As such, antisocial peer influence is thought to be of relatively greater etiological importance for late-onset offenders compared to early-onset offenders.

Psychopathy

Psychopathic personality disorder is a pattern of interpersonal, affective, and behavioural symptoms (Hare, 1996; Hart, Hare, & Harpur, 1991). Interpersonal descriptors of the psychopathic offender include grandiose, egocentric, manipulative, dominant, forceful, and cold-hearted. Affectively, the psychopathic offender has shallow and labile emotions, an inability to form enduring bonds, a profound lack of empathy, and an absence of anxiety, guilt or remorse. Behaviourally, these individuals are impulsive, sensation-seeking, antisocial and often criminal, and fail to meet social obligations and responsibilities. Within correctional populations, psychopathic offenders are more likely than non-psychopaths to be arrested at an early age, commit more offenses, employ more aliases, spend more time in prison, have poorer release outcomes, and commit more institutional offenses with greater use of threats and violence (Wong, 1984). In general, psychopathic offenders are more violent and aggressive than are non-psychopaths (Hare & McPherson, 1984; Kosson, Steuerwald, Forth, & Kirkhart, 1997; Serin, 1991; Serin & Amos, 1995). Specifically, Serin (1991) found that violent psychopaths report a greater likelihood of using instrumental aggression (committing violent acts for purposes of control or material gain) and weapons than do non-psychopaths.

Within correctional settings, an important distinction is made between psychopathy (as measured by the Psychopathy Checklist-Revised [PCL-R]; Hare, 1991), and the criteria for a diagnosis of antisocial personality disorder (APD) as listed in the most recent edition of the Diagnostic and Statistical Manual (DSM-IV; APA, 1994). The essential feature of a DSM-IV diagnosis of APD is a “pervasive pattern of disregard for and violation of, the rights of others that begins in childhood or early adolescence and continues into adulthood” (APA; 1994, p. 645). An increased reliance on behavioural indicators of this disorder since the second edition of the DSM has raised concerns regarding the relationship between the diagnostic criteria for APD and clinical conceptions of the related construct of psychopathy (Hare, Hart, & Harpur, 1991). In order to accurately assess psychopathy, the Psychopathy Checklist-Revised (PCL-R; Hare, 1991) consists of a 20-item clinical rating scale completed using a semi-structured interview and detailed collateral information or file review. Items are scored on a 3-point scale according to specific criteria, with a possible total score ranging from 0 to 40. This total score indicates the extent to which an individual matches the prototypical psychopath as described, for example, in the work of Cleckley (1976). Factor analyses initially revealed a two-factor structure of the PCL-R, with Factor 1 consisting of items reflecting the interpersonal/affective facets of psychopathy, and Factor 2 consisting of items reflecting social deviance or antisocial lifestyle features of psychopathy (Hare et al., 1990; Harpur, Hakstian, & Hare, 1988). A recent large-scale multi-group analysis of the PCL-R yielded a two-factor, four-facet hierarchical model of the PCL-R, where facets 1 (Interpersonal items) and 2 (Affective items) load on to Factor 1, and facets 3 (Lifestyle items) and 4 (Antisocial items) load on to Factor 2 (Hare, 2003; Parker, Sitarenios, & Hare, 2003). As measured by the PCL-R, psychopathy has been shown to be a more

reliable and more specific construct than APD (Hare, 1983) and to have greater predictive validity (Hare, 1991).

Although most researchers and clinicians will refrain from referring to children as psychopathic, it is thought that the personality traits and behavioural characteristics that define adult psychopathy begin to manifest themselves during early childhood (Lahey & Kazdin, 1990; Robins, 1996; Robins & Rutter, 1990; Viding, 2004). The problem of identifying psychopathy early in the lifespan is complicated by the task of differentiating the future psychopath from other children who display serious affective and behavioural problems, such as symptoms of conduct disorder, attention-deficit hyperactivity disorder, or oppositional defiant disorder (e.g., Abramowitz, Kosson, & Seidenberg, 2004). For example, children with conduct disorder include a small subset with, and a larger subset without, psychopathic characteristics (Frick, 1995; Frick et al., 2003).

Psychopathic offenders begin their criminal careers at an early age and usually become persistent offenders (Hart & Hare, 1997). Reflecting research findings with adult offenders, children with psychopathic tendencies have a greater number and variety of conduct problems and are more likely to come into police contact than children without these tendencies (Viding, 2004). Importantly, research indicates that psychopathy does not have the same association with environmental indicators as antisocial behaviour in general. For example, the quality of family environment has been found to be a crucial factor for offenders who are not psychopathic (Devita, Forth, & Hare, 1990). Similarly, although inadequate parenting is a known environmental risk factor for antisocial behaviour among non-psychopathic children, this risk factor appears to have a lesser impact on psychopathic children (Wotton, Frick, Shelton, & Silverthorn, 1997).

Little research has been conducted concerning the development of psychopathy across the lifespan. However, one longitudinal study of identical and fraternal male and female twins by Blonigen and colleagues (Blonigen, Hicks, Krueger, Patrick, & Iacono, 2006) examined the development of psychopathic traits from late adolescence to early adulthood. Using the Multidimensional Personality Questionnaire (MPQ; Tellegen, in press), the authors investigated the degree to which genetic and environmental influences contribute to continuity and change in psychopathic traits during this developmental period. Similar to the two-factor structure of the PCL-R (Hare, 1991), the authors focused on two factors derived from analyses of the Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996): Fearlessness-Dominance (FD) and Impulsive Antisociality (IA). The first factor (FD) is marked by social dominance, narcissism, stress immunity, and fearlessness, whereas the second factor (IA) is marked by impulsivity, aggression, and alienation, and is associated with substance abuse and antisocial deviance (Benning, Patrick, Blonigen, Hicks, & Iacono, 2005). The authors found that at ages 17 and 24 years, approximately half of the variance for both FD and IA was accounted for by genetic effects, whereas the remaining half was attributed to non-shared environmental effects. A larger proportion of the variance at age 17 was due to additive genetic contributions, whereas a larger proportion of the residual variance at age 24 was due to non-shared environmental effects. These findings suggest that the stable portion of variance in these psychopathic traits from late adolescence to early adulthood is primarily due to genetic factors, whereas the proportion of variance that is unique or changing at age 24 may be more environmentally mediated (Blonigen et al., 2006). Further, the authors noted a decline in IA from late adolescence to early adulthood, paralleling criminal activity as reflected in the age-crime curve. The authors conclude

that there is a possibility that the age-crime curve may be due in part to changes in personality such that normative maturation in IA traits during this period of development may contribute to desistance in criminal behaviour for most individuals in the population. It should be cautioned that this study employed an epidemiological community sample; as such, findings concerning the development of psychopathic traits during this period of the life course may differ for criminal psychopaths. More research is needed to determine whether similar changes in psychopathic traits occur within offender populations, and to what extent these changes might contribute to continuity versus desistance of criminal behaviour.

Although most psychopathic offenders persist in a variety of criminal endeavours throughout adolescence and adulthood, approximately half of criminal psychopaths show a relatively sharp reduction in criminality at around 35 or 40 years of age, especially with regard to nonviolent offenses (Hare, McPherson, & Forth, 1988; Porter, Birt, & Boer, 2001). A propensity for violence and aggression appears to persist across much of the lifespan of psychopathic offenders. In their cross-sectional analysis of male offenders aged 16 to 69 years, Harpur and Hare (1994) found that indicators of social deviance decrease sharply with age, whereas affective/interpersonal features appear to remain stable with age, as operationalized by the PCL-R (Hare, 1991). When psychopathic offenders display age-related reductions in criminality, the question becomes whether these reductions are a function of changes in core personality traits, or whether they reflect an increased knowledge of ways to avoid imprisonment. For those psychopathic offenders who are imprisoned during this period of the life course, the question also becomes whether reductions in social deviance as measured by factor 2 scores reflect a

decreased opportunity to behave in deviant ways. For example, items on factor 2 include item 9 (parasitic lifestyle) and item 19 (revocation of conditional release).

Whereas the antisocial behaviour of late-onset offenders has been differentially associated with antisocial attitudes and associates, early-onset antisocial behaviour has been linked to early signs of psychopathic personality characteristics. Simons and colleagues (1994) present evidence in support of the early starter model proposed by Patterson and colleagues (Patterson & Yoerger, 1993; Patterson et al., 1992; Patterson et al., 1991; Patterson et al., 1989); criminal justice involvement was highest among those early starters with an oppositional/defiant orientation. Data from the Cambridge Study in Delinquent Development (Farrington, 1995) indicates that antisocial child behaviour, impulsivity, family criminality, and poor parental child-rearing behaviour are among the most important childhood predictors of delinquency, specifically between eight and ten years of age. Using longitudinal data drawn from the Dunedin Multidisciplinary Health study, Jeglum-Bartusch and colleagues (1997) found that the childhood (versus adolescent) factor was more directly related to theoretical descriptors of individual criminal propensity, including low verbal ability, hyperactive behaviour, and a negative/impulsive personality style. From the same community sample, Moffitt and colleagues (2002) found that early-onset (LCP) offending patterns were differentially associated with weak bonds to family, early school leaving, and psychopathic personality traits of alienation, impulsivity, and callousness. As such, research suggests that early-onset antisocial behaviour is linked to signs of psychopathic personality early in life. It must be noted that the majority of this evidence is drawn from community samples of non-offenders, and that follow-up of these individuals has continued to a maximum of 18 years. Therefore, the present study addresses the need to examine this potential

relationship between psychopathic personality and early-onset antisocial behaviour among an adult offender sample.

Objective of the current study

It is apparent that much evidence exists to support the criminogenic influences of antisocial attitudes and associates and a psychopathic personality on antisocial behaviour. Several investigations have also explored the relevance of Moffitt's taxonomy of offending among delinquent populations, frequently employing well controlled longitudinal designs (e.g., Moffitt et al., 2002). Evidence from adolescent samples supports the existence of a dual taxonomy of offending, and suggests the contributions of antisocial attitudes and associates, and psychopathic personality to patterns of late- and early-onset offending, respectively. However, despite well-controlled designs and frequent follow-ups, the use of adolescent samples presents a concern that, during the juvenile years, adolescence-limited (late onset) and life-course persistent (early onset) offenders might not be readily distinguishable (Ge, Donnellan, & Wenk, 2001). By using an adult offender sample, the present study will explore whether late-onset offending is synonymous with adolescent-limited offending; in other words, if late-onset offenders truly desist from antisocial behaviour in early adulthood, one would not expect to find many late-onset individuals within an adult offender population. If this is not the case, it is conceivable that certain offenders may have begun their criminal behaviour in adolescence and have not yet desisted. In addition, by using an adult offender sample and both retrospective and concurrent accounts of antisocial attitudes, associates, and behaviour, the accuracy of discriminating between late-onset temporary offenders and early-onset persistent offenders stands to be improved in the current study. Moreover, despite the independently accumulating evidence with respect to antisocial attitudes and

associates, psychopathic personality, and a dual taxonomy of offending related to age of onset, researchers thus far have not investigated potential interrelationships between these constructs. In addition, evidence drawn from studies of adolescent populations cannot be combined with that drawn from adult offender samples to explain potential differences in adult offending trajectories. As such, the primary aim of this study is to investigate, using an adult offender sample, the potential contributions of age of onset, and the criminogenic roles of antisocial attitudes and associates and antisocial personality in the explanation of adult criminal offending.

This investigation necessitates the use of a retrospective/concurrent design for several reasons. Firstly, very few existing studies involve samples who go on to become persistent offenders. Community samples such as those in the Dunedin Multidisciplinary Health study (Moffitt et al., 2002; Moffitt & Caspi, 2001; Moffitt, 1993a, 1993b; Jeglum-Bartusch et al., 1997; Bartusch et al., 1997), the Cambridge Study in Delinquent Development (Farrington, 1995; Farrington et al., 1986), and the National Youth Survey (McDermott & Nagin, 2001), are limited in their sampling of non-offenders and in their limited length of longitudinal follow-up (generally ending in the early-to-mid 20s; e.g., Moffitt et al., 2002; Farrington et al., 1986). As such, the retrospective/concurrent design of the present study ensures the sampling of an official offender population, as well as the simultaneous assessment of relevant constructs spanning the life-course of these offenders, that is not limited to late adolescence or early adulthood.

Relevant to the objectives of the current study, research has compared peer influence theories (such as strain, DA, and social learning theories) with social control theories. Combined with the evidence presented above regarding antisocial attitudes, associates, and psychopathic personality, the results of these studies guide the hypotheses

to be tested in the current study. Simons and colleagues (Simons, Wu, Conger & Lorenz, 1994) compared peer influence and control theories by means of structural equation modeling, and incorporated an early- versus late-starter model proposed by Patterson and colleagues (Patterson, Capaldi, & Bank, 1991; Patterson & Yoerger, 1993; Patterson, DeBaryshe, & Ramsey, 1989; Patterson, Reid, & Dishion, 1992). From a peer influence perspective, it is proposed that inept parenting allows for, or even encourages, an adolescent to associate with deviant peers. As a result of these affiliations, the adolescent adopts attitudes that are favourable to delinquent behaviour (Elliot, Ageton, & Canter, 1979). The quality and number of delinquent friendships are not thought to differ from those of conventional peer friendships. Like differential association theory, this perspective assumes that all adolescents are influenced by their friends' values and behaviours; deviance is said to reflect the types of behaviours that are encouraged and reinforced by deviant friends (Simons et al., 1994).

In contrast, a control perspective reflects the view that it is the quality of child socialization within the family that is the fundamental determinant of deviant behaviour. This is similar to the argument put forth by Gottfredson and Hirschi (1990) that, as a result of inadequate parenting, some adolescents tend to be impulsive, defiant, and risk-taking (i.e., lacking in self-control). In turn, this antisocial disposition leads to antisocial behaviour and attraction to peers with similar antisocial characteristics. Thus, control theorists view inept parenting as contributing directly to the development of antisocial traits, and regard these traits as causing involvement with delinquent peers. Unlike the peer influence perspective, control theorists contend that the quality of friendships between delinquent peers is likely to be quite different. In contrast to the peer influence perspective, the control perspective maintains that relationships between delinquents

generally involve less trust and less support than friendships between conventional adolescents, due to the impulsive, risk-taking, and insensitive behaviour of delinquent peers.

With direct relevance to a life-course perspective of offending, a third position has been suggested by Patterson and colleagues regarding the relationship between parenting, deviant peers, and delinquency (Patterson et al., 1991; Patterson & Yoerger, 1993; Patterson et al., 1989; Patterson et al., 1992). The authors propose two routes to delinquency according to late versus early onset of delinquent behaviour. For late starters, delinquency is considered to be a function of the encouragement and support provided by delinquent peers. Patterson and colleagues contend that these youths have often experienced a reduction in the quality of parenting because of difficulties in the parent-child relationship that often arise with pubescence. These difficulties facilitate a drift into affiliation with deviant peers and participation in antisocial behaviour. For early starters, Patterson and colleagues posit that inadequate parenting leads these youth to have severe deficits in social skills, leading them to be aggressive and defiant with others (Patterson et al., 1991; 1992). As a result, early starters are rejected by conventional peers and by default form friendships with each other, establishing a delinquent peer group. Consonant with the developmental taxonomies put forth by Moffitt (1993a) and Quinsey and colleagues (2004), whereas late starters tend to desist from delinquency within a short period, early starters are at risk for persistent offending during adolescence and adulthood.

The model proposed by Patterson and colleagues (1991; 1992) can be viewed as an intermediary position between peer influence and control theories. In a test of Patterson and colleagues' model, the path from deviant peers to criminal sanctions among

early starters was found to be consistent with the peer influence perspective (Simons et al., 1994). However, the authors failed to find an association between ineffective parenting and deviant peers; further, the finding that an oppositional/defiant orientation mediates the impact of effective parenting on deviant peers is consistent with control theory (Simons et al., 1994).

For late starters, effective parenting was found to be associated negatively with deviant peers, which in turn was found to be related positively to criminal sanctions; effective parenting was not found to be related to an oppositional/defiant orientation, and an oppositional/defiant orientation showed no association with either deviant peers or criminal sanctions. These findings suggest that the impact of parental behaviour on criminal behaviour is mediated by affiliation with deviant peers, and that for late starters, a coercive, oppositional interpersonal style is not a risk factor for antisocial behaviour (Simons et al., 1994). This pattern of findings is consistent with the peer influence perspective and with Patterson and colleagues' (1991; 1992) position regarding late starters.

This seminal study by Simons and colleagues (Simons et al., 1994) provides strong support for a consideration of antisocial attitudes and associates in the etiology of antisocial behaviour among late starters, as well as the importance of an antisocial disposition in the etiology of antisocial behaviour among early starters. A recent follow-up study of AL and LCP offenders at age 26 (Moffitt et al., 2002) found that measures taken at ages 15 and 18 reaffirmed that the LCP antisocial pathway is differentially associated with weak bonds to family and psychopathic personality traits of alienation, impulsivity, and callousness. With regard to the AL antisocial pathway, results from this follow-up study support previous research findings that the AL path is associated with

affiliation with delinquent peers (Jeglum-Bartusch et al., 1997; Moffitt & Caspi, 2001), a tendency to endorse antisocial values, and with nonviolent delinquent offenses (Jeglum-Bartusch et al., 1997).

Retrospective Design

Arguably, the use of prospective longitudinal designs such as those conducted by Moffitt and colleagues (e.g., Moffitt et al., 1996; 2002; Moffitt & Caspi, 2001) is the preferred method to investigate the development of antisocial behaviour from age of onset. However, these longitudinal studies also have their limitations, including frequent sampling of non-offender populations, inadequate follow-up time to determine whether samples continue on to become persistent offenders, and the frequent cross-sectional analysis of delinquent cohorts that conceivably confound early-onset and late-onset offenders. Although a retrospective design may overcome some of these limitations, there are obvious concerns over the validity of any retrospective self-report methodology, especially among offender samples. Studies of recall of autobiographical memories in community samples have found that fewer memories are recalled as a function of the time elapsed since the remembered event occurred (e.g., Crovitz & Schiffman, 1974, Rubin, 1982 as cited in Squire, 1989). This pattern is to be expected considering the limitations of human memory, and the potential causes of retrospective errors. In addition to simply forgetting particular events that occurred in the distant past, retrospective errors can result from a tendency to remember events as having occurred earlier than they actually did (e.g., Thompson, Skowronski, & Lee, 1988), or because people tend to reinvent the past to suit their current needs or circumstances (e.g., Ross, 1989).

In a study of the accuracy of retrospective self-report of delinquency, Henry and colleagues (1994) administered the Self-Report Delinquency interview (SRD; Elliot, Huizinga, & Ageton, 1985) to a sample of male and female 18-year-olds who were participants in a longitudinal epidemiological study. Similar to the collection of self-reported antisocial behaviour in the present study, the SRD taps a broad range of illegal behaviours; in addition, the SRD also collects information on history of police and court contacts. Subjects were asked to report whether or not they had ever engaged in each illegal behaviour, and to report the age at which they had first engaged in that behaviour. Rates of agreement between the prospective and retrospective measures of delinquency were moderately good, with both under- and over-reporting occurring. The authors suggest that these errors might have occurred to some extent because of a lack of precise recall of the ages at which certain events occurred, confusion about the definitions of events, or inaccuracy on the part of criterion records (e.g., police and court records) in the case where retrospective accounts were compared to official records (Henry et al., 1994). As such, the authors caution that retrospective reports of delinquency might not be accurate enough for precise dating, but they are defensible in the case of determining an individual's relative rank in a distribution (Henry et al., 1994). In the present study, the use of the self-report measure of antisocial behaviour is defensible in that its purpose lies in differentiating early-onset versus late-onset offenders, and not in pinpointing the exact ages of onset for each participant.

In a comparison of prospective, retrospective, and official onset of different categories of offending, Kazemian and Farrington (2005) found that ages of onset reported retrospectively tended to be higher than those reported prospectively. More specifically, agreement rates were lowest for minor forms of offending and highest for

more serious offenses. However, official measures of offending can also produce misleading results, especially when studying minor forms of offending. Indeed, Moffitt and colleagues (2001) caution that estimates of ages of onset can vary according to the type of data used, and that, “. . . investigations that rely on official data to study crime will ascertain age of onset approximately 3-5 years after it has happened” (p. 83). Thus, at least with regard to studying age of onset of a variety of minor and serious forms of offending, where longitudinal prospective accounts are not feasible, retrospective accounts might be more accurate than official records. Moffitt (1993a) also posits that in the case of late-onset offenders, change in delinquent behaviour is often sudden, especially during the period of onset. As such, if a late-onset offender has no significant antisocial behaviour in early childhood, he or she is unlikely to report such behaviour. Further, Maxfield and colleagues (2000) found that offenders who have been arrested on numerous occasions were more likely to admit these arrests in self-reports. If this is accurate, early-onset persistent offenders in the present study might report participating in antisocial events more often than late-onset offenders. The effect would be that of polarizing the responses between these groups, amplifying the differences in the amount of offending during each of childhood, adolescence, and adulthood as indicated on the self-report measure of antisocial behaviour used in the present study.

Bradburn, Rips, and Shevell (1987) caution that especially salient personal events are often given too recent a date when recalling their occurrence. The format of the self-report measure of antisocial behaviour used in the present study addresses this potential for making retrospective errors due to “telescoping”, or mistakenly importing events into a given reference period (e.g., adolescence), when they actually happened earlier (e.g., early childhood). Survey methodologists have recommended the use of “bounded recall”

in order to reduce the potential for errors resulting from telescoping (Bradburn et al., 1987). This method uses data from the first interview or time period (e.g., early childhood) as cues for recall in the next time period (e.g., adolescence); the previous time period acts as a landmark from which to place events that occurred after this time. For instance, by asking respondents to indicate the number of times they participated in a certain antisocial behaviour in early childhood before they answer the same question for each of adolescence and adulthood, the format of the measure of antisocial behaviour used in the present study will potentially reduce errors due to telescoping.

Hypotheses of the present study

Keeping the above potential limitations in mind, a consideration of existing research provides support for not only a developmental taxonomy of early- versus late-onset patterns of offending, but reaffirms the differential importance of antisocial attitudes and associates and antisocial personality within these offending trajectories. The first two hypotheses to be tested concern whether the developmental theories of antisocial behaviour hold in retrospect. Consistent with previous research involving adolescent samples (e.g., Moffitt et al., 2002; Jeglum-Bartusch et al., 1997; Farrington, 1995; Simons et al., 1994), it is predicted that in adolescence, antisocial personality will be more evident in early-onset offenders than late-onset offenders. Secondly, consistent with theories proposed by Moffitt (1993a) and others (Bartusch et al., 1997; McDermott & Nagin, 2001), it is hypothesized that in adolescence, antisocial associates will be more strongly related to antisocial behaviour for late-onset offenders than for early-onset offenders.

The second set of hypotheses is concerned with whether these theories hold for the same individuals currently in adulthood. Consistent with research on the prevalence

and etiology of psychopathic personality (e.g., Blonigen et al., 2006; Hart & Hare, 1997; Hare & McPherson, 1984; Wong, 1984), and in line with developmental theories discussed herein (Quinsey et al., 2004; Moffitt, 1993a, 1993b), it is hypothesized that in adulthood, antisocial personality will be more evident in early-onset offenders than late-onset offenders. Finally, consistent with evidence presented by Gendreau and colleagues (Gendreau et al., 1997; 1996) and others (e.g., Sampson & Laub, 1990), it is hypothesized that in adulthood, antisocial associates will be more strongly related to antisocial behaviour for late-onset offenders than for early-onset offenders.

Methods

Participants

In order to obtain sufficient statistical power, an initial random sample of 183 federally incarcerated inmates were approached for participation. A response rate of 76% yielded a sample of 139 male federal inmates who consented to participate in the present study. Attrition and incomplete responses ($n = 13$) resulted in a final sample of 126 participants serving a federal sentence of at least two years.

In keeping with previous approaches and to avoid classifying offenders into onset groups based on a single episode of antisocial behaviour, offenders were classified as early-onset if they reported participating in at least two serious (criminal or violent) antisocial acts in childhood ($n = 65$, 51.6%); late-onset offenders were those who reported none or one serious antisocial behaviour prior to the age of 13, and at least two serious antisocial acts between the ages of 13 and 17 ($n = 39$, 30.0%); adult-onset offenders were those who reported none or one serious antisocial behaviour prior to the age of 18 ($n = 21$, 16.7%).

Participants ranged in age from 20 to 73 years of age ($M = 39.9$, $SD = 12.1$) and reported years of education ranging from 1 to 20 years ($M = 11.9$, $SD = 2.8$). Adult-onset offenders were significantly older than either early- or late-onset offenders, $F(2, 118) = 5.2$, $p < .01$; years of education did not differ between onset groups. Participants were primarily Caucasian (82.5%), followed by Native (7.1%), Black (4.0%), Other (3.2%) and Asian (2.4%).

Officially recorded convictions were obtained through the Canadian Police Information Centre (CPIC). Officially recorded most serious convictions were primarily for violent (assault, murder, robbery, weapons, kidnapping and arson; $n = 71$, 56.8%), sexual ($n = 31$, 24.8%), and property offences (theft, escape, obstruction of justice, mischief, other; $n = 16$, 12.8%), with fewer convictions for driving ($n = 4$, 3.2%) and drug offences ($n = 3$, 2.4%). Official adult convictions ranged from one to 104 ($M = 18.4$, $SD = 18.5$), with adult-onset offenders having significantly fewer officially recorded offences compared to both early- and late-onset offenders, $F(2, 122) = 5.2$, $p < .01$. Adult-onset offenders were also less likely to have a history of property offence convictions compared to both early- and late-onset offenders, $F(2, 122) = 4.3$, $p < .05$.

Measures

Early Childhood and Adolescence Behaviour Scale (ECABS; Mills & Kroner, 2002a). The ECABS is an adaptation of the Antisocial Behaviour Scale (Forth & Brown, 1993; see Appendix B). The ECABS is a measure of the number of times a respondent has engaged in specific behaviours in both their childhood (age 12 and below) and their adolescence (age 13 to 17). For the purposes of the present study, an additional column for adult antisocial behaviour was included as a measure of the severity of adult antisocial behaviour. Respondents were asked to circle the number of times they engaged in each

of 50 behaviours during each of these developmental periods. Examples of the behaviours included in the ECABS are: “Did you ever cheat on a test at school?,” “Have you ever shoplifted items worth less than \$50?,” and “Have you ever injured someone using a weapon? (e.g., knife, gun, rock, baseball bat, etc.).” Rating scales for each item ranged from ‘0’ to ‘21+’ times (0, 1, 2-5, 6-10, 11-20, 21+). Scores for each developmental period of the ECABS were computed by summing scale items for that developmental period.

Preliminary data (Mills & Kroner, 2005) from a sample of male offenders admitted to a medium security federal penitentiary indicate that total early childhood scores are correlated moderately with total adolescent scores ($r = .69$), factor 2 scores from the Psychopathy Checklist-Revised (PCL-R; Hare, 1991; $r = .55$), and with total score on the Level of Service Inventory (LSI; Andrews, 1982; $r = .49$), a measure of general risk for criminal recidivism. Total adolescent scores from the ECABS are moderately correlated with PCL-R factor 2 scores ($r = .54$), total PCL-R scores ($r = .37$), and total LSI scores ($r = .51$). The moderate strength of these correlations is to be expected as previous antisocial behaviour is identified as a risk factor in both the LSI (Andrews, 1982) and the PCL-R (Hare, 1991).

Official and Self-Report Criminal History. Data was collected from participants’ Canadian Police Information Centre (CPIC) records to determine the total number of adult convictions and offence histories. In addition, offenders were asked to indicate the number of times they had been convicted as an adult, and the most serious offence for which they had been incarcerated. Data was also collected regarding age, ethnicity, and years of education. (See Appendix A).

Statistical Information on Recidivism (SIR; Nufield, 1982). The SIR combines 15 items in an actuarial scoring system that provides a probability of re-offending within three years of release. Each of the 15 items is static and includes type of current offence, age of admission, previous incarceration and history of violence. Twelve of the 15 items relate to criminal history, and the remaining three items refer to marital status, number of dependants, and employment status at arrest. Summation of SIR items yields a total score ranging from -30 (poor risk) to 28 (very good risk). The items of the SIR are negatively weighted, with lower numbers indicating greater severity. Prediction studies have shown the SIR to be predictive of general recidivism (Wormith & Goldstone, 1984; Bonta *et al.*, 1996; Kroner & Loza, 2001; Mills *et al.*, 2003; Mills *et al.*, 2004). The SIR is considered less adequate in predicting violent recidivism (Bonta *et al.*, 1992; Serin, 1996).

Measures of Criminal Attitudes and Associates (MCAA; Mills & Kroner, 1999).

The MCAA is a two part, self-report measure of criminal attitudes and associates (See Appendix C). Part A is a quantitative self-report measure of criminal associates and Part B is a four-scale measure of antisocial attitudes. Items in Part A ask respondents to recall the four adults in the community with whom they spend the most free time. Respondents are specifically directed to not report the identities of the people to whom they are referring. For each adult indicated, respondents are asked to report the proportion of free time is spent in this person's company (0-25%, 25-50%, 50-75%, 75-100%).

Respondents are then asked four questions regarding the degree of criminal involvement of their associates: (a) Has this person ever committed a crime?, (b) Does this person have a criminal record?, (c) Has this person ever been to jail?, and (d) Has this person tried to involve you in a crime? From this information, a measure of criminal associates can be calculated. The Number of Criminal Friends is calculated by adding up the

number of friends to which the respondent answers yes to any of the questions of criminal involvement, resulting in a possible range of zero to four criminal associates.

Part B is a 46-item measure of attitudes and is comprised of four scales: Violence, Entitlement, Antisocial Intent, and Associates. The Violence scale contains 12 items such as, “It’s alright to fight someone if they stole from you,” and “It’s understandable to hit someone who insults you.” An elevated score on Violence indicates an endorsement of attitudes that are supportive of violence, tolerance of violence, and a willingness to use violence to attain a desired goal and as a form of social interaction (Mills & Kroner, 1999). The Entitlement scale is comprised of 12 items such as, “Taking what is owed you is not really stealing,” and “A lack of money should not stop you from getting what you want.” Elevated scores on the Entitlement scale indicate attitudes supportive of an individual’s right to take whatever they want (Mills & Kroner, 1999). The Antisocial Intent scale contains 12 items such as, “I could see myself lying to the police,” and “I would run a scam if I could get away with it.” Items on the Antisocial Intent scale refer to potential actions that the individual believes he could commit in the future (Mills & Kroner, 1999). The Associates scale contains 10 items such as, “I always feel welcome around criminal friends,” and “Most of my friends don’t have criminal records.” Elevated scores on the Associates scale indicate association with others who are involved in criminal activities (Mills & Kroner, 1999). For all of the items in Part B, participants are asked to respond to a Likert scale of 1 to 4, where 1 = “Strongly disagree” and 4 = “Strongly agree”.

Test-retest reliability of the MCAA total score over a 4-week period was found to be .81 (Mills, Kroner, & Forth, 2002). Criterion validity as indicated by the MCAA’s relationship with prior criminal history was found to be moderate (prior convictions, $r =$

.40 and prior incarcerations, $r = .51$). The four-scale structure of the MCAA has been confirmed by means of factor analysis, with congruence coefficients of .84 (Violence), .76 (Entitlement), .80 (Antisocial Intent), and .86 (Associates).

Inventory of Life Course Associates (ILCA; Mills & Kroner, 2002b). The ILCA is a research questionnaire comprised of five sections (See Appendix D). The first three sections refer to a respondent's childhood (under 12 years of age), adolescence (from 13 to 17 years of age), and adulthood (18 years and above), respectively. For each time period, respondents are asked about their associates, and are instructed to not name or identify these individuals. Examples of items included in each of these sections include: "Circle the types of things that the kids you associated with regularly might have gotten in to trouble for: Stealing/Skipping school/Fighting/ Drinking/Having Sex/Drugs/Vandalism/Setting Fires/None of these," and "When you got into trouble whose idea was it? Circle one answer. Yours/Theirs/Ours." Because Part A of the MCAA only deals with antisocial associates in adulthood, the ILCA was used as a measurement of antisocial associates across the lifespan. Greater scores on the number of acts committed by associates reflected greater antisociality of associates during a given developmental period (i.e., if a respondent said his associates during adolescence got in trouble for stealing, skipping school, and taking drugs, he would receive a higher score compared to a respondent who reported his associates as having participated in none of these acts).

The fourth section of the ILCA is comprised of four items that asks respondents about possible antisocial influences in general. Examples of these items include: "Have any members of your immediate family (Mother, Father, Brother, Sister) been in trouble with the law? If yes, how many?" and "Have you ever tried to change your friends or

associates because you knew they were bad or bad for you?” The fifth section of the ILCA consists of ten items and asks respondents about their associates who have never been in trouble with the law. Examples of these items include: “Do you have any friends or associates that have NEVER been in trouble with the law?” and “Who do you feel is most accepting of you? Associates/Friends who do crime, Associates/Friends who do NOT do crime.” For the purposes of the present study, the ILCA will be used as a measure of antisocial associates in childhood and adolescence, scored as the sum of antisocial acts in which associates participated during these periods of the life course.

Self-Report Psychopathy Scale-III (SRP-III; Paulhus, Hemphill, & Hare, in press).

The SRP-III is a 64-item measure consisting of four 16-item subscales: Erratic Lifestyle, Callous Affect, Interpersonal Manipulation, and Antisocial Behaviour (See Appendix E). Respondents are asked to indicate their level of agreement with each item on a 5-point Likert scale ranging from 1 (Disagree Strongly) to 5 (Agree Strongly). Examples of items from the Erratic Lifestyle subscale include: “I’m a rebellious person,” and “I will break dates or appointments if something more interesting comes along.” Examples of items from the Callous Affect subscale include: “I often feel guilty about hurting other peoples’ feelings,” and “I am sometimes mean to people who love me.” Items from the Interpersonal Manipulation subscale include: “I purposely flatter people to get them on my side,” and “It’s fun to see how far you can push people before they get upset.” Items from the Antisocial Behaviour subscale include: “During my teenage years I have tried to force someone to have sex,” and “During my teenage years I have NEVER attacked someone physically with the idea of hurting him or her.”

It is arguable that the use of a well-validated, widely administered measure of psychopathy (e.g., the PCL-R; Hare, 1991) would be preferred over the use of a recently

developed self-report scale of psychopathy (SRP-III, Paulhus, Hemphill, & Hare, in press). However, the ease of administration and efficiency of the measure in contrast to the PCL-R makes the SRP-III a more suitable self-report alternative for the current study. Although PCL-R scores obtained based solely on file review data have been shown to correlate with those based on both file reviews and interviews, file-only scores are often lower than those obtained with the standard procedure (Grann, Langstrom, Tenstrom, & Stalenheim, 1998; Hare, 2003; Wong, 1988). Further, the SRP-III was developed to improve upon its predecessor, and also to reflect the recently proposed two-factor/four-facet structure of psychopathic personality (Hare, 2003). Confirmatory factor analysis has supported the psychometric qualities of the SRP-III, and correlations with delinquent behaviour and antisocial entertainment preferences have shown a coherent pattern across the four facets (Williams, Nathanson, & Paulhus, 2003), suggesting that the SRP-III is a valid measure that parallels the construct measured by the PCL-R (Hare, 1991). However, to the extent that psychopathy might be used to explain delinquency, it is important that the measure of psychopathy not include prior offending or antisocial behaviour. Although inclusion of a fourth factor of antisocial behaviour arguably improves the ability of a measure such as the PCL-R to predict future violent and criminal behaviour, it has a confounding effect in the study of psychopathy as a possible cause of offending (Farrington, 2005). Therefore, to avoid this confounding of early antisocial behaviour in the use of psychopathy as a predictor of future antisocial behaviour, items on the Antisocial Behaviour subscale of the SRP-III were removed from predictive analyses in the present study.

Childhood and Adolescent Taxon Scale (CATS; Harris, Rice, & Quinsey, 1994).

The CATS is an eight-item scale conventionally scored from file information that was

developed to reflect childhood aggressive and antisocial conduct and to discriminate between psychopaths and nonpsychopaths (See Appendix F). Items include elementary school maladjustment, teen and parental alcoholism, suspension or expulsion, arrest before age 16, more than three DSM Conduct Disorder symptoms, separation from biological parents before age 16, and childhood aggression. Items are scored dichotomously, with 0 indicating 'No' and 1 indicating 'Yes'. In the present study, the CATS was scored from a semi-structured interview, with Item 4 (three or more DSM-IV Conduct Disorder symptoms) scored from a semi-structured interview based on the Interview Guide for the DSM-IV (Zimmerman, 1994). In one study of federally sentenced male adult offenders (Glover, Nicholson, Hemmati, Bernfeld, & Quinsey, 2002), the CATS showed strong inter-rater reliability ($r = .92$), and significant correlations with PCL-R total scores ($r = .82$), PCL-R factor 1 scores ($r = .54$), and factor 2 scores ($r = .64$). In the present study, scores on the CATS were collected as an index of the severity of participants' early antisocial personality.

Procedures

Ethical approval was obtained from Research Ethics Boards at the author's academic institution and the Regional and National Headquarters of Correctional Services Canada. Upon receiving this approval, participants were recruited on a voluntary basis from a medium security federal correctional institution. Informed consent (see Appendix G) was obtained and ethical procedures were followed as per CPA/APA guidelines. Prior to administering paper-and-pencil measures, the author conducted individual interviews for the CATS in a private office. Following the interview, the remaining measures were given to participants to be completed in a testing room, and were collected by the author upon completion. Measures were ordered

randomly to minimize possible order or carry-over effects. All measures were identified by participant number only and not by name so as to protect the identity of the participants. Following completion of the self-report measures, offenders were provided with a debriefing form (see Appendix H) and thanked for their participation.

Analysis plan

Prior to analyzing the data, a random check of approximately 30% of cases ($N = 40$) was conducted by a graduate psychology student to verify the accuracy of data entry and to identify any errors. A total of 8 errors out of 9220 data points were identified and subsequently corrected, providing an estimated error rate of 0.008%. For cases in which 20% or fewer values were missing from a given measure (or subscale in the case of the MCAA and SRP-III), missing values were replaced with the series mean.

Before any potential relationships between age of onset of antisocial behaviour and the present variables of interest could be explored, it was necessary to establish criteria for determining whether a given participant was an early-onset offender or a late-onset offender. In previous research, authors have relied upon markers of desistence to determine this membership. In their longitudinal study of a large Swedish cohort that was followed for thirty years, Kratzer and Hodgins (1999) defined early starters as those who had been convicted of a least one offense both before and after the age of 18, and who had committed at least one crime during each of three or more age periods. Adolescence-limited or late-onset offenders were those who had been convicted of an offense before age 18 but not after. Similarly, in a longitudinal study of a large Norwegian sample, Kjelsberg (1999) defined adolescence-limited offenders as those who were not registered as having committed an offense after the age of 21 years; the remaining offender sample who had committed offenses after this age were regarded as

life-course persistent offenders. It should be noted that this sample was comprised of “adolescent debut” offenders; as such, nothing is known about the childhood antisocial behaviour of these individuals. Basing early- versus late-onset group membership by markers of desistence is clearly problematic in that age of onset is all but ignored.

Conversely, Moffitt and colleagues (Moffitt et al., 1996; 2002; Moffitt & Caspi, 2001) based their AL and LCP membership groupings on age of onset data. Individual life histories were taken by means of parent and teacher ratings biannually from ages 5 to 18 years (based on the Rutter Child Scales; Elander & Rutter, 1996), and then by ratings on the Self Report Delinquency interview (Elliot & Huizinga, 1989) at ages 15 and 18. The authors used a computerized algorithm to divide the sample into those who exhibited childhood antisocial behaviours and those who did not. Individuals were considered to be LCP offenders if they had evidence of extreme antisocial behaviour that was both stable across time (at least three of ages 5, 7, 9, and 11 years) and pervasive across situations (reported by parents and corroborated by teachers) during childhood, as well as evidence of self-reported extreme delinquency at the age 15 or 18 interview (10% of the sample). Those who self-reported antisocial behaviour during adolescence but who did not meet the childhood criteria were considered to be AL offenders (26% of the sample).

In a similar manner, Simons and colleagues (1994) employed age of onset data to determine group membership of early- versus late-starters. Using a list of 14 “serious delinquent behaviours”, similar to those comprising the Early Childhood and Adolescent Behaviour Scale employed in the present study (ECABS; Mills & Kroner, 2002a), those adolescents who reported engaging in two or more acts by an average age of 14 years were considered to be early starters. This cut-off age was determined post hoc based on pragmatic rather than theoretical data; by age 14, 25% of early starters showed

involvement in the criminal justice system, whereas 98% of late starters reported no involvement (Simons et al., 1994). However, at the final wave of data collection one year later (age 15), 23% of late starters had experienced involvement in the criminal justice system. The authors acknowledge the possibility of labeling effects or discrimination (i.e., low SES or affiliation with deviant peers may increase the probability of arrest), but assume that such biases are likely to operate for both early and late starters. The authors suggest that ultimately, the proper age for differentiating early- from late- onset offenders is an empirical issue and should reflect the age at which associations between predictors or covariates begin to differ for these groups. Studies of prison populations have shown that recidivists are generally first arrested by age 14 or 15, whereas one-time offenders are more often first arrested at a later age (Gendreau, Madden, & Leipziger, 1979). Similarly, Farrington and colleagues found that boys first arrested between the ages of 10 and 12 years average twice as many convictions as later starters (Farrington, Gallagher, Morley, St. Leger, & West, 1986).

Consistent with these findings, age 13 is used as a cut-off between early childhood and adolescence in the ECABS (Mills & Kroner, 2002a). Specifically, early-onset offenders were identified as those individuals who indicated participation in two or more serious antisocial acts on the ECABS that are criminal or interpersonally violent (e.g., bullying) and whose participation occurred before the age of 13 years. Late-onset offenders therefore were those individuals who did not meet the early-onset criteria and who indicated participation in two or more serious antisocial acts only after the age of 13 years, beginning in adolescence. Because the present sample was comprised of adult offenders, both early-onset and late-onset offenders were expected to indicate some form

of antisocial behaviour in the adulthood portion of the modified version of the ECABS used in the present study.

A related concern was the possibility that significantly fewer late-onset offenders would be found in an adult sample taken from a federal correctional institution, relative to early-onset persistent offenders. However, it must be considered that five or six percent of offenders (namely those early-onset persistent offenders) account for approximately half of all known crimes (Farrington, 1995); statistically, the remaining half must be attributed to late-onset offenders. Further, if the age of adulthood is generally taken to be 25 years of age, we can still expect to find late-onset offenders in an adult correctional population. In the context of Moffitt's (1993a) taxonomy, a lack of availability of alternatives to crime might explain why some late-onset offenders desist later than others; indeed, the desistance portion of the age-crime curve slopes more gradually than the more abrupt criminal initiation portion. As such, although the forces of cumulative continuity build up less momentum over the course of a late-onset offender's relatively short criminal career, many of these offenders encounter the same snares that maintain the continuity of offending found among early-onset offenders (Moffitt, 1993a).

Table 1 shows a conceptual organization of the constructs measured in the present study. Once participants were classified as early-onset or late-onset offenders, statistical analyses were conducted to test each of the proposed hypotheses. Firstly, correlational analyses were conducted to determine the extent of association between constructs measured in the present study, including the relationship between self-reported and officially recorded adult convictions.

Table 1

Conceptualization of Constructs according to Measurement and Time Period

Measure	Construct and time period		
	Childhood	Adolescence	Adulthood
Criminal Record	—	—	Official adult criminal behaviour
Self-Report Crimes	—	—	Self-report criminal behaviour
SIR	—	—	Criminal risk
ECABS	Self-reported antisocial, criminal, and violent behaviour in childhood	Self-reported antisocial, criminal, and violent behaviour in adolescence	Self-reported antisocial, criminal, and violent behaviour in adulthood
ILCA associates	Self-reported antisocial behaviour of childhood associates	Self-reported antisocial behaviour of adolescent associates	Self-reported antisocial behaviour of adult associates
MCAA	—	—	Self-reported antisocial attitudes
CATS	—	Antisocial personality before the age of 18	—
SRP-III	—	—	Psychopathy

Note. SIR = Statistical Information on Recidivism; ECABS = Early Childhood and Adolescent Behaviour Scale; ILCA = Inventory of Life Course Associates; MCAA = Measure of Criminal Attitudes and Associates; CATS = Childhood and Adolescent Taxon Scale; SRP-III = Self-Report Psychopathy-III.

In order to test the first hypothesis, that antisocial personality would be more evident among early-onset offenders than late-onset offenders during adolescence, t-tests were conducted to test for significant differences in antisocial personality between early-onset and late-onset offenders, as measured by the CATS (Harris, Rice & Quinsey, 1994). To test whether in adolescence, antisocial associates would be more strongly related to antisocial behaviour for late-onset offenders than for early-onset offenders, correlations between these constructs were compared by means of a Chi-square test, where a significant Chi-square value indicates that the samples from which the correlations were drawn are heterogeneous.

To further test the relative contributions of adolescent antisocial associates (as measured by the ILCA; Mills & Kroner, 2002b) and antisocial personality (as measured by the CATS; Harris, Rice & Quinsey, 1994) to adolescent behaviour, a series of multiple regressions were conducted and standardized beta values for the predictor variables were compared. Three regressions were conducted for each onset group, using self-reported adolescent antisocial, criminal, and violent behaviour as measured by the ECABS (Mills & Kroner, 2002a) as outcome variables.

In order to test whether psychopathy would be more evident among early-onset than late-onset offenders in adulthood, mean SRP-III scores for both onset groups were compared with t-tests. To test whether antisocial associates are more strongly related to antisocial behaviour for late-onset versus early-onset offenders in adulthood, correlations between these constructs were compared by means of the Chi-square test for heterogeneity discussed above. Subsequently, in order to compare the relative contributions of adult antisocial associates and psychopathy to adult behaviour, a series of

multiple regressions were conducted for each onset group, and standardized beta coefficients were compared. Three multiple regressions were conducted for each onset group, using self-reported antisocial, criminal, and violent behaviour (as measured by the ECABS; Mills & Kroner, 2002a) as outcome variables.

With the goal of providing a more comprehensive picture of the potential relationships between antisocial associates, personality, and behaviour across the lifespan, several post-hoc analyses were conducted. Although these analyses do not directly test the hypotheses of the present study, results from these analyses stand to improve our understanding of what offenders view as being related to their subsequent antisocial behaviour, and whether age of onset is related to these associations. Firstly, correlational analyses were conducted to assess the extent of the relationships between childhood variables (self-reported behaviour on the ECABS and childhood antisocial associates as measured by the ILCA) and adolescent variables (self-reported behaviour on the ECABS, adolescent antisocial associates as measured by the ILCA, and antisocial personality as measured by the CATS). Correlations were computed for the entire sample and for early- and late-onset groups separately. Further, a series of multiple regressions were conducted to determine the extent to which childhood variables predict adolescent antisocial behaviour for each onset group and for the entire study sample. Total self-reported behaviour in adolescence was the outcome variable, and self-reported behaviour and associates in childhood were the predictors.

Similarly, correlations were conducted between adolescent variables (self-reported behaviour on the ECABS, antisocial associates on the ILCA, and antisocial personality on the CATS) and adult variables (officially recorded adult convictions, risk

for general recidivism, self-reported behaviour on the ECABS, antisocial associates on the ILCA, antisocial attitudes on the MCAA, and psychopathy on the SRP-III). These correlations were conducted to show the extent to which adolescent variables relate to adult antisocial behaviour for the present sample and more specifically for early- and late-onset offenders. Further, a series of multiple regressions were conducted to determine the relative contributions of adolescent variables (self-reported behaviour, associates, attitudes and antisocial personality) to adult behaviour. Separate regressions were run for the entire sample, early-onset offenders and late-onset offenders, predicting each of self-reported adult behaviour on the ECABS, official adult convictions, and risk for general recidivism.

Finally, a series of multiple regressions were conducted to test the relative contributions of age of onset and adult variables (antisocial attitudes/associates, and psychopathy) to adult antisocial behaviour. For each multiple regression, onset group was entered into the equation first, followed by each of MCAA, SRP-III, and ILCA adult associates, for a total of 9 hierarchical multiple regressions. The purpose of these multiple regressions was to examine whether in adulthood, knowledge of an individual's antisocial attitudes and associates, and psychopathic personality added anything in the prediction of antisocial behaviour once age of onset was known. These regressions were conducted for the entire sample, using onset group as an effect-coded dummy variable, where early-onset offenders were assigned a value of 1 and late-onset offenders were assigned a value of -1. Adult-onset offenders served as the comparison group, and as such were not given an effect-coded value (Pedhauzer, 1997).

Subsequent to these regression analyses, three similar regressions were conducted in which the effect-coded onset group variable was entered into the equation first, followed by adolescent antisocial associates as measured by the ILCA. Because an individual's onset is known as of adolescence, the aim of these multiple regressions was to determine whether knowledge of an individual's antisocial associates during adolescence would provide any predictive information in addition to that provided by knowing that individual's age of onset on antisocial behaviour.

Before conducting any multiple regressions in the present study, data was examined to ensure that assumptions of this type of analysis were met, including lack of multicollinearity, heteroscedasticity, and problematic outliers (Pedhauzer, 1997). Because the purpose of the multiple regressions conducted for the present study was prediction, and not causal analysis, high multicollinearity would not affect the efficiency of the regression coefficients and thus was not a great concern. Nonetheless, multicollinearity was assessed by means of the Tolerance statistic, or $1 - R^2$ for the regression of a given independent variable on the dependent variable. Tolerance statistics for all independent variables were less than .20, indicating an absence of problematic multicollinearity. Homoscedasticity was assessed by means of a scatterplot of the residuals against the dependent variable, where a random dispersion of the residuals throughout the range of the dependent variable indicates lack of problematic heteroscedasticity. The presence of outliers was indicated by casewise leverage statistics; a leverage statistic less than .20 was considered to be acceptable, whereas a value greater than .50 indicated a potentially problematic outlier. In the present sample, no significant outliers were found using this test, and therefore no cases were removed from the analyses. The assumption of linearity

was tested by means of plots of studentized residuals against unstandardized predicted values. Normally distributed error variance was examined by means of a histogram of standardized residuals, where normally distributed error variance shows a roughly normal curve. The Durbin-Watson coefficient, d , indicated lack of autocorrelation and independence of observations for all multiple regressions conducted in the present study.

Results

Descriptive statistics for the study measures and their inter-correlations are presented in Tables 2 and 3, respectively. As can be seen, reliability coefficients for all of the study measures were moderate to strong, ranging from $\alpha = .68$ on the MCAA Entitlement scale to $\alpha = .94$ on the SRP-III. Alphas were not calculated for the ECABS as it is a tool to measure the amount of antisocial behaviour during a given developmental period, as opposed to serving as an operationalized measure of a construct. Mean scores on the ECABS childhood and adolescent scales were consistent with those found in a sample of 75 adult male offenders in a medium security institution (Mills & Kroner, 2005). Results also indicate that scores on the ECABS, MCAA, and SRP-III were more highly correlated with self-reported adult convictions than with officially recorded convictions, whereas SIR scores were equivalently correlated with self-report and official convictions. On average, late-onset offenders were slightly older than early-onset offenders. Although this difference was not significant, it is counter to what would be predicted from a life-course theory of criminal behaviour, from which one would expect early-onset (“life course persistent”) offenders to be older on average compared to late-onset (“adolescent limited”) offenders. For the offenders in this study, self-reported adult convictions were significantly positively correlated with official adult convictions, $r(124)$

Table 2

Descriptive Statistics and Psychometric Properties of the Study Measures

Variable	M (SD)	Minimum	Maximum	α
SIR	3.0 (11.1)	-20	20	0.75
CATS	2.8 (2.4)	0	8	0.78
ECABS Total Childhood ^a	13.3 (20.3)	0	150	—
ECABS Total Adolescence ^a	32.1 (32.1)	0	180	—
ECABS Total Adulthood ^a	3.4 (30.0)	0	149	—
MCAA (total scale)	94.1 (28.0)	50	174	0.95
Associates	24.9 (8.3)	10	40	0.87
Antisocial Intent	21.8 (9.7)	12	48	0.92
Entitlement	25.3 (6.2)	12	44	0.68
Violence	22.1 (8.9)	12	48	0.91
SRP-III (total scale)	152.1 (35.9)	80	231	0.94
Lifestyle	41.8 (11.2)	19	75	0.85
Callous Affect	36.2 (7.3)	17	55	0.72
Interpersonal Manipulation	34.5 (9.5)	16	59	0.85
Antisocial Behaviour	36.7 (14.0)	16	73	0.89
SRP-III modified ^b	112.5 (24.9)	62	171	0.92

Note. SIR = Statistical Information on Recidivism; ECABS = Early Childhood and Adolescent Behaviour Scale; ILCA = Inventory of Life Course Associates; MCAA = Measure of Criminal Attitudes and Associates; CATS = Childhood and Adolescent Taxon Scale; SRP-III = Self-Report Psychopathy-III.

^aBased on sum of items on ECABS scales, where 0 = '0', 1 = '1', 2 = '2 to 5', 3 = '6 to 10', 4 = '11 to 20', 5 = '21+'.

^bSRP-III total score excluding Antisocial Behaviour subscale.

Table 3

Bivariate Correlations between Adult Criminal History Variables, Antisocial Attitudes/Associates, and Childhood and Adolescent variables (N = 126)

	1	2	3	4	5	6	7	8	9	10	11	12
1 Official adult convictions	—											
2 Self-report adult convictions	0.78**	—										
3 SIR	-0.69**	-0.65**	—									
4 CATS	0.31**	0.43**	-0.53**	—								
5 MCAA total	0.28**	0.35**	-0.50**	0.41**	—							
6 ILCA childhood associates	0.24**	0.43**	-0.41**	0.56**	0.47**	—						
7 ILCA adolescent associates	0.25**	0.41**	-0.47**	0.62**	0.53**	0.74**	—					
8 ILCA adulthood associates	0.29**	0.50**	-0.47**	0.40**	0.40**	0.55**	0.57**	—				
9 SRP-III total	0.36**	0.47**	-0.56**	0.58**	0.70**	0.56**	0.65**	0.53**	—			
10 ECABS total childhood	0.22*	0.41**	-0.34**	0.53**	0.47**	0.71**	0.64**	0.49**	0.57**	—		
11 ECABS total adolescent	0.32**	0.47**	-0.47**	0.62**	0.58**	0.76**	0.79**	0.59**	0.74**	0.81**	—	
12 ECABS total adulthood	0.46**	0.57**	-0.58**	0.54**	0.58**	0.61**	0.67**	0.58**	0.72**	0.69**	0.82**	—

Note. SIR = Statistical Information on Recidivism; ECABS = Early Childhood and Adolescent Behaviour Scale; ILCA = Inventory of Life Course Associates; MCAA = Measure of Criminal Attitudes and Associates; CATS = Childhood and Adolescent Taxon Scale; SRP-III = Self-Report Psychopathy-III.

* $p < .05$, ** $p < .01$.

= .78, $p < .001$. The strength and direction of this correlation is important given that the ECABS did not list all possible criminal acts.

Adolescent Differences between Early-Onset and Late-Onset Offenders

It was hypothesized that during adolescence, antisocial personality scores would be higher among early-onset offenders than late-onset offenders. This hypothesis was tested by comparing mean scores on the CATS between onset groups. As hypothesized, early-onset offenders had significantly higher CATS scores compared to late-onset offenders, $t(96) = 5.5$, $p < .001$ (see Table 4). With regard to ECABS self-reported behaviour during adolescence, early-onset offenders reported higher frequencies of antisocial and criminal behaviour with a trend toward a difference for self-reported violent behaviour during adolescence.¹ These findings are consistent with the hypothesized differences between onset groups. The fact that the difference between groups for violent behaviour approached significance could be attributed to the low base rate of self-reported violent behaviour during adolescence for both onset groups.

In order to test the hypothesis that in adolescence, antisocial associates would be more strongly related to antisocial behaviour for late-onset offenders than for early-onset offenders, correlations between adolescent variables were compared for the two onset groups. Correlations between adolescent variables for each onset group are presented in Table 5. ILCA antisocial associates during adolescence was significantly correlated with all forms of ECABS self-reported behaviour for both early- and late-onset offenders, with the exception of violent behaviour for the latter group. Subsequently, results of a chi-square test for heterogeneity show that ILCA antisocial associates during adolescence is significantly more highly correlated with ECABS self-reported violent behaviour for

¹ For all analyses, a trend toward significance refers to probabilities between .05 and .10

Table 4

Comparisons of Adolescent and Adult Variables by Onset Group

Variables	Early Onset (<i>n</i> = 65) M (SD)	Late Onset (<i>n</i> = 39) M (SD)	<i>t</i>	<i>p</i>
Age	37.9 (12.1)	39.4 (11.5)	-0.6	<i>n.s.</i>
Adolescent Variables				
CATS	4.1 (2.5)	2.0 (1.7)	5.6	<.001
ILCA adolescent associates	3.9 (2.6)	2.1 (2.0)	4.1	<.001
ECABS adolescent antisocial	14.11 (9.2)	7.6 (5.5)	4.5	<.001
ECABS adolescent criminal	30.5 (23.6)	12.3 (10.5)	5.4	<.001
ECABS adolescent violent	3.5 (5.4)	1.5 (4.8)	1.9	.060
ECABS total adolescent	48.1 (35.1)	21.4 (16.7)	5.2	<.001
Adult Variables				
Official Adult Criminal Behaviour	22.1 (18.5)	18.2 (19.5)	1.0	<i>n.s.</i>
Self-Report Criminal Behaviour	17.2 (20.3)	10.0 (14.1)	2.0	.060
SIR	-1.22 (9.5)	3.1 (10.26)	-2.0	<.05
MCAA Associates	27.8 (7.3)	24.5 (7.7)	2.2	<.05
MCAA Antisocial Intent	24.5 (9.5)	19.7 (9.2)	2.5	<.05
MCAA Entitlement	26.3 (6.5)	25.0 (6.4)	1.0	<i>n.s.</i>
MCAA Violence	23.5 (9.5)	21.5 (8.3)	1.0	<i>n.s.</i>
MCAA Total	102.0 (27.2)	90.6 (27.1)	2.1	<.05
SRP-III Lifestyle	45.6 (10.6)	41.3 (10.7)	2.0	.054
SRP-III Callous Affect	38.5 (7.7)	34.2 (6.5)	2.9	<.01
SRP-III Manipulation	36.9 (9.8)	33.1 (9.0)	2.0	.053
SRP-III Antisocial Behaviour	46.2 (12.5)	37.1 (10.2)	3.8	<.001
SRP-III total	166.9 (32.7)	145.7 (30.9)	3.2	<.01
SRP-III modified ^a	120.7 (24.5)	108.6 (23.3)	2.4	<.05
ECABS adult antisocial	12.4 (6.9)	8.6 (5.9)	2.8	< .01
ECABS adult criminal	32.2 (24.0)	16.9 (13.9)	4.1	< .001
ECABS adult violent	5.3 (4.6)	3.0 (4.0)	2.6	< .05
ECABS total adult	49.9 (32.1)	28.5 (20.3)	4.2	< .001

Note. CATS = Childhood and Adolescent Taxon Scale; ILCA = Inventory of Life Course

Associates; ECABS = Early Childhood and Adolescent Behaviour Scale; SIR =

Statistical Information on Recidivism; MCAA = Measure of Criminal Attitudes and

Associates; SRP-III = Self-Report Psychopathy-III; *n.s.* = *p*-value greater than .10

^aSRP-III total score excluding Antisocial Behaviour subscale.

Table 5

Bivariate Correlations between Adolescent Variables by Onset Group

Early-onset Offenders (<i>n</i> = 65)		1	2	3	4	5	6
1	ECABS adolescent antisocial	—					
2	ECABS adolescent criminal	0.72**	—				
3	ECABS adolescent violent	0.53**	0.78**	—			
4	ECABS total adolescent	0.82**	0.98**	0.82**	—		
5	ILCA adolescent associates	0.62**	0.76**	0.58**	0.76**	—	
6	CATS	0.36**	0.42**	0.31*	0.43**	0.48**	—
Late-onset Offenders (<i>n</i> = 39)		1	2	3	4	5	6
1	ECABS adolescent antisocial	—					
2	ECABS adolescent criminal	0.54**	—				
3	ECABS adolescent violent	-0.05	0.56**	—			
4	ECABS total adolescent	0.65**	0.97**	0.62**	—		
5	ILCA adolescent associates	0.35*	0.56**	0.23	0.53**	—	
6	CATS	0.60**	0.44**	0.15	0.52**	0.34**	—

Note. ECABS = Early Childhood and Adolescent Behaviour Scale; ILCA = Inventory of Life Course Associates; CATS = Childhood and Adolescent Taxon Scale

* $p < .05$, ** $p < .01$.

early-onset offenders, $r(63) = .58, p < .01$, than for late-onset offenders, $r(37) = .23, ns.$, $\chi^2_{(1)} = 4.2, p < .05$ (see Table 6). No significant differences were found between onset groups for correlations between ILCA adolescent antisocial associates and either ECABS self-reported antisocial or criminal behaviour, though there were clear trends in this direction. These findings do not support the hypothesis that antisocial associates would be more strongly related to antisocial behaviour among late-onset than among early-onset offenders.

A series of multiple regressions was conducted to compare the relative contributions of ILCA adolescent antisocial associates and CATS scores to adolescent antisocial behaviour (Table 7). When predicting total ECABS self-reported antisocial behaviour in adolescence, ILCA adolescent antisocial associates accounted for a significant proportion of independent variance for both early-onset offenders, $\beta = .73, p < .01$, and late-onset offenders, $\beta = .40, p < .01$. However, contrary to what might be expected according to a life-course theory of antisocial behaviour, CATS scores added significantly to predicted ECABS total adolescent behaviour for late-onset offenders and not early-onset offenders. This finding was similar when predicting ECABS adolescent criminal behaviour. When predicting ECABS adolescent antisocial behaviour, ILCA adolescent antisocial associates added significantly to predicted behaviour for early-onset offenders, whereas CATS scores added significantly to predicted behaviour for late-onset offenders. In the prediction of ECABS adolescent violent behaviour, ILCA adolescent antisocial associates added significantly to the equation for early-onset offenders, whereas neither ILCA adolescent antisocial associates nor CATS scores accounted for significant variance when predicting ECABS adolescent violent behaviour for late-onset

Table 6

Chi-square Tests for Heterogeneity of Significant Correlations between Antisocial Associates and Antisocial Behaviour in

Adolescence

Correlated variables	Early-onset ($n = 65$)	Late-onset ($n = 39$)	χ^2	p
ILCA adolescent associates & ECABS adolescent antisocial	0.62**	0.35*	2.94	0.086
ILCA adolescent associates & ECABS adolescent criminal	0.76**	0.56**	3.01	0.082
ILCA adolescent associates & ECABS adolescent violent	0.58**	0.23	4.18	<.05
ILCA adolescent associates & ECABS total adolescent	0.76**	0.53**	3.76	0.052

Note. ILCA = Inventory of Life Course Associates; ECABS = Early Childhood and Adolescent Behaviour Scale.

* $p < .05$, ** $p < .01$.

Table 7

Summary of Regression Analyses for Variables Predicting Adolescent Behaviour

Variables predicting ECABS total adolescent behaviour	Early-Onset (<i>n</i> = 65)			Late-Onset (<i>n</i> = 39)		
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>B</i>	<i>SE</i>	<i>B</i>
ILCA Antisocial associates in adolescence	10.03	1.29	.73***	3.44	1.16	.40**
CATS	1.17	1.46	.08 <i>n.s.</i>	3.72	1.32	.38**
<i>R</i> ²	0.59***			0.41***		
Variables predicting ECABS adolescent antisocial behaviour	Early-Onset (<i>n</i> = 65)			Late-Onset (<i>n</i> = 39)		
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>B</i>	<i>SE</i>	<i>B</i>
ILCA Antisocial associates in adolescence	2.08	0.41	.58***	0.47	0.39	.17 <i>n.s.</i>
CATS	0.35	0.47	.09 <i>n.s.</i>	1.71	0.44	.54***
<i>R</i> ²	0.39***			0.38***		
Variables predicting ECABS adolescent criminal behaviour	Early-Onset (<i>n</i> = 65)			Late-Onset (<i>n</i> = 39)		
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>B</i>	<i>SE</i>	<i>B</i>
ILCA Antisocial associates in adolescence	6.76	0.87	.73***	2.47	0.75	.46**
CATS	0.74	0.98	.07 <i>n.s.</i>	1.77	0.86	.29*
<i>R</i> ²	0.59***			0.38***		
Variables predicting ECABS adolescent violent behaviour	Early-Onset (<i>n</i> = 65)			Late-Onset (<i>n</i> = 39)		
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>B</i>	<i>SE</i>	<i>B</i>
ILCA Antisocial associates in adolescence	1.2	0.25	.57***	0.5	0.42	.21 <i>n.s.</i>
CATS	0.08	0.29	.04 <i>n.s.</i>	0.24	0.48	.09 <i>n.s.</i>
<i>R</i> ²	0.34***			0.06 <i>ns</i>		

Note. ECABS = Early Childhood and Adolescent Behaviour Scale; ILCA = Inventory of Life Course Associates; CATS = Childhood

and Adolescent Taxon Scale ; * $p < .05$, ** $p < .01$, *** $p < .001$.

offenders. In sum, ILCA adolescent antisocial associates predicted all forms of self-reported adolescent behaviour for early-onset offenders, whereas antisocial personality as measured by the CATS predicted behaviour for late-onset offenders, with the exception of ECABS adolescent violent behavior. Again, this could be due to a low base rate of violent behaviour reported by this onset group.

In summary, the above analyses indicate that consistent with the first hypothesis, early-onset offenders reported more antisocial behaviour, more antisocial associates, and were scored higher on the CATS than were late-onset offenders. However, contrary to the second hypothesis, antisocial associates were more strongly related to adolescent behaviour for early-onset than for late-onset offenders. This was further supported by the consistent and greater contribution of adolescent antisocial associates over the CATS in the prediction of adolescent behaviour.

Adult Differences between Early-Onset and Late-Onset Offenders

There were no significant differences found between early-onset and late-onset offenders in terms of the number of official adult convictions, though a trend towards more self-reported convictions was evident. It was hypothesized that in adulthood, psychopathy would be more evident in early-onset offenders than late-onset offenders. This hypothesis was tested by comparing mean scores on the SRP-III between onset groups. Results show that early-onset offenders scored higher on the SRP-III total than did the late-onset offenders. When the SRP-III subscales were tested individually both the Callous Affect and Antisocial Behaviour subscales were significantly higher for early-onset offenders, with differences on the remaining subscales showing a similar trend (see Table 4). The significant difference remained even when scores on the antisocial behaviour subscale were removed from the

analysis to prevent confounding of early antisocial behaviour among early-onset offenders (SRP-III modified). That early-onset offenders showed higher levels of psychopathy in adulthood compared to late-onset offenders is consistent with the findings presented above for antisocial personality differences found in adolescence.

Similar to the second hypothesis, it was also predicted that in adulthood, antisocial attitudes and associates would be more strongly related to self-reported and official antisocial behaviour for late-onset offenders than for early-onset offenders. For early-onset offenders, ILCA antisocial associates in adulthood was significantly correlated with all forms of ECABS behaviour in adulthood, and official adult convictions (correlations ranged from $r = .28$ for official convictions to $r = .46$ for self-reported antisocial behaviour; see Table 8). For late-onset offenders, no significant correlations were found between ILCA antisocial associates in adulthood and ECABS self-reported antisocial behaviour or official antisocial behaviour. Correlations between ILCA adult antisocial associates and ECABS adult behaviour were compared for early-onset and late-onset offenders. Similar to the findings for adolescence, the relationships between ILCA antisocial associates and both ECABS antisocial and criminal behaviour in adulthood were significantly stronger for early-onset offenders (Table 9). No significant differences were found between onset groups for violent behaviour as reported on the ECABS. Furthermore, the correlation between ILCA antisocial associates and official adult convictions was significantly higher for early-onset offenders than late-onset offenders, $\chi^2_{(1)} = 4.0, p < .05$. Similar to the findings from adolescence, these results do not support the hypothesis that antisocial associates would be more strongly related to antisocial behaviour among late-onset than among early-onset offenders.

Table 8

Bivariate Correlations between Adult Variables by Onset Group

Early-onset Offenders (<i>n</i> = 65)		1	2	3	4	5	6	7	8	9
1	Official adult convictions	—								
2	ECABS adult antisocial	0.36**	—							
3	ECABS adult criminal	0.43**	0.67**	—						
4	ECABS adult violent	0.15	0.40**	0.63**	—					
5	ECABS total adult	0.42**	0.77**	0.98**	0.70**	—				
6	MCAA total	0.28*	0.46**	0.42**	0.31*	0.46**	—			
7	ILCA adult associates	0.30*	0.46**	0.53**	0.51**	0.57**	0.33**	—		
8	SRP-III total	0.32*	0.59**	0.62**	0.47**	0.66**	0.67**	0.56**	—	
9	SRP-III modified	0.30*	0.56**	0.54**	0.44**	0.58**	0.71**	0.47**	0.94**	—
Late-onset Offenders (<i>n</i> = 35)		1	2	3	4	5	6	7	8	9
1	Official adult convictions	—								
2	ECABS adult antisocial	0.31	—							
3	ECABS adult criminal	0.39*	0.60**	—						
4	ECABS adult violent	0.23	0.45**	0.42**	—					
5	ECABS total adult	0.41*	0.79**	0.94**	0.62**	—				
6	MCAA total	0.15	0.45**	0.78**	0.52**	0.76**	—			
7	ILCA adult associates	-0.11	-0.05	0.11	0.31	0.12	0.28	—		
8	SRP-III total	0.3	0.48**	0.75**	0.35*	0.72**	0.85**	0.09	—	
9	SRP-III modified	0.25	0.46**	0.74**	0.33*	0.71**	0.83**	0.05	0.97**	—

Note. ECABS = Early Childhood and Adolescent Behaviour Scale; MCAA = Measure of Criminal Attitudes and Associates; ILCA = Inventory of Life Course Associates; SRP-III = Self-Report Psychopathy-III.

*SRP-III total score excluding Antisocial Behaviour subscale; * $p < .05$, ** $p < .01$.

Table 9

Chi-square Tests for Heterogeneity of Significant Correlations between Antisocial Attitudes/Associates and Antisocial Behaviour in

Adulthood

Correlated variables	Early-onset ($n = 65$) r	Late-onset ($n = 39$) r	$\chi^2(1)$	p
ILCA adult associates & ECABS adult antisocial	0.46**	-.05	6.82	< .01
ILCA adult associates & ECABS adult criminal	0.53**	0.11	5.24	< .05
ILCA adult associates & ECABS adult violent	0.51**	0.31	1.34	<i>n.s.</i>
ILCA adult associates & official adult convictions	0.30*	-.11	4.02	< .05
MCAA & ECABS adult antisocial	0.46**	0.45**	0.00	<i>n.s.</i>
MCAA & ECABS adult criminal	0.42**	0.78**	8.14	< .01
MCAA & ECABS adult violent	0.31*	0.52**	1.49	<i>n.s.</i>
MCAA & official adult convictions	0.28*	0.15	0.42	<i>n.s.</i>

Note. ILCA = Inventory of Life Course Associates; ECABS = Early Childhood and Adolescent Behaviour Scale; MCAA = Measure

of Criminal Attitudes and Associates; *n.s.* = p -value greater than .10

* $p < .05$, ** $p < .01$.

When comparing correlations between MCAA antisocial attitudes and the ECABS adult behaviour, an opposite pattern was evident. Specifically, late-onset offenders showed a significantly stronger relationship between MCAA scores and self-reported criminal behaviour ($\chi^2_{(1)} = 8.1, p < .01$) and total adult behaviour ($\chi^2_{(1)} = 7.8, p < .01$). However, there were no significant differences between onset groups with regard to correlations between MCAA scores and official adult convictions. The divergent findings for ILCA antisocial associates and MCAA antisocial attitudes suggest that, whereas the behaviour of early-onset offenders in adulthood is more strongly associated with antisocial associates, the behaviour of late-onset offenders is linked more strongly to attitudes that are supportive of criminal behaviour.

A series of multiple regressions were conducted to compare the relative contributions of adult antisocial attitudes, associates, and psychopathy to adult antisocial behaviour (see Table 10). In order to avoid confounding early antisocial behaviour as measured by the Antisocial Behaviour of the SRP-III, the SRP-III modified was used as a predictor variable, in which total scores were derived from the summation of scores on the remaining three SRP-III subscales. The ILCA adult associates accounted for significant independent variance when predicting ECABS adult antisocial, adult criminal, and adult violent behaviour among early-onset offenders. The SRP-III added significantly only to the prediction of ECABS antisocial behaviour. For late-onset offenders, the MCAA antisocial attitudes contributed to the prediction of ECABS adult violent behaviour.

In summary, the above analyses indicate that consistent with the third hypothesis, early-onset offenders reported more psychopathy traits than late-onset offenders. In partial support of the fourth hypothesis, antisocial attitudes were more strongly related to the adult behaviour of late-onset offenders than early-onset offenders. This was also seen in the prediction of adult

Table 10

Summary of Regression Analyses Predicting Adult Antisocial Behaviour from Antisocial Attitudes/Associates and Psychopathy for Early-onset and Late-onset Offenders

Variables predicting ECABS adult antisocial behaviour	Early-Onset (<i>n</i> = 65)			Late-Onset (<i>n</i> = 39)		
	<i>B</i>	<i>SE</i> <i>B</i>	β	<i>B</i>	<i>SE</i> <i>B</i>	<i>B</i>
MCAA	0.04	0.04	.15 <i>n.s.</i>	0.07	0.08	.30 <i>n.s.</i>
ILCA adult associates	1.12	0.49	.27*	-.69	1.12	-.12 <i>n.s.</i>
SRP-III modified ^a	0.09	0.04	.32*	0.05	0.09	.21 <i>n.s.</i>
<i>R</i> ²	0.37***			0.22 <i>ns</i>		
Variables predicting ECABS adult criminal behaviour	Early-Onset (<i>n</i> = 65)			Late-Onset (<i>n</i> = 39)		
	<i>B</i>	<i>SE</i> <i>B</i>	<i>B</i>	<i>B</i>	<i>SE</i> <i>B</i>	<i>B</i>
MCAA	0.07	0.13	.08 <i>n.s.</i>	0.22	0.13	.42 <i>n.s.</i>
ILCA adult associates	5.29	1.73	.36**	-.48	0.18	-.04 <i>n.s.</i>
SRP-III modified ^a	0.29	0.15	.30 <i>n.s.</i>	0.26	0.14	.43 <i>n.s.</i>
<i>R</i> ²	0.38***			0.65***		
Variables predicting ECABS adult violent behaviour	Early-Onset (<i>n</i> = 65)			Late-Onset (<i>n</i> = 39)		
	<i>B</i>	<i>SE</i> <i>B</i>	<i>B</i>	<i>B</i>	<i>SE</i> <i>B</i>	<i>B</i>
MCAA	.00	0.03	.00 <i>n.s.</i>	0.14	0.05	1.02**
ILCA adult associates	1.11	0.35	.39**	-.44	0.66	-.12 <i>n.s.</i>
SRP-III modified ^a	0.05	0.03	.24 <i>n.s.</i>	-.08	0.05	-.48 <i>n.s.</i>
<i>R</i> ²	0.30***			0.37**		

Note. ECABS = Early Childhood and Adolescent Behaviour Scale; MCAA = Measure of Criminal Attitudes and Associates; ILCA = Inventory of Life Course Associates;

^aSRP-III total score excluding Antisocial Behaviour subscale.

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

violent behaviour, in which antisocial attitudes showed a greater contribution over antisocial associates and psychopathy. However, in contrast to the fourth hypothesis, antisocial associates were related to the adult behaviour of early-onset, but not late-onset offenders. This was further supported by the greater contribution of antisocial associates over antisocial attitudes or psychopathy in the prediction of adult behaviour for early-onset offenders.

Childhood Antisocial Contributions to Adolescent Behaviour

In order to gain a more comprehensive picture of the interrelationships between the predictors of interest and behaviour across the lifespan, several post-hoc analyses were conducted. Correlations between childhood variables and adolescent variables are presented in Table 11.² With regard to early-onset offenders, it is interesting to note that all childhood and adolescent variables are significantly positively correlated, with the exception of ECABS childhood violent behavior and adolescent antisocial personality as measured by the CATS. Again, this is perhaps due to the low rate of childhood violent behaviour reported by both onset groups. For late-onset offenders, ECABS childhood antisocial behaviour shows no significant association with any adolescent variables. This is to be expected due to the fact that late-onset offenders are categorized as such due to their lack of antisocial behaviour in childhood. Nonetheless, ECABS self-reported childhood criminal behaviour was significantly associated with ECABS adolescent antisocial behaviour for late-onset offenders. This singular significant correlation may possibly be due to alpha error as it is one of 12 similar correlations. A key finding in the present sample is that the presence of childhood antisocial associates as measured by the ILCA is significantly positively correlated with both ILCA antisocial associates and ECABS antisocial behaviour in adolescence for both early- and late-onset offenders.

² Because analyses examining prior contributions to later antisocial behaviour were exploratory and were not guided by formal hypotheses, corrections to reduce alpha error were not made.

Table 11

Bivariate Correlations between Childhood and Adolescent Variables for Early-onset and Late-onset Offenders

Early-onset offenders (<i>n</i> = 65)		1	2	3	4	5	6	7	8	9	10	11
1	ECABS childhood antisocial	—										
2	ECABS childhood criminal	0.49**	—									
3	ECABS childhood violent	0.46**	0.76**	—								
4	ECABS total childhood	0.74**	0.95**	0.81**	—							
5	ILCA childhood associates	0.49**	0.63**	0.50**	0.66**	—						
6	ECABS adolescent antisocial	0.70**	0.46**	0.42**	0.61**	0.60**	—					
7	ECABS adolescent criminal	0.63**	0.72**	0.51**	0.77**	0.71**	0.72**	—				
8	ECABS adolescent violent	0.52**	0.73**	0.75**	0.77**	0.68**	0.53**	0.78**	—			
9	ECABS total adolescent	0.68**	0.71**	0.57**	0.79**	0.74**	0.82**	0.98**	0.82**	—		
10	ILCA adolescent associates	0.59**	0.55**	0.38**	0.62**	0.72**	0.62**	0.76**	0.58**	0.76**	—	
11	CATS	0.33**	0.36**	0.18	0.38**	0.47**	0.36**	0.42**	0.31**	0.43**	0.48**	—

Late-onset offenders (<i>n</i> = 39)		1	2	3	4	5	6	7	8	9	10	11
1	ECABS childhood antisocial	—										
2	ECABS childhood criminal	0.07	—									
3	ECABS childhood violent	^a	^a	—								
4	ECABS total childhood	0.97**	0.32	^a	—							
5	ILCA childhood associates	0.04	0.07	^a	0.06	—						
6	ECABS adolescent antisocial	0.07	0.44**	^a	0.18	0.22	—					
7	ECABS adolescent criminal	0.28	0.10	^a	0.29	0.42**	0.54**	—				
8	ECABS adolescent violent	0.15	-0.01	^a	0.14	0.28	-0.05	0.56**	—			
9	ECABS total adolescent	0.24	0.20	^a	0.28	0.42**	0.65**	0.97**	0.62**	—		
10	ILCA adolescent associates	0.09	0.24	^a	0.14	0.53**	0.35*	0.56**	0.23	0.53**	—	
11	CATS	0.02	0.19	^a	0.07	0.18	0.60**	0.44**	0.15	0.52**	0.34*	—

Note. ECABS = Early Childhood and Adolescent Behaviour Scale; ILCA = Inventory of Life Course Associates; CATS = Childhood and Adolescent Taxon Scale; * $p < .05$, ** $p < .01$. ^aCorrelation is not available due to absence of self-reported violent behaviour among late-onset offenders.

In order to examine the relative contributions of childhood variables to the prediction of adolescent behaviour, a multiple regression was conducted for the entire sample and for each onset group, in which childhood behaviour as measured by the ECABS and associates as measured by the ILCA served as predictor variables, and total self-reported adolescent behaviour as measured by the ECABS was the outcome variable. For the study sample as a whole both ECABS childhood antisocial and criminal behaviour accounted for a significant proportion of independent variance in predicting ECABS adolescent behaviour (Table 12). Self-reported violent behaviour in childhood did not contribute significant independent variance when predicting adolescent behaviour. However, childhood antisocial associates as measured by the ILCA accounted for a significant proportion of independent variance in the prediction of ECABS adolescent behaviour over and above self-reported childhood antisocial and criminal behaviour.

Similarly, results show that, for early-onset offenders, both ECABS antisocial and criminal, but not violent behaviour in childhood, accounted for significant proportions of the variance in the prediction of total adolescent behaviour as measured by the ECABS (Table 13). In addition, ILCA childhood antisocial associates also accounted for a significant amount of variance over and above ECABS childhood behaviour for early-onset offenders, $R^2 = .74$, $F(4,60) = 41.8$, $p < .001$.

As could be expected, ECABS childhood behaviour did not account for a significant proportion of the variance in predicting behaviour for late-onset offenders,. However, ILCA childhood antisocial associates did account for a significant amount of independent variance in predicting ECABS adolescent behaviour for this onset group, $\beta = .40$, $p < .01$. These results are consistent with what would be predicted by a life-course theory of antisocial behaviour: for

Table 12

*Summary of Multiple Regression Analyses of Childhood Antisocial Behaviour and Associates**Predicting Adolescent Behaviour (N = 126)*

Variables predicting ECABS Total Adolescent	<i>B</i>	<i>SE B</i>	β
ECABS childhood antisocial	1.59	0.27	.36***
ECABS childhood criminal	0.71	0.21	.29**
ECABS childhood violent	-0.41	0.92	-.03 <i>n.s.</i>
ILCA childhood associates	6.2	1.08	.37***
R^2		0.75***	

Note. ECABS = Early Childhood and Adolescent Behaviour Scale; ILCA = Inventory of Life Course Associates.

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

Table 13

Summary of Multiple Regression Analyses of Childhood Antisocial Behaviour and Associates Predicting Adolescent Behaviour by

Onset Group

Variables predicting ECABS total adolescent	Early-onset (<i>n</i> = 65)			Late-onset (<i>n</i> = 39)		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
ECABS childhood antisocial	1.56	0.35	.36***	2.16	1.47	.22 <i>n.s.</i>
ECABS childhood criminal	0.71	0.26	.32**	6.00	5.55	.16 <i>n.s.</i>
ECABS childhood violent	-.29	1.1	-.03 <i>n.s.</i>			
ILCA childhood associates	6.04	1.42	.38***	5.88	2.17	.40*
<i>R</i> ²		0.74***			0.50***	

Note. ECABS = Early Childhood and Adolescent Behaviour Scale; ILCA = Inventory of Life Course Associates.

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

early-onset offenders, antisocial behaviour and associates in childhood predicted antisocial behaviour in adolescence, whereas having antisocial associates in childhood was the sole significant predictor for late-onset offenders adolescent behaviour. However, this finding is potentially confounded by the fact that, by definition, late-onset offenders self-reported no antisocial behaviour before the age of 13.

In summary, childhood behaviour was related to adolescent behaviour and antisocial personality among early-onset offenders. Importantly, for both onset groups, having antisocial associates during childhood was related to having antisocial associates and participating in antisocial behaviour during adolescence. For early-onset offenders, having antisocial associates, as well as exhibiting antisocial behaviour during childhood, was related to antisocial personality in adolescence. Additional support for the predictive role of antisocial associates from childhood to adolescence was found in the contribution of antisocial associates to the prediction of adolescent behaviour for the sample as a whole, as well as for early- and late-onset offenders separately.

Adolescent Antisocial Contributions to Adult Behaviour

Subsequent to exploring the potential relationships between childhood and adolescent constructs in the present sample, analyses were conducted to assess potential relationships between adolescent and adult constructs. Correlations between ECABS adolescent behaviour, ILCA antisocial associates, CATS scores, and adult variables are presented in Table 14. Self-reported behaviour during adolescence as measured by the ECABS total score was significantly correlated with official adult convictions for early-onset offenders, but not for late-onset offenders. In addition, ECABS self-reported adolescent behaviour and ILCA antisocial associates were significantly correlated with SIR criminal risk in adulthood for early-

Table 14

Bivariate Correlations between Adolescent and Adult Variables for Early-onset and Late-onset Offenders

	Early-onset Offenders (n = 65)										
	1	2	3	4	5	6	7	8	9	10	11
1 ECABS total adolescent	—										
2 ILCA adolescent associates	0.76**	—									
3 CATS	0.43**	0.48**	—								
4 Official adult convictions	0.28*	0.18	0.26*	—							
5 SIR	-0.35**	-0.30*	-0.35**	-0.74**	—						
6 Self-report number of prior convictions	0.43**	0.32*	0.32*	0.83**	-0.66**	—					
7 ECABS total adult	0.77**	0.56**	0.33**	0.42**	-0.48**	0.52**	—				
8 MCAA total	0.55**	0.43**	0.29*	0.28*	-0.48**	0.28*	0.46**	—			
9 ILCA adult associates	0.59**	0.52**	0.25*	0.30*	-0.37**	0.48**	0.57**	0.33**	—		
10 SRP-III total	0.73**	0.61**	0.43**	0.32*	-0.45**	0.38**	0.66**	0.67**	0.56**	—	
11 SRP-III modified ^a	0.68**	0.54**	0.40**	0.30*	-0.41**	0.35**	0.58**	0.71**	0.47**	0.94**	—
Late-onset Offenders (n = 39)											
1 ECABS total adolescent	—										
2 ILCA adolescent associates	0.53**	—									
3 CATS	0.52**	0.34*	—								
4 Official adult convictions	0.12	0.00	0.08	—							
5 SIR	-0.21	-0.26	-0.31	-0.59**	—						
6 Self-report number of prior convictions	0.23	0.28	0.37*	0.64**	-0.66**	—					
7 ECABS total adult	0.73**	0.51**	0.33*	0.41*	-0.45**	0.49**	—				
8 MCAA total	0.64**	0.58**	0.30	0.15	-0.32	0.45**	0.76**	—			
9 ILCA adult associates	-0.01	0.28	0.08	-0.11	-0.23	0.19	0.12	0.28	—		
10 SRP-III total	0.60**	0.44**	0.38*	0.30	-0.36*	0.59**	0.72**	0.85**	0.09	—	
11 SRP-III modified ^a	0.54**	0.42*	0.33*	0.25	-0.26	0.54**	0.71**	0.83**	0.05	0.97**	—

Note. ECABS = Early Childhood and Adolescent Behaviour Scale; ILCA = Inventory of Life Course Associates; CATS = Childhood and Adolescent Taxon Scale; SIR = Statistical Information on Recidivism; MCAA = Measure of Criminal Attitudes and Associates; SRP-III = Self-Report Psychopathy-III; * $p < .05$, ** $p < .01$; ^aSRP-III total score excluding Antisocial Behaviour subscale.

onset but not late-onset offenders. Antisocial associates in adolescence as measured by the ILCA was also related to ECABS antisocial behaviour in adulthood for the early-onset group but not the late-onset group. The persistent relationship of the ILCA associates variable with later behaviour prompted an examination of the relationship between childhood associates and adult behaviour. The ILCA childhood associates was significantly correlated with the ECABS total adult behaviour ($r = .22, p < .001$), number of official convictions ($r = .22, p < .05$), and the SIR ($r = -.41, p < .001$).

To examine the relative contributions of adolescent antisocial behaviour, associates, and personality to adult antisocial behaviour, a series of multiple regressions were conducted (Table 15). Results show that for all participants, total adolescent behaviour as measured by the ECABS accounted for a significant proportion of independent variance in the prediction of the extent of total ECABS behaviour in adulthood. In the prediction of official adult convictions for the study sample, total behaviour in adolescence as reported on the ECABS and CATS scores both approached significance. In the prediction of criminal risk among the full study sample, CATS scores were a significant predictor, with a negative standardized regression coefficient indicating that higher CATS scores are predictive of increased criminal risk. Neither adolescent behaviour as measured by the ECABS, nor antisocial associates as measured by the ILCA, were found to contribute significantly to adult criminal risk once the CATS was accounted for.

For early-onset and late-onset offenders, only total adolescent behaviour as measured by the ECABS was a significant predictor adult behaviour as measured by the ECABS (Table 16). None of the variables added significantly to the amount of independent variance in the prediction of official adult convictions or criminal risk (SIR) for either onset group. However,

Table 15

Summary of Multiple Regression Analyses Predicting Adult Antisocial Behaviour from Adolescent Variables (N = 126)

Variables predicting ECABS total adult behaviour	<i>B</i>	<i>SE B</i>	β
ECABS total adolescent	.72	.08	.77***
ILCA adolescent antisocial associates	.45	1.04	.04 <i>n.s.</i>
CATS	.42	.87	.03 <i>n.s.</i>
R^2		0.68***	
Variables predicting official adult convictions	<i>B</i>	<i>SE B</i>	<i>B</i>
ECABS total adolescent	0.15	0.08	.26 <i>n.s.</i>
ILCA adolescent antisocial associates	-0.53	1.05	-.07 <i>n.s.</i>
CATS	1.57	0.88	.20 <i>n.s.</i>
R^2		0.13*	
Variables predicting SIR	<i>B</i>	<i>SE B</i>	<i>B</i>
ECABS total adolescent	-.05	0.04	-.15 <i>n.s.</i>
ILCA adolescent antisocial associates	-.62	0.56	-.14 <i>n.s.</i>
CATS	-1.63	0.47	-.35**
R^2		0.32***	

Note. ECABS = Early Childhood and Adolescent Behaviour Scale; ILCA = Inventory of Life Course Associates; CATS = Childhood and Adolescent Taxon Scale; SIR = Statistical Information on Recidivism.

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

Table 16

Summary of Regression Analyses Adult Antisocial Behaviour from Adolescent Variables for Early-onset and Late-onset Offenders

Variables predicting ECABS total adult behaviour	Early-Onset (<i>n</i> = 65)			Late-Onset (<i>n</i> = 35)		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
ECABS total adolescence	.74	.12	.82***	.82	.18	.67***
ILCA adolescent associates	-.99	1.66	-.08 <i>n.s.</i>	1.91	1.39	.18 <i>n.s.</i>
CATS	.24	1.34	.02 <i>n.s.</i>	-.97	1.56	-.08 <i>n.s.</i>
<i>R</i> ²		.60***			.56***	
Variables predicting official adult convictions in adulthood	Early-Onset (<i>n</i> = 65)			Late-Onset (<i>n</i> = 35)		
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>
ECABS total adolescence	.16	.10	.30 <i>n.s.</i>	.17	.26	.15 <i>n.s.</i>
ILCA adolescent associates	-1.05	1.42	-.15 <i>n.s.</i>	-.86	1.98	-.09 <i>n.s.</i>
CATS	1.65	1.15	.21 <i>n.s.</i>	.37	2.23	.03 <i>n.s.</i>
<i>R</i> ²		.11 <i>ns</i>			.02 <i>ns</i>	
Variables predicting SIR	Early-Onset (<i>n</i> = 65)			Late-Onset (<i>n</i> = 35)		
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>
ECABS total adolescence	-.07	.05	-.26 <i>n.s.</i>	.02	.13	.03 <i>n.s.</i>
ILCA adolescent associates	.07	.70	.02 <i>n.s.</i>	-1.00	.99	-.19 <i>n.s.</i>
CATS	-1.06	.57	-.26 <i>n.s.</i>	-1.54	1.11	-.26 <i>n.s.</i>
<i>R</i> ²		.18**			.12 <i>ns</i>	

Note. ECABS = Early Childhood and Adolescent Behaviour Scale; ILCA = Inventory of Life Course Associates; CATS = Childhood and Adolescent Taxon Scale; SIR = Statistical Information on Recidivism.

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

total ECABS behaviour during adolescence significantly predicted the extent of ECABS behaviour in adulthood for the sample as a whole, and for each onset group independently.

In summary, antisocial behaviour during adolescence was related to a variety of behavioural and risk outcomes in adulthood for both early- and late-onset offenders, including self-reported behaviour, increased official convictions, and increased risk for re-offending. Consistent with analyses examining the relationships between childhood and adolescence, having antisocial associates during adolescence is also related to increased antisocial behaviour among early-onset offenders. This finding received further support in the contribution of adolescent antisocial associates to the prediction of antisocial behaviour for the study sample. Moreover, having antisocial associates during childhood was correlated with antisocial behaviour in adulthood, including self-reported behaviour, official adult convictions, and criminal risk. In addition, having antisocial associates during adolescence was related to increased antisocial attitudes among late-onset offenders. A consistent finding, whether examining the sample as a whole or when analyzing onset groups separately, was that antisocial behaviour during adolescence was related to antisocial behaviour during adulthood.

The Relative Contribution of Antisocial Onset to Adult Behaviour

In a final examination of the relative contributions of age of onset, antisocial attitudes and associates, and psychopathy to adult offending, a series of multiple regressions were conducted using the entire study sample. Onset was effect-coded so that early-onset offenders were assigned a value of 1 and late-onset offenders were assigned a value of -1. Adult-onset offenders served as the necessarily excluded comparison group, and as such were not assigned a value. In the prediction of the extent of adult antisocial behaviour as indicated by the ECABS, onset explained 12% of the variance; the addition of the MCAA into the regression

equation significantly increased the proportion of explained variance to 37% (see Table 17). Similarly, onset explained 12% of the variance before adding ILCA antisocial associates to the equation, after which 32% of the variance in extent of adult antisociality was explained. When onset and SRP-III scores were entered separately into the regression equation, the proportion of variance accounted for increased from 11% to 44%. Therefore, it appears that knowledge of an offender's age of onset does provide information in the prediction of later adult behaviour in addition to knowledge of his antisocial attitudes and associates and psychopathic personality.

In the prediction of official criminal convictions, onset accounted for a small proportion of the variance (between 1% and 2%) prior to the addition of any other explanatory variables (Table 18). Whereas adding ILCA antisocial associates to the equation did not significantly increase the proportion of variance accounted for over and above knowledge of onset, adding MCAA scores significantly increased the proportion of accounted variance to 5%; adding SRP-III scores significantly increased the proportion of accounted variance to 9%. Overall, the relationship between these variables and official adult conviction were fairly small.

Very similar findings were evident in the prediction of criminal risk where onset explained between 4% and 6% of the variance (Table 19). Adding the MCAA to the regression equation significantly increased this percentage to 20%; ILCA associates increased the proportion of accounted variance to 16% after accounting for onset, and SRP-III scores increased the proportion of accounted variance to 17%. As such, it appears that age of onset does explain some of the variance in the prediction of adult antisociality (specifically in the prediction of the extent of self-reported behaviour and criminal risk); it is clear that the additional information provided by antisocial attitudes and associates (the MCAA and ILCA)

Table 17

Summary of Hierarchical Regression Analyses Predicting Extent of Adult Behaviour on the ECABS from Onset Group and Adult Variables (N = 126)

Variables	Model 1			Model 2		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Onset Group	-10.71	2.95	-.34***	-7.54	2.55	-.24**
MCAA Antisocial attitudes				.56	.09	.51***
R^2		.12			.37	
<i>F</i> for R^2 change		13.4***			38.6***	

Variables	Model 1			Model 2		
	<i>B</i>	<i>SE B</i>	β	<i>SE B</i>	β	<i>B</i>
Onset Group	-10.82	2.92	-.35***	-7.18	2.67	-.23**
ILCA Antisocial associates				9.16	1.71	.46***
R^2		.12			.32	
<i>F</i> for R^2 change		13.7***			28.6***	

Variables	Model 1			Model 2		
	<i>B</i>	<i>SE B</i>	β	<i>SE B</i>	β	<i>B</i>
Onset Group	-10.35	2.95	-.33**	-5.99	2.43	-.19*
SRP-III modified ^a				.72	.10	.59***
R^2		.11			.44	
<i>F</i> for R^2 change		12.3**			56.5***	

Note. ECABS = Early Childhood and Adolescent Behaviour Scale; MCAA = Measure of Criminal Attitudes and Associates; ILCA = Inventory of Life Course Associates; SRP-III = Self-Report Psychopathy-III.

^aSRP-III total score excluding Antisocial Behaviour subscale.

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

Table 18

Summary of Hierarchical Regression Analyses Predicting Official Adult Convictions from Onset Group and Adult Variables (N = 126)

Variables	Model 1			Model 2		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Onset Group	-1.93	1.95	-.10 <i>n.s.</i>	-1.03	1.95	-.05 <i>n.s.</i>
MCAA antisocial attitudes				.16	.07	.23*
R^2		.01			.06	
<i>F</i> for R^2 change		.9 <i>n.s.</i>			5.4*	

Variables	Model 1			Model 2		
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>B</i>	<i>SE B</i>	<i>B</i>
Onset Group	-2.61	1.93	-.14 <i>n.s.</i>	-1.72	1.98	-.09 <i>n.s.</i>
ILCA Antisocial associates				2.25	1.27	.18 <i>n.s.</i>
R^2		.02			.05	
<i>F</i> for R^2 change		1.8 <i>n.s.</i>			3.15 <i>n.s.</i>	

Variables	Model 1			Model 2		
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>B</i>	<i>SE B</i>	β
Onset Group	-1.87	1.97	-.09 <i>n.s.</i>	-.50	1.96	-.03 <i>n.s.</i>
SRP-III modified ^a				.22	.08	.29**
R^2		.01			.09	
<i>F</i> for R^2 change		.9 <i>n.s.</i>			8.5**	

Note. MCAA = Measure of Criminal Attitudes and Associates; ILCA = Inventory of Life

Course Associates; SRP-III = Self-Report Psychopathy-III.

^aSRP-III total score excluding Antisocial Behaviour subscale.

* $p < .05$, ** $p < .01$

Table 19

Summary of Hierarchical Regression Analyses Predicting Criminal Risk from Onset Group and Adult Variables (N = 126)

Variables	Model 1			Model 2		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Onset Group	1.92	1.00	.19 <i>n.s.</i>	1.12	.93	.11 <i>n.s.</i>
MCAA antisocial attitudes				-.15	.03	-.42***
R^2		.04			.20	
<i>F</i> for R^2 change		3.7 <i>n.s.</i>			20.3***	

Variables	Model 1			Model 2		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	<i>B</i>
Onset Group	2.50	.99	.25*	1.71	.97	.17 <i>n.s.</i>
ILCA Antisocial associates				-2.06	.62	-.32**
R^2		.06			.16	
<i>F</i> for R^2 change		6.4*			11.1**	

Variables	Model 1			Model 2		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	<i>B</i>
Onset Group	2.25	1.03	.22*	1.40	.99	.14 <i>n.s.</i>
SRP-III modified ^a				-.14	.04	.35***
R^2		.05			.17	
<i>F</i> for R^2 change		4.8*			13.7***	

Note. MCAA = Measure of Criminal Attitudes and Associates; ILCA = Inventory of Life

Course Associates; SRP-III = Self-Report Psychopathy-III.

^aSRP-III total score excluding Antisocial Behaviour subscale.

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

and psychopathy (SRP-III) explains a significantly greater proportion of the variance over and above that accounted for by onset.

Because age of onset is known by the time an individual is an adolescent and adolescent associates have figured prominently in the prediction of behaviour, a series of multiple regressions was conducted in which the effect-coded onset group variable was entered, followed by the adolescent variable of ILCA antisocial associates (Table 20). The extent of self-reported behaviour in adulthood as measured by the ECABS, official adult convictions, and criminal risk served as separate outcome variables in this series of regressions. In the prediction of the extent of antisocial behaviour in adulthood, onset explained 11% of the variance, whereas adding ILCA adolescent antisocial associates significantly increased the proportion of accounted variance to 37%. Neither onset nor ILCA adolescent associates accounted for a significant proportion of the variance when predicting official adult convictions. However, in the prediction of criminal risk, the proportion of explained variance significantly increased from 5% to 12% when adding ILCA adolescent associates to the equation. Thus, when examining the predictive value of adolescent antisocial associates over and above age of onset, patterns were similar to those found when predicting adult behaviour from onset and adult antisocial associates.

Although it is clear that early- and late-onset offenders differ with regard to the relative contributions of antisocial attitudes, associates and psychopathy to various outcomes in adulthood, the above analyses reveal that it is likely not an individual's age of onset that will inform us most about his offending across the lifespan, but rather the criminogenic constructs themselves that are valuable in the prediction of criminal behaviour and risk for re-offending. In other words, age of onset of antisocial behaviour may serve to explain how an offender

Table 20

*Summary of Hierarchical Regression Analyses Predicting Adult Antisociality from Onset**Group and Adolescent Associates (N = 126)*

Variables predicting extent of ECABS in adulthood	Model 1			Model 2		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	<i>B</i>
Onset Group	-10.79	2.89	-.35***	-4.77	2.60	-.15 <i>n.s.</i>
ILCA Adolescent Associates				6.61	1.01	.55***
R^2		.12			.39	
<i>F for R^2 change</i>		12.9***			42.8***	

Variables predicting official adult convictions	Model 1			Model 2		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	<i>B</i>
Onset Group	-2.05	1.92	-.11 <i>n.s.</i>	-1.16	2.05	-.06 <i>n.s.</i>
ILCA Adolescent Associates				.98	.80	.13 <i>n.s.</i>
R^2		.01			.03	
<i>F for R^2 change</i>		1.1 <i>n.s.</i>			1.5 <i>n.s.</i>	

Variables predicting criminal risk	Model 1			Model 2		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Onset Group	2.21	1.01	.22*	1.14	1.04	.11 <i>n.s.</i>
ILCA Adolescent Associates				-1.17	.40	-.30**
R^2		.05			.12	
<i>F for R^2 change</i>		4.8*			8.6**	

Note. ILCA = Inventory of Life Course Associates.

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

arrives at his criminal behaviour in adulthood, *vis a vis* his antisocial attitudes and associates, and psychopathic personality characteristics.

Discussion

The present study was designed to assess the relative contributions of antisocial attitudes, associates and psychopathic personality to life-course offending patterns among early-onset and late-onset offenders. Consistent with the hypothesized results, higher scores on measures of psychopathic personality were found for early-onset offenders than late-onset offenders both in adolescence (CATS) and adulthood (SRP-III). Congruent with a life-course perspective, psychopathy was predictive of antisocial behaviour for early-onset offenders in adulthood. However, antisocial personality during adolescence was also correlated with adolescent antisocial behaviour among late-onset offenders. Furthermore, whereas the life-course theory of offending predicts that antisocial associates would be more strongly related to antisocial behaviour among late-onset offenders, this construct was consistently predictive of the adolescent and adult antisocial behaviour of both early-and late-onset offenders in the present sample. Analyses revealed that onset groups did differ with regard to the predictive contributions of the study variables to adult criminality and that an offender's age of onset did contribute significant independent variance over and above attitudes, associates, and personality in the prediction of future criminal behaviour.

Results from the present study also show that not only can adult male offenders remember their associates and behaviours from childhood and adolescence, but that their recall is sufficient to create onset groups that yielded results that are largely consistent with those predicted for these groups. Moreover, the present study demonstrates that antisocial friends in childhood and adolescence as recalled by the offenders in this sample are important

in the understanding of their subsequent antisocial behaviours. This finding is especially interesting with regard to early-onset offenders, for whom this association was not expected given the hypotheses generated from existing theory and research.

The first objective of this study was to determine whether early-onset offenders were more highly psychopathic than late-onset offenders. Consistent with expectations, psychopathic characteristics were found to be significantly higher for early-onset offenders compared to late-onset offenders, measured both retrospectively for adolescence (CATS) and concurrently in adulthood (SRP-III). In addition to providing support for Moffitt's life-course perspective of offending (1993a), this finding also converges with emerging research showing the stability of psychopathic traits across the lifespan (Forth et al., 2003; Frick & Marsee, 2006; Hare & Neumann, 2006; Kosson, Cyterski, Stuerwald, Neumann, & Walker-Matthews, 2002; Salekin, Neumann, Leistico, & DiCocco, 2004). In a prospective longitudinal study of 403 London males from age 10 to 32, Farrington (1991) found that measures of antisocial personality had test-retest correlations of $r = .50$ between ages 10 and 14, $r = .58$ between ages 14 and 18, and $r = .55$ between ages 18 and 32. Stability was greater between ages 18 and 32 than between ages 10 and 18, but nonetheless, there was significant stability during the adolescent years. Results from the present study provide additional support for this stability of psychopathic traits. Specifically, the CATS, an interview-based estimate of adolescent antisocial personality, was similarly correlated ($r = .58$) with the SRP-III, a paper-pencil based self-report measure of adult psychopathy.

The second objective of this study was to determine the relative contributions of antisocial attitudes and associates to the criminal behaviour of early- and late-onset offenders. The criminogenic contribution of antisocial associates received support in the

present study, with this construct predicting adolescent antisocial behaviour for both early- and late-onset offenders. This finding diverges from that proposed by Moffitt (1993a), from which it was hypothesized that antisocial attitudes and associates would be more predictive of antisocial behaviour among late-onset offenders than early-onset offenders. However, this finding is consistent with the model proposed by Patterson and colleagues (1992), in which deviant peers are posited to contribute to the antisocial behaviour of both early- and late-onset offenders. For early-onset individuals, deficits in social skills are thought to lead to aggression and subsequent rejection by conventional peers; friendships with delinquent peers are formed by default, thus placing early-onset offenders at increased risk for persistent offending in adolescence and adulthood. Consistent with these findings, Lacourse and colleagues (Lacourse, Nagin, Vitaro, Cote, Arseneault, & Tremblay, 2006) report recent evidence that children who lack empathy, are not helpful, and have hyperactivity or low levels of anxiety (i.e., characteristics associated with psychopathy, which was found to be higher in early-onset offenders in the present sample) are more likely to become involved in deviant peer groups. For late-onset offenders, Patterson and colleagues (1992) posit that delinquent friendships are formed as a result of pubescent difficulties in the parent-child relationship, and that these friendships similarly place late-onset individuals at increased risk for antisocial behaviour.

In contrast to the life-course model proposed by Moffitt and colleagues (1993a), the present study found that the adolescent antisocial behaviour of late-onset, but not early-onset offenders could be partially explained by psychopathic characteristics. However, this finding is consistent with recent evidence presented by Petras and colleagues (Petras, Schaeffer, Ialongo, et al., 2004), in which young boys who were found to be on an ‘Increasing

Aggression' pathway during late childhood and adolescence and who were above the mean on a measure of deviant peer affiliation were more than three times as likely as the 'Chronic High Aggression' class of boys to be diagnosed with antisocial personality disorder. As such, it appears that for some individuals whose antisocial behaviour begins later in childhood, a combination of antisocial associates and personality characteristics are important risk factors for continued antisocial behaviour.

A second objective of the present study was to examine whether differences between early- and late-onset offenders would be found in adulthood. In addition to the finding that early-onset offenders show higher levels of psychopathy, results from the present study suggest that for early-onset offenders in adulthood, antisocial behaviour was more strongly associated with antisocial associates. For late-onset offenders in adulthood, antisocial behaviour was more strongly linked to antisocial attitudes. The predictive roles of antisocial attitudes and associates were confirmed by means of regression analyses. Results partially support both the peer influence (Simons et al., 1994) and life-course models of antisocial behaviour (Moffitt, 1993a). Specifically, the antisocial behaviour of early-onset offenders was predicted by antisocial associates and psychopathic personality. Although neither antisocial attitudes and associates, nor psychopathy, predicted the adult antisocial behaviour of late-onset offenders, antisocial attitudes predicted violent behaviour among this onset group. Thus, similar to results from adolescent data in the present study, adult data supports the criminogenic contributions of antisocial attitudes and associates to the antisocial behaviour of both early- and late-onset offenders. This is an unexpected finding from the perspective of a life-course theory of offending (Moffitt, 1993a), which emphasizes the role of antisocial attitudes and associates in the criminal behaviour of late-onset offenders only.

Whereas antisocial personality characteristics (CATS) significantly predicted the self-reported antisocial and criminal behaviour of late-onset offenders in adolescence, the same did not hold when examining the contribution of psychopathy to the prediction of adult behaviour for this onset group. This is potentially a consequence of differences in measurement; personality characteristics in adolescence were assessed using the semi-structured CATS interview, whereas psychopathy in adulthood was measured with the SRP-III self-report measure. The fact that psychopathic personality did not account for the antisocial behaviour of late-onset offenders in adulthood, and that antisocial attitudes and associates continued to be significant predictors for these individuals is also consistent with the peer influence (Simons et al., 1994) and life-course theories (Moffitt, 1993a) of antisocial behaviour. Further research is needed to determine whether psychopathic personality is predictive of adolescent antisocial behaviour among other samples of late-onset offenders. If so, additional investigation is required in order to identify the mechanisms by which psychopathic personality becomes less predictive for late-onset offenders once they reach adulthood.

Although causation cannot be demonstrated by a correlation design, the associations between criminogenic and behavioural variables between childhood and adolescence, as well as adolescence and adulthood, suggest several areas of continuity across the lifespan. For both early- and late-onset offenders, having antisocial associates in childhood was associated with an increased likelihood of having antisocial associates in adolescence, which in turn was correlated with having antisocial associates for early-onset offenders in adulthood and antisocial attitudes for late-onset offenders. Moreover, having antisocial associates in adolescence was linked to a variety of behavioural outcomes for early-onset offenders in

adulthood, including higher numbers of official adult convictions and higher rates of self-reported antisocial and violent behaviour. Similar findings were evident when childhood associates were correlated with adult antisocial behaviour and criminal risk. Although previous research has highlighted the importance of antisocial associates in the prediction of criminal behaviour for late-onset offenders over that of early-onset offenders, the present findings suggest that the role of antisocial associates across the lifespan is important in examinations of antisocial behaviour for both onset groups.

Consistent with research suggesting continuity of psychopathic personality across the lifespan (Frick & Marsee, 2006; Hare & Neumann, 2006; Kosson, Cyterski, Stuerwald, Neumann, & Walker-Matthews, 2002; Salekin, Neumann, Leistico, & DiCocco, 2004), having psychopathic personality characteristics in adolescence was associated with psychopathic personality in adulthood. Moreover, psychopathy in adolescence was also associated with antisocial attitudes and associates, increased levels of self-reported criminal and violent behaviour, officially recorded convictions, and criminal risk in adulthood among early-onset offenders. These findings are consistent with research showing the far-reaching consequences of psychopathy, including the tendency to commit more offences, spend more time in prison, have poorer release outcomes, and show greater use of threats and violence (Wong, 1984; Hare & McPherson, 1984; Kosson, Steuerwald, Forth, & Kirkhart, 1997; Serin, 1991; Serin & Amos, 1995). A secondary outcome of this research is the initial validation of the SRP-III with male offenders. To a lesser extent, associations between adolescent psychopathy and adult characteristics were also found among late-onset offenders in the present sample. Specifically, psychopathic personality characteristics in adolescence were correlated with antisocial behaviour and attitudes in adulthood for these offenders.

As such, it is apparent that psychopathic personality characteristics earlier in life are associated with antisocial behaviour, attitudes, and continued psychopathy for early-onset offenders. In addition, antisocial personality is correlated with self-reported antisocial and criminal behaviour among late-onset offender. According to Moffitt's (1993a) life course theory, and Quinsey and colleagues (2004) taxonomy of offending, these findings reflect the continuity of psychopathic personality and the consequential antisocial behaviours and lifestyle found among early-onset offenders. However, these findings also suggest the potential role of adolescent psychopathic personality characteristics among late-onset offenders in adulthood. That psychopathy might have a criminogenic role for some late-onset offenders is consistent with recently voiced concerns over whether juvenile offenders who phenotypically appear psychopathic might "outgrow" their propensity for antisocial or criminal behaviour once they reach a certain age (Edens & Cahill, 2007). This tendency would be consistent with the life-course perspective offered by Moffitt (i.e., the adolescent-limited offender; 1993a), and reflects a need for better understanding of the etiology and role of psychopathic personality characteristics during adolescence.

A final series of multiple regressions showed that, although onset provided some explanation in the prediction of adult antisocial behaviour, this prediction became significantly more accurate when additional explanatory variables were considered. This was especially true in the case of predicting the extent of self-reported antisocial behaviour in adulthood, as well as criminal risk. Importantly, age of onset contributed almost negligibly to the prediction of officially record adult convictions. Taken together with differences found between onset groups with regard to antisociality in adulthood, these findings have important practical implications. Although onset can explain differences in antisociality, it is

apparent that knowing an individual's age of onset is not nearly as informative as knowing additional information regarding criminogenic variables such as antisocial attitudes and associates, and psychopathic personality. Because onset is known by the time an offender reaches adolescence, this suggests that additional information regarding his antisocial attitudes and associates during this developmental period would be more beneficial in predicting later outcomes regarding antisocial behaviour. Findings from the present study support this notion, with information on offenders' antisocial associates during adolescence significantly increasing the proportion of explained variance over and above age of onset when predicting adult antisocial behaviour. In sum, it is proposed that an offender's age of onset may serve as an explanatory role in how they arrive at certain degrees of antisociality (i.e., the extent of their antisocial attitudes and associates). However, it is unlikely that age of onset by itself is useful in the prediction of future antisocial behaviour.

An additional finding that runs counter to a life-course perspective as proposed by Moffitt (1993a) was that early-onset offenders and late-onset offenders in the present sample did not significantly differ in age at the time of their participation. A life-course perspective would predict that, due to their persistent offending across the lifespan, "life-course persistent" (early-onset) offenders would be older than "adolescence-limited" (late-onset) offenders, who are expected to desist from their antisocial behaviour once they have reached adulthood. Although Moffitt (1993a) acknowledges the possibility that some late-onset offenders may become "ensnared" in a criminal lifestyle for reasons such as lack of prosocial alternatives to crime, the life-course perspective suggests that the vast majority of late-onset offenders will desist once they have reached social maturity. Life-course theorists and researchers themselves have found that a significant percentage of "adolescence-limited"

youth continue to show evidence of criminal behaviour at age 26 (Moffitt et al., 2002) and as late as age 32 (Hagen, Farrington, & Moffitt, 1995). Similarly, the fact that early-onset and late-onset offenders in the present sample were similar in age suggests that it is entirely possible that a significant proportion of late-onset offenders do not in fact desist from their offending behaviour in adulthood.

Limitations of the present study

The foremost limitation of this study is arguably the use of retrospective self-report in the measurement of childhood and adolescent variables – and for older offenders, the measurement of antisocial behaviour during earlier adult years. However, several strengths of the study design helped to lessen the impact of this limitation. Firstly, administering a semi-structured interview to assess antisocial personality during adolescence, prior to completion of the self-report paper and pencil measures, potentially helped to prime participants to recall and recognize events from their past. The CATS interview, which also incorporated a semi-structured interview checklist for DSM-IV Conduct Disorder symptoms, asks questions such as “Did you ever get suspended or expelled from school?”, “Did you ever bully other kids, such as threatening them if they didn’t give you something?”, and “Did you ever use a weapon in a fight?”. These questions relate to events and behaviours that may have occurred during childhood or adolescence. By asking participants to recall behaviours such as these, and by giving them time to respond with as much detail surrounding the behaviour(s) as they wished to provide, the CATS interview potentially enabled participants to consider events and circumstances in their childhood and adolescence that they might have neglected to consider when answering a paper and pencil format questionnaire without any prior thoughts about their antisocial behaviour in childhood and adolescence.

Furthermore, although participants were given the opportunity and freedom to describe the extent of their antisocial behaviours and the specific circumstances surrounding a given behaviour, they were not asked to provide details or justify the reasons behind their actions. Although autobiographical descriptions can likely never be free from the tendency to organize one's memories in a way that is consistent with one's present self-conception (Barclay, 1994), it has been argued that the elicitation of information on concrete settings (e.g., elementary school) and behaviours (e.g., school yard fighting), rather than on evaluation and motivations, can be expected to improve assessment objectivity. As such, by asking participants whether or not they participated in a specific type of behaviour, and not asking them for specific reasons or justifications for their involvement (or lack of involvement) in this behaviour, the validity of the CATS interview was likely improved.

A related limitation of the CATS was the potential for time-ordering problems in analyses of adolescent personality and behaviour, in that this measure was used to assess personality characteristics during the same developmental period in which antisocial behaviour was measured (i.e., adolescence). However, because determining causality was not the aim of these analyses, the relative sequence of etiology of personality and behaviour during this time is not of direct concern in the present study.

Findings have also suggested that reliable retrospective recall of Conduct Disorder (CD) symptoms can be best obtained from individuals whose current actions reflect their past actions. In a recent study examining the effect of systematic variation in retrospective conduct disorders on antisocial personality diagnoses, Reuter, Chao, and Conger (2000) found that adults who never engaged in antisocial behaviour were not likely to report past behaviour problems, whereas those whose childhood patterns of problematic behaviour

persisted into adulthood were more likely to report childhood Conduct Disorder. In addition, the authors suggest that for those adults who have experienced a change in behaviour from childhood to adulthood, retrospective reports of CD symptoms are less reliable. The authors caution that this limitation is especially relevant for studies of developmental theories of antisocial behavior that emphasize age of onset. It is argued that correct classifications of antisocial personality and behaviour may be obtained for adults whose behaviour remains consistent over time, but those individuals whose behaviour has changed over time (either becoming increasingly or decreasingly antisocial) may receive incorrect classifications.

In light of the limitations associated with retrospective measurement, it could be argued that the use of a prospective longitudinal design would more accurately and reliably test the hypotheses of the present study. Prospective longitudinal studies of criminal behaviour have several advantages, the primary of which is the ability to provide information about the development of offending behaviour over time, including ages of onset and desistence, frequency, severity, and variety of offending, and specialization of offending (Farrington, 2006). In addition, a longitudinal study can provide valuable information about developmental sequences, within-individual changes, effects of life events, and influences of risk and protective factors on offending over time (Farrington, 2006).

Despite the many advantages of a longitudinal design, there are several problems associated with this methodology as well. These include a focus on naturalistic observation, making it difficult to isolate the impact of any particular variable from the effects of numerous others. Combined with the infrequency of data collection often seen in longitudinal studies, it can also become difficult to pinpoint a causal sequence. In addition, the length of time before key results can be reported is often problematic, as is the

confounding of age, period, and cohort effects. Further, an experiment that was desirable and feasible at its inception may be less so several years later, due to changes in theory brought about by concurrent studies conducted in shorter periods of time, or changes in public policy, methodology, and practical constraints such as the availability of funding or access to participants.

In a recent evaluation of cohort studies, Colman and Jones (2004) caution that the study of rare occurrences, such as extreme antisocial or criminal behaviour, strains statistical power in longitudinal studies that employ cohorts of individuals born in a certain time and place. For example, the Cambridge Study in Delinquent Behaviour (Farrington, 1991), a well-known longitudinal study of antisocial behaviour, used a sample of 403 south London males aged 10 to 40. Within this sample, the vast majority of participants had no adolescent (76%) or adult (67%) convictions, and of those with criminal records, a significant percentage showed low rates of offending, with 11% of convicted adolescents and 14% of convicted adults having only one official conviction. Although it is fortunate at an individual and societal level that criminal behaviour is a rare occurrence, it becomes clear that in order to collect statistically meaningful longitudinal data on criminal individuals, a vast proportion of the general population would have to be sampled and followed across the life course in order to yield sufficient data on a variety of variables of interest.

From this perspective, it is argued that birth cohort studies and similar longitudinal designs will “never be able to collect a comprehensive picture of the life course” (Colman & Jones, 2004, p. 1378), and that the life-course modeling approach, with its ability to integrate various factors such as genetic differences, developmental markers, and social environment, can only benefit from an understanding of the complex pathways to the behaviour in question

(e.g., criminal offending). As such, despite the limitations associated with a retrospective design, the information accumulated from research such as the present study serves to increase our understanding of the variables that are likely to be most fruitful when incorporated into a well-designed developmental study.

As a compromise to the prospective longitudinal study, Loeber and colleagues (1998) in the Pittsburgh Youth Study screened a representative sample of boys in public schools. They then conducted followed up research on all high-risk boys and a random sample of the remaining representative sample. The advantage to this methodology is that, by basing their screening process on variables known to place young boys at risk for antisocial behaviour, there is an increased yield of criminal outcomes, while still permitting conclusions about the broader population. This of course requires an understanding of the factors that place individuals at risk at an early age, so that these individuals are correctly identified for inclusion in the study.

A related limitation of this study was the inability to directly assess the developmental course of psychopathic personality from adolescence to adulthood. Recent literature suggests support for a construct in adolescence that is similar to adult psychopathy (e.g., Forth et al., 2003; Frick & Marsee, 2006; Hare & Neumann, 2006; Kosson, Cyterski, Stuerwald, Neumann, & Walker-Matthews, 2002; Salekin, Neumann, Leistico, & DiCocco, 2004). However, researchers and clinicians have been cautious to apply the construct to children and adolescents, given that definitions and assessments of psychopathy have largely originated from investigations involving adult samples. Although the examination of psychopathic traits in adolescence is a relatively new endeavour, researchers thus far have highlighted the developmental challenges of measuring such traits in children and

adolescents, in addition to the potentially undesirable consequences of labeling a youth as psychopathic (Edens, Skeem, Cruise, & Cauffman, 2001; Hart, Watt, & Vincent, Johnstone & Cooke, 2004; Olgoff & Lyon, 2000). Measures that are currently used to assess psychopathic traits in youth do not provide cut-off scores for labeling a child or adolescent as psychopathic, and several manuals explicitly warn against doing so (Forth et al., 2003; Frick & Hare, 2001). In the present study, caution was taken to describe personality characteristics in adolescence (CATS scores) as “antisocial”, whereas scores on an adult measure (SRP-III) were taken to indicate psychopathy in adulthood. Although the current study was limited in terms of examining the developmental course of psychopathic personality characteristics across the lifespan, the associations of antisocial personality and psychopathic personality traits between both childhood and adolescence, and adolescence and adulthood, suggest continuity of this construct across the life course. From the perspective of an emerging developmental science of personality, childhood temperament can be conceptualized with respect to adult personality structure, and adult personality can be understood in terms of its childhood antecedents (Caspi et al., 2005). Thus, it is conceivable that psychopathic personality traits, like other personality traits, are likely to have their origins in childhood and adolescence.

As aforementioned, a potential concern in the present study is the use of a self-report measure of psychopathy (the SRP-III; Paulhus, Hemphill, & Hare, in press), as opposed to the use of a well-validated interview assessment, such as the PCL-R (Hare, 1991). The SRP-III was designed to reflect the recently proposed four-factor, two-facet structure of psychopathy (Hare, 2003), which has received empirical support in both adult (Hare & Neumann, 2006; Neumann et al., 2005; Vitacco, Neumann, & Jackson, 2005) and adolescent

samples of offenders (Neumann et al., 2006; Salekin et al., 2006). In the present sample, the SRP-III showed strong internal consistency. Moreover, scores on the SRP-III were significantly correlated with a semi-structured interview-based measure of adolescent antisocial personality, providing support for construct validity. SRP-III scores were also significantly positively correlated with increased official and self-reported adult convictions, criminal risk, and self-reported antisocial behaviours across the lifespan. These findings are the first to suggest construct validity within an offender sample, and provide further support in favour of using the SRP-III as a measure of psychopathic personality among adult male offenders.

A final limitation of the present study was the sample size for each onset group. Although significant differences were found between groups, implying that effect sizes were likely strong, it is probable that additional differences between onset groups would have been identified using a larger sample. On the other hand, it was not possible to recruit a large enough sample so that sub-samples of early- and late-onset offenders were also of ideal size. Similarly, due to the random sampling of offenders, screening participants for age of onset prior to their participation in the study was also not an option. Clearly, future research should utilize large samples of offenders so that each onset group is of sufficient size to achieve maximum statistical power.

Directions for future research

Taken together, findings from the present study and those from existing research suggest several areas in need of continued investigation. Firstly, the present study was not intended to address the many hypotheses generated from recent research on the genetic and biological contributions to the development of psychopathy and criminal behaviour across

the lifespan. Recent research has placed great emphasis on investigating the heritability of psychopathic personality traits and the neurobiological basis for antisocial behaviour. Recent studies with youth samples (e.g., Frick, Kimonis, Dandreaux, & Farell, 2003; Kosson et al., 2002; Piatigorsky & Hinshaw, 2004) have demonstrated psychopathic traits in children that are stable over time (Frick et al., 2003). Behavioural genetic studies with children (Viding, Blair, Moffitt, & Plomin, 2005), adolescents (Larsson, Andershed, & Lichtenstein, *in press*), and adults (Blonigen, Carlson, Krueger, & Patrick, 2003) all provide evidence for a strong genetic component in the etiology of psychopathy. Longitudinal research (Frick et al., 2003) has shown that antisocial behaviour in children significantly predicted the stability of psychopathic characteristics in adolescents five years later. In a similar vein, researchers have reported bivariate analyses that provide evidence for a genetic influence on the covariance of psychopathy scales reflecting emotional detachment and antisocial tendencies. Taken together, these studies provide support for the presence of psychopathic traits in early life, and stability in the mechanisms underlying them. Thus, future research should continue to examine the biological and genetic bases of psychopathic personality characteristics, and whether these features reflect the same dimensions of psychopathy as found in adults.

Although Quinsey and colleagues (2004) offer evidence in support of a discrete class or taxon of persistently antisocial individuals for whom antisocial personality is an adaptive trait, the present study could not address this hypothesis. It should be noted that Edens and colleagues (2006) offer evidence to counter a taxonic conceptualization, citing that the sole reliance on file review scoring of the PCL-R, dichotomous scoring, and higher than expected item-total correlations on the PCL-R raise doubts as to the taxonic findings obtained in previous studies (e.g., Harris, Rice, & Quinsey, 1994; Skilling et al., 2002). The present

study was not designed to assess constructs relevant to identifying taxon members versus non-members, such as neurodevelopmental difficulties and inept parenting early in life. Thus, future research should address the above noted incongruence in findings by assessing the relevant constructs in relation to the etiology of antisocial and psychopathic personality in persistently antisocial individuals.

In addition to investigating the potential innate causes of psychopathy, the task has become that of disentangling the sequence of events that place an individual who is genetically or biologically at risk for psychopathy on a pathway to persistent antisocial behaviour, as well as the causal link between antisocial behaviour and other psychopathic traits. Psychopathic traits (e.g., callousness, impulsivity) in youth have been found to predict future antisocial behaviour (Frick et al., 2003; Vitacco, Neumann, Robertson, & Durrant, 2002). However, prior antisocial behaviour is associated with higher levels of callousness and other psychopathic traits in adolescents (Frick et al., 2003) and adults (Dowson, Sussams, Grounds, & Taylor, 2001; Lynam, 1998), making the causal sequence of psychopathic personality and antisocial behaviour unclear. Similarly, neurobiological theorists (e.g., Blair, 2003) have suggested that the lifestyle of the psychopath may exacerbate neurological impairments, if any, rather than the impairments being defining at birth. It is argued that lifestyle habits, such as substance abuse, would be more detrimental to neurological impairment than an innate impairment in the long term.

In a more recent study looking at the development of psychopathy, Blair and colleagues (Blair, Peschardt, Budhani, Mitchell, & Pine, 2006) argue that there may be a genetic contribution to the emotional dysfunction behind antisocial behaviour, and that it is possible that this association with emotional dysfunction underlies the genetic contribution to

antisocial behaviour. Similarly, Salekin and colleagues (2006) have recently suggested that it is possible that youth who show callous and unemotional traits start out with a deficiency in affect and then begin to accumulate behavioural symptoms over time, such as an arrogant and deceitful interpersonal style, followed by irresponsible and antisocial behaviours. Alternately, it is possible that these youth begin with problematic behavioural tendencies and personality characteristics, and that the affective components of psychopathy start to develop after some time is spent engaging in antisocial or criminal activity. In sum, if the accumulation of symptoms is relevant to the etiology of psychopathy, then future research will require the development of sensitive measures of these symptoms and frequent measurement over time.

Developmental researchers (e.g., Saltaris, 2002) have suggested that conduct problems, coupled with temperamental dispositions and an inability to form attachment bonds with early caregivers are implicated in the manifestation of psychopathic traits in adulthood. As aforementioned, Harris, Rice, and Lalumiere (2001) concluded that criminal violence has at least two developmental pathways, one originating early in life and involving neurodevelopmental insults, and one involving psychopathy, with antisocial parenting facilitating the progression of both. Given that continuity of psychopathic personality traits may occur via dynamic person-environment interactions (Lynam, 2002), Neumann and colleagues (2006) advocate future research that aims to clarify the longitudinal relations between early involvement in antisocial behaviour (including peers, parents, and communities) and the development of other psychopathic features in adulthood. Assessing the genetic and/or neurodevelopmental processes, in combination with parenting and other

social environment variables implicated in psychopathic personality and persistent offending across the lifespan is clearly an area of research that requires continued investigation.

In addition to the above recommendations, results from the present study point to several methodological and theoretical considerations that should be made when conducting future research on risk factors for the development of criminal behaviour as it relates to age of onset. Firstly, whether conducting longitudinal or concurrent research, a larger and more heterogeneous sample is likely to yield more representative results regarding antisocial behaviour and its antecedents. The present sample was comprised of male adult offenders who were primarily Caucasian, and was drawn exclusively from a medium-security Canadian federal institution. Thus, the findings presented herein may not be generalized to more ethnically diverse samples, samples of probationary offenders, or those incarcerated in either lower or higher security level institutions. Future research should utilize a larger, more heterogeneous sample of offenders in order to determine the degree to which the present findings can be generalized and, simultaneously, to investigate where potential differences lie with respect to these sample characteristics and the predictive values of the criminogenic constructs examined herein.

In addition to improving upon the methodologies utilized by previous research, considerations must be made regarding existing theory. It has been argued recently that a life-course theory is limited as an explanation of the development of psychopathy (Vein & Beech, 2006). However, this is likely due to the fact that the life-course theory as put forth by Moffitt (1993a) was primarily developed as an explanation of how for some individuals, childhood and adolescent antisocial behaviour develops into persistent antisocial behaviour in adulthood, whereas for others it does not. Although more recent iterations of the life-

course theory have provided increased insight into the development of psychopathy associated persistent antisocial behaviour (e.g., Bartusch et al., 1997), its conception was not specifically for this purpose. As a result, its use as an explanation for the etiology and consequences of psychopathy is arguably limited. However, recent research endeavours by life-course theorists have begun to expand the reach of life-course explanation of antisocial behaviour by incorporating results from neurodevelopmental research (e.g., Bartusch et al., 1997). Future research should continue to incorporate genetic and neurodevelopmental approaches into longitudinal designs with continuous follow-up, so that a clearer picture can be drawn from the relative contributions of inherited traits, neurobiological characteristics, and social environment to the development of antisocial behaviour.

Ideally, the above suggestions for future research would involve large samples of individuals who exhibit heterogeneity with respect to innate biological characteristics (e.g., genetic predisposition, neurological impairment, gender, ethnicity), social environment (e.g., parenting, socioeconomic status, schooling), antisocial history, peer group membership (e.g., delinquent versus prosocial), and offending history (e.g., violent and sexual offenders, non-violent offenders). The careful examination of other developmental models of antisocial behaviour (e.g., Simons et al., 1994) would require more in-depth investigations into parenting and family variables in relation to age of onset, association with delinquent peers, and the development of antisocial behaviour. In addition, the use of the PCL-R in the measurement of adult psychopathy would be beneficial in the attempt to replicate findings presented in the present study, as well as to provide further construct validity for the SRP-III. The incorporation of these recommendations would necessitate the recruitment, careful measurement, and continuous follow-up of a large sample of participants in order to gain a

truly comprehensive picture of the role of age of onset with respect to a variety of existing and potentially criminogenic constructs and outcomes in later life.

Implications of the Present Study

Results from the present study have several important research, theoretical, and practical implications. Firstly, findings herein provide support for the use of retrospective self-report in the assessment of prior antisocial behaviour, associates, and personality characteristics among adult offenders. This adds to a growing body of literature suggesting that the use of self-report in recounting antisocial behaviour is efficacious (Farrall, 2005; Kroner & Loza, 2001; Mills, Kroner, Hemmati, 2004; Walters, in press). Taken together with recent research that suggests that offenders will generally self-disclose valid crime-related information and that underreporting of information is not explained by impression management, an arrogant/deceitful interpersonal style (a characteristic of psychopathy), or number of past convictions (Kroner, Mills, & Morgan, in press) findings from the present study serve to provide support for the use of self-report methods in research with adult offenders.

Secondly, the present study has implications for a life-course theory of antisocial behaviour. Findings such as the influence of psychopathic personality among late-onset offenders in adolescence, the importance of antisocial associates among early-onset offenders across the lifespan, and the equivalent average age of early- and late-onset offenders found in the present sample call into question some of the fundamental tenets of Moffitt's (1993a) life-course theory of antisocial behaviour. Importantly, the present study revealed that knowing the age at which an individual begins to behave in antisocial ways is not nearly as informative in predicting future criminal behaviour as are the criminogenic constructs that

may result from that individual's history of antisocial behaviour, though it did contribute unique variance in the prediction of behaviour.

The latter point has practical implications in the identification of at-risk youth, the assessment of risk for future criminal behaviour among actively antisocial individuals, and in the design and implementation of successful interventions for antisocial individuals, whether at the beginning of their criminal careers or deeply entrenched in a criminal lifestyle. In the case of early-onset offenders, research has suggested that due to their frequent resistance to rehabilitation (e.g., Salekin et al., 1998), a focus should be placed on prevention efforts. These prevention efforts, directed at young offenders' impulsivity and difficulties in self-control, may reduce future criminal behaviour and have far-reaching social and economic benefits. Moreover, for youth who display psychopathic tendencies, both Frick and colleagues (2000) and Kosson and colleagues (2002) argue that, although conduct disordered children who display callous and unemotional traits may in fact be psychopathic youth, effective treatment is possible if targeted to the specific needs of this group. The present study suggests that antisocial associates are important with respect to the criminal behaviour of both early-onset and late-onset offenders. From this perspective, programs specifically developed to address issues such as social problem-solving and risk-taking behaviour in the context of a prosocial and supportive network would assist these individuals in redirecting their behavioural trajectories (Carroll et al., 2006).

To conclude, findings from the present study add to an already impressive body of literature documenting the criminogenic roles of antisocial associates, attitudes, and psychopathic personality. Moreover, it was revealed that age of onset does provide important predictive information regarding the future antisocial behaviour of an individual,

over and above these constructs. Importantly, the present study demonstrates that these findings are robust, collected via efficient retrospective and concurrent self-report methodologies as opposed to employing a lengthy and resource-demanding prospective longitudinal design. In addition, although several concurrent and retrospective studies have utilized data from adolescent samples, the current study is the first to examine age of onset in relation to the antisocial functioning of primarily violent adult male offenders. Substantiated by inter-correlations and predictive contributions across the life course, the present study also provides important evidence of the impact of having antisocial associates early in life on future criminal behaviour and risk for re-offending. In addition to these contributions regarding age of onset and antisocial behaviour across the lifespan, the present study is also the first to report evidence of construct validity of the SRP-III using a sample of predominantly violent adult male offenders.

Importantly, several key findings in the present study call into question the hypotheses generated by a life-course perspective, and in so doing, propose future avenues of research. It is clear that a comprehensive picture of a criminal offending over the life course is yet to be completed; nonetheless, research such as the current study adds to a growing understanding of why some individuals outgrow their antisocial behaviours and return to prosocial lifestyles, while others persist and become lifelong criminal offenders, with far-reaching consequences for individuals and society as a whole.

References

- Abramowitz, C. S., Kosson, D. S., & Seidenberg, M. (2004). The relationship between childhood Attention Deficit Hyperactivity Disorder and conduct problems and adult psychopathy in male inmates. *Personality and Individual Differences*, 36, 1031-1047.
- Agnew, R. (1991). The interactive effect of peer variables on delinquency. *Criminology*, 29, 47-72.
- Agnew, R., & White, H. R. (1992). An empirical test of general strain theory. *Criminology*, 30, 475-499.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitude and predicting social behavior*. Englewood Cliffs, NJ: Prentice Hall.
- Alarid, L. F., Burton, V. S., & Cullen, F. T. (2000). Gender and crime among felony offenders: Assessing the generality of social control and differential association theories. *Journal of Research in Crime and Delinquency*, 37, 171-199.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders (4th ed.)*. Washington, DC: APA.
- Andrews, D. A. (1982). *The Level of Supervision Inventory (LSI): The first follow-up*. Toronto: Ontario Ministry of Correctional Services.
- Andrews, D. A., & Bonta, J. (1995). *The Level of Service Inventory-Revised*. Toronto, Canada: Multi-Health Systems.
- Andrews, D. A. & Bonta, J. (2003). *The psychology of criminal conduct (4th ed.)*. Cincinnati, OH: Anderson Publishing Co.

- Barclay, C. R. (1994). Composing protoselves through improvisation. In U. Neisser & R. Fivush (Eds.), *The remembering self: Construction and accuracy in the self-narrative* (pp. 55-77). Cambridge: Cambridge University Press.
- Bartusch, D. R. J., Lynam, D. R., Moffitt, T. E., & Silva, P. A. (1997). Is age important? Testing a general versus a developmental theory of antisocial behavior. *Criminology*, 35, 13-48.
- Bell, R. Q., & Chapman, M. (1986). Child effects in studies using experimental or brief longitudinal approaches to socialization. *Developmental Psychology*, 22, 595-603.
- Benning, S. D., Patrick, C. J., Blonigen, D. M., Hicks, B. M., & Iacono, W. G. (2005). Estimating facets of psychopathy from normal personality traits: A step toward community-epidemiological investigations. *Assessment*, 12, 3-18.
- Blair, R. J. R. (2003). Neurobiological basis of psychopathy. *British Journal of Psychiatry*, 182, 5-7.
- Blair, R. J. R., Peschardt, K. S., Budhani, S., Mitchell, D. G. V., & Pine, D. S. (2006). The development of psychopathy. *Journal of Child Psychology and Psychiatry*, 47(3-4), 262-275.
- Blonigen, D. M., Carlson, S. R., Krueger, R. F., & Patrick, C. J. (2003). A twin study of self-reported psychopathic personality traits. *Personality and Individual Differences*, 35, 179-197.
- Blonigen, D. M., Hicks, B. M., Krueger, R. F., Patrick, C. J., & Iacono, W. G. (2006). Continuity and change in psychopathic traits as measured via normal-range personality: A longitudinal-biometric study. *Journal of Abnormal Psychology*, 115(1), 85-95.

- Bonta, J., Harman, W. G., Hann, R. G., & Cormier, R. B. (1996). The prediction of recidivism among federally sentenced offenders: a re-validation study of the SIR scale. *Canadian Journal of Criminology*, 38, 61–79.
- Bonta, J., Lipinski, S., & Martin, M. (1992). *Characteristics of federal inmates who recidivate*. Ottawa, ON: Statistics Canada.
- Bradburn, N. M., Rips, L. J., & Shevell, S. K. (1987). Answering autobiographical questions: the impact of memory and inference on surveys. *Science*, 236(4798), 157-161.
- Cairns, R. B., & Cairns, B. D. (1991). Adolescence in our time: Lifelines and risks. Unpublished manuscript.
- Cairns, R. B., Cairns, B. D., Neckerman, H. J., Gest, S. D., & Gariepy, J.-L. (1988). Social networks and aggressive behavior: Peer support or peer rejection? *Developmental Psychology*, 24, 815-823.
- Carroll, A., Hemingway, F., Bower, J., Ashman, A., Houghton, S., & Durkin, K. (2006). Impulsivity in juvenile delinquency: Differences among early-onset, late-onset, and non-offenders. *Journal of Youth and Adolescence*, 35(4), 519-529.
- Caspi, A., & Bem, D. J. (1990). Personality continuity and change across the life course. In L. Pervin (Ed.) *Handbook of personality theory and research* (pp. 549-575).
- Caspi, A., Elder, G. H., & Bem, D. J. (1987). Moving against the world: Life-course patterns of explosive children. *Developmental Psychology*, 23, 308-313.
- Caspi, A., Roberts, B. W., & Shiner, R. L. (2005). Personality development: stability and change. *Annual Review of Psychology*, 56, 453-484.
- Chess, S., & Thomas, A. (1987). *Origins and evolution of behavior disorders: From infancy to early adult life*. Cambridge, MA: Harvard University Press.

- Cleckley, H. M. (1976). *The mask of sanity* (5th ed.). St. Louis, MO: Mosby.
- Cloninger, C. R., Bayon, C., & Pryzbeck, T. R. (1997). Epidemiology and axis I comorbidity of antisocial personality. In D. M. Stoff, J. Breiling, & J. D. Maser (Eds.), *Handbook of antisocial behavior* (pp. 12-21). New York: Wiley.
- Cohen, P., Kasen, S., Bifulco, A., Andrews, H., & Gordon, K. (2005). The accuracy of adult narrative reports of developmental trajectories. *International Journal of Behavioral Development*, 29(5), 345-355.
- Coid, J. (1993). Current concepts and classifications of psychopathic disorder. In P. Tyrer & G Stein (Eds.), *Personality disorder reviewed* (pp. 113-164). London: Gaskell.
- Coie, J. D., Belding, M., & Underwood, M. (1988). Aggression and peer rejection in childhood. In B. Lahey & A. Kazdin (Eds.), *Advances in clinical child psychology* (Vol. 2, pp. 125-158). New York: Plenum Press.
- Colman, I., & Jones, P. B. (2004). Birth cohort studies in psychiatry: Beginning at the beginning. *Psychological Medicine*, 34, 1375-1383.
- Cote, J. E., & Allahar, A. L. (1994). *Generation on hold: Coming of age in the late twentieth century*. Toronto, Canada: Stoddart Publishing Co. Limited.
- Crovitz, H. F., & Schiffman, H. (1974). Frequency of episodic memories as a function of their age. *Bulletin of the Psychonomic Society*, 4, 517-518.
- Devita, E., Forth, A., & Hare, R. D. (1990). Family background of male criminal psychopaths. *Canadian Psychology*, 31, 346.
- Dodge, K. A., Coie, J. D., & Brakke, N. P. (1982). Behavior patterns of socially rejected and neglected preadolescents: The roles of social approach and aggression. *Journal of Abnormal Child Psychology*, 10, 389-410.

- Dodge, K. A., & Frame, C. L. (1982). Social cognitive biases and deficits in aggressive boys. *Child Development, 53*, 629-635.
- Dodge, K. A., & Newman, J. P. (1981). Biased decision-making processes in aggressive boys. *Journal of Abnormal Psychology, 90*, 375-379.
- Edelbrock, C., Rende, R., Plomin, R., & Thomspon, L. A. (1995). A twin study of competence and problem behavior in childhood and early adolescence. *Journal of Child Psychology and Psychiatry, 36*, 775-785.
- Edens, J. F., Lilienfeld, S. O., Marcus, D. K., & Poythress, N. G. Jr. (2006). Psychopathic, not psychopath: Taxometric evidence for the dimensional nature of psychopathy. *Journal of Abnormal Psychology, 115*, 131-144.
- Edens, J. F., Skeem, J. L., Cruise, K. R., & Cauffman, E. (2001). Assessment of “juvenile psychopathy” and its association with violence: A critical review. *Behavioural Sciences and the Law, 19*, 53-80.
- Elander, J. & Rutter, M. (1996). Use and development of the Rutter Parents’ and Teachers’ scales. *International Journal of Methods in Psychiatric Research 6*, 63–78.
- Elliott, D. S., Ageton, S. S., & Canter, R. J. (1979). An integrated theoretical perspective on delinquent behavior. *Journal of research in Crime and Delinquency, 16*, 3-27.
- Elliott, D. S., and Huizinga, D. (1989). Improving self-reported measures of delinquency. In Klein, M. W. (ed.), *Cross-National Research in Self-Reported Crime and Delinquency* (pp. 155-186). Norwell, MA: Kluwer Academic.
- Elliot, D. S., Huizinga, D., & Ageton, S. S. (1985). *Explaining delinquency and drug use*. Beverly Hills, CA: Sage.

- Ellis, L., & Walsh, A. (2000). *Criminology: A global perspective*. Needham Heights, MA: Allyn & Bacon.
- Farrington, D. P. (1991). Antisocial personality from childhood to adulthood. *The Psychologist*, 4, 389-394.
- Farrington, D. P. (1995). The development of offending and antisocial behaviour from childhood: Key findings from the Cambridge Study in Delinquent Development. *Journal of Child Psychology and Psychiatry*, 36(6), 929-964.
- Farrington, D. P. (2006). Key longitudinal-experimental studies in criminology. *Journal of Experimental Criminology*, 2, 121-141.
- Farrington, D. P., Gallagher, B., Morely, L., St. Leger, R. J., & West, D. J. (1986). *Cambridge study in delinquent development: Long term follow-up*. Unpublished annual report, Cambridge University Institute of Criminology, Cambridge, England.
- Farrington, D., Ohlin, L., & Wilson, J. Q. (1986). *Understanding and controlling crime*. New York: Springer-Verlag.
- Fergusson, D. M. & Woodward, L. J. (2000). Educational, psychosocial, and sexual outcomes of girls with conduct problems in early adolescence. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 41, 779-792.
- Forth, A. E., & Brown, S. (1993). *Antisocial Behavior Scale*. Unpublished Test. Carleton University, Ottawa, Canada.
- Forth, A. E., Hart, S. D., & Hare, R. D. (1990). Assessment of psychopathy in male young offenders. *Psychological Assessment: Journal of Consulting and Clinical Psychology*, 2, 1-3.

- Forth, A. E., Kosson, D. S., & Hare, R. D. (2003). *The Psychopathy Checklist: Youth Version*. Toronto, Canada: Multi-Health Systems.
- Frick, P. J. (1995). Callous-unemotional traits and conduct problems: A two-factor model of psychopathy in children. *Issues in Criminological and Legal Psychology, 1*, 47-51.
- Frick, P. J., Bodin, S. D., & Barry, C. T. (2000). Psychopathic traits and conduct problems in community samples and clinic-referred samples of children: Further development of the Psychopathy Screening Device. *Psychological Assessment, 12*, 382-393.
- Frick, P. J., Cornell, A. H., Bodin, S. D., Dane, H. E., Barry, C. T., & Loney, B. R. (2003). Callous-unemotional traits and developmental pathways to severe conduct problems. *Developmental Psychology, 39*, 246-260.
- Frick, P. J., Kimonis, E. R., dandreaux, D. M., & Farell, J. M. (2003). The 4 years stability of psychopathic traits in non-referred youth. *Behavioural Sciences and the Law, 21*, 1-24.
- Frick, P. J., & Marsee, M. A. (2006). Psychopathy and developmental pathways to antisocial behaviour in youth. In C. J. Patrick (Ed.), *Handbook of psychopathy* (pp. 353-374). New York: Guilford Press.
- Frick, P. J., O'Brien, B. S., Wooton, J. M., & McBurnett, K. (1994). Psychopathy and conduct problems in children. *Journal of Abnormal Psychology, 103*, 700-707.
- Gangestad, A. W., & Thornhill, R. (1997). The evolutionary psychology of extrapair sex: The role of fluctuating asymmetry. *Evolution & Human Behavior, 18*, 69-88.
- Ge, X., Donnellan, M. B., & Wenk, E. (2001). The development of persistent criminal offending in males. *Criminal Justice and Behavior, 28*(6), 731-755.

- Gendreau, P., Goggin, C. E., & Law, M. A. (1997). Predicting prison misconducts. *Criminal Justice and Behavior*, 24, 414-431.
- Gendreau, P., Grant, B. A., Leipziger, M., & Collins, C. (1979). Norms and recidivism rates for the MMPI and selected experimental scales on a Canadian delinquent sample. *Canadian Journal of Behavioural Science*, 11, 21-31.
- Gendreau, P., Little, T., & Goggin, C. (1996). A meta-analysis of the predictors of adult offender recidivism. What works! *Criminology*, 34, 575-607.
- Gendreau, P., Madden, P., & Leipziger, M. (1979). Norms and recidivism rates for social history and institutional experience for first incarcerates: Implications for programming. *Canadian Journal of Criminology*, 21, 1-26.
- Glover, A. J. J., Nicholson, D. E., Hemmati, T., Bernfeld, G. A., & Quinsey, V. L. (2002). A comparison of predictors of general and violent recidivism among high-risk federal offenders. *Criminal Justice and Behavior*, 29(3), 235-249.
- Glueck, S., & Glueck, E. (1950). *500 criminal careers*. New York: Knopf.
- Goggin, C., Gendreau, P., & Gray, G. (1998). Case need domain: Associates and social interaction. *Forum on Corrections Research*, 10, 24-47.
- Gottfredson, M. & Hirschi, T. (1990). *A general theory of crime*. Stanford, CA: Stanford University Press.
- Grann, M., Langstrom, N., Tengstrom, A., & Stalenheim, E. G. (1998). Reliability of the file-based retrospective ratings of psychopathy with the PCL-R. *Journal of Personality Assessment*, 70, 416-426.

- Halverson, F. F. Jr., Kohnstamm, G. A., & Martin, R. P. (Eds.). (1994). *The developing structure of temperament and personality from infancy to adulthood*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Hare, R. D. (1983). Diagnosis of antisocial personality disorder in two prison populations. *American Journal of Psychiatry*, 140, 887-890.
- Hare, R. D. (1991). *Manual for the Revised Psychopathy Checklist*. Toronto, ON: Multi-Health Systems.
- Hare, R. D. (1993). *Without conscience: The disturbing world of the psychopaths among us*. New York: Pocket Books.
- Hare, R. D. (1996). Psychopathy: A clinical construct whose time has come. *Criminal Justice and Behavior*, 23, 25-54.
- Hare, R. D. (2003). *Manual for the Revised Psychopathy Checklist (2nd ed.)*. Toronto, Canada: Multi-Health Systems.
- Hare, R. D., Harpur, T. J., Hakstian, A. R., Forth, A. E., Hart, S. D., & Newman, J. P. (1990). The Revised Psychopathy Checklist: Descriptive statistics, Reliability, and factor structure. *Psychological Assessment*, 2, 338-341.
- Hare, R. D., Hart, S. D., & Harpur, T. J., (1991). Psychopathy and the DSM-IV criteria for antisocial personality disorder. *Journal of Abnormal Psychology*, 100, 391-398.
- Hare, R. D., & McPherson, L. M. (1984). Violent and aggressive behavior in criminal psychopaths. *International Journal of Law and Psychiatry*, 7, 35-50.
- Hare, R. D., McPherson, L. M., & Forth, A. E. (1988). Male psychopaths and their criminal careers. *Journal of Consulting and Clinical Psychology*, 56, 710-714.

- Hare, R. D., & Neumann, C. S. (2006). The PCL-R assessment of psychopathy: Development, structural properties, and new directions. In C. Patrick (Ed.), *Handbook of psychopathy* (pp. 58-88). New York: Wiley.
- Harpur, T. J., Hakstian, A. R., & Hare, R. D. (1988). Factor structure of the Psychopathy Checklist. *Journal of Consulting and Clinical Psychology*, 56, 741-747.
- Harpur, T. J., & Hare, R. D. (1994). Assessment of psychopathy as a function of age. *Journal of Abnormal Psychology*, 103, 604-609.
- Harris, G. T., Rice, M. E., & Quinsey, V. L. (1994). Psychopathy as a taxon: Evidence that psychopaths are a discrete class. *Journal of Consulting and Clinical Psychology*, 62, 387-397.
- Hart, S. D., & Hare, R. D. (1997). Psychopathy: Assessment and association with criminal conduct. In D. M. Stoff & J. Breiling (Eds.), *Handbook of antisocial behaviour*. New York, NY: John Wiley & Sons, Inc.
- Hart, S. D., Hare, R. D., & Harpur, T. J., (1992). The Psychopathy Checklist-Revised: An overview for researchers and clinicians. In J. Rosen & P. McReynolds (Eds.), *Advances in psychological assessment* (Vol. 7, pp. 103-130). New York: Plenum.
- Hart, S. D., Watt, K. A., & Vincent, G. M. (2002). Commentary on Seagrave and Grisso: Impressions of the state of the art. *Law and Human Behavior*, 26, 241-245.
- Harris, G. T., Rice, M. E., & Quinsey, V. L. (1994). Psychopathy as a taxon: Evidence that psychopaths are a discrete class. *Journal of Consulting and Clinical Psychology*, 62(2), 387-397.
- Hemphill, J. (1991). *Psychopathy and recidivism following release from a therapeutic community treatment program*. Unpublished master's thesis, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

- Henry, B., Moffitt, T. E., Caspi, A., Langley, J., & Silva, P. A. (1994). On the “remembrance of things past”: A longitudinal evaluation of the retrospective method. *Psychological Assessment, 6*(2), 92-101.
- Hirschi, T., & Gottfredson, M. (1994). The generality of deviance, in T. Hirschi & M. Gottfredson (Eds.). *The Generality of Deviance*. New Brunswick, NJ: Transaction Publishers.
- Jaffe, P., & Baker, L. L. (1999). Why changing the YOA does not impact youth crime: Developing effective prevention programs for children and adolescents. *Canadian Psychology, 40*(1), 22-29.
- Jeglum-Bartusch, D. R., Lynam, D. R., Moffitt, T. E., & Silva, P. A. (1997). Is age important? Testing a general versus a developmental theory of antisocial behavior. *Criminology, 35*(1), 13-48.
- Johnson, D. L., & Walker, T. (1987). Primary prevention of behavioral problems in Mexican-American children. *American Journal of Community Psychology, 15*, 375-385.
- Johnstone, L., & Cooke, D. J. (2004). Psychopathic-like traits in childhood: Conceptual and measurement concerns. *Behavioral Sciences and the Law, 22*, 103-125.
- Kanazawa, S., & Still, M. C. (2000). Why men commit crimes and why they desist. *Sociological Theory, 18*, 434-447.
- Kazdin, A. F. (1987). *Conduct disorders in childhood and adolescence*. Newbury Park: Sage.
- Kazemian, L., & Farrington, D. P. (2005). Comparing the validity of prospective, retrospective, and official onset for different offending categories. *Journal of Quantitative Criminology, 21*(2), 127-147.

- Kosson, D. S., Cyterski, T. D., Steuerwald, B. L., Neumann, C. S., & Walker-Matthews, S. (2002). The reliability and validity of the Psychopathy Checklist: Youth Version in non-incarcerated males. *Psychological Assessment, 14*, 97-109.
- Kosson, D. S., Smith, S. S., & Newman, J. P. (1990). Evaluating the construct validity of psychopathy on black and white male inmates: Three preliminary studies. *Journal of Abnormal Psychology, 99*, 250-259.
- Kosson, D. S., Steuerwald, B. L., Forth, A. E., & Kirkhart, K. J. (1997). A new method for assessing the interpersonal behavior of psychopathic individuals: Preliminary validation studies. *Psychological Assessment, 9*, 89-101.
- Kratzer, L., & Hodgins, S. (1999). A typology of offenders: a test of Moffitt's theory among males and females from childhood to age 30. *Criminal Behaviour and Mental Health, 9*, 57-73.
- Kroner, D. G. & Loza, W. (2001). Evidence for the efficacy of self-report in predicting violent and nonviolent criminal recidivism. *Journal of Interpersonal Violence, 16*, 168-177.
- Kroner, D. G., Mills, J. F., & Morgan, R. D. (in press). Underreporting of crime-related content and the prediction of criminal recidivism among violent offenders. *Psychological Services*.
- Lacourse, E., Nagin, D., Vitaro, F., Cote, S., Arseneault, L., & Tremblay, R. (2006). Prediction of early-onset deviant peer group affiliation: A 12-year longitudinal study. *Archives of General Psychiatry, 63*, 562-568.

- LaFrenier, P., & Sroufe, L. A. (1985). Profiles of peer competence in the preschool: Interrelations between measures, influence of social ecology, and relation to attachment history. *Developmental Psychology*, 21, 56-69.
- Lahey, B., & Kazdin, A. (Eds.). (1990). *Advances in clinical child psychology* (Vol. 13). New York: Plenum.
- Lally, J. R., Mangione, P. L., & Hoing, A. S. (1988). The Syracuse University Family Development Research Project: Long-range impact of an early intervention with low-income children and their families. In Dr. R. Powell (Ed.), *Annual advances in applied developmental psychology, Vol. 3: Parent education as early childhood intervention: Emerging directions in theory, research, and practice*. Norwood, NJ: Ablex.
- Lalumiere, M. L., Harris, G. T., & Rice, M. E. (2001). Psychopathy and developmental instability. *Evolution & Human Behavior*, 22, 75-92.
- Lalumiere, M. L., & Quinsey, V. L. (2000). Good genes, mating effort, and delinquency. *Behavioral and Brain Sciences*, 23, 608-609.
- Larsson, H., Andershed, H., & Lichtenstein, P. (in press). A genetic factor explains most of the variation in the psychopathic personality. *Journal of Abnormal Psychology*.
- Laub, J. H., Nagin, D. S., & Sampson, R. J. (1998). Trajectories of change in criminal offending: Good marriages and the desistance process. *American Sociological Review*, 63, 225-238.
- Lilienfeld, S. O., & Andrews, B. P. (1996). Development and preliminary validation of a self-report measure of psychopathic personality traits in noncriminal populations. *Journal of Personality Assessment*, 66, 488-524.

- Livshits, G., & Kobylansky, E. (1991). Fluctuating asymmetry as a possible measure of developmental homeostasis in humans: A review. *Human Biology*, 63, 441-466.
- Loeber, R. (1982). The stability of antisocial and delinquent child behaviour: A review. *Child Development*, 53, 1431-1446.
- Loeber, R., & Baicker-McKee, C. (1989). The changing manifestations of disruptive/antisocial behavior from childhood to early adulthood: Evolution or tautology? Unpublished manuscript, Western Psychiatric Institute, University of Pittsburgh, Pittsburgh, PA.
- Loeber, R., Farrington, D. P., Stouthamer-Loeber, M., & van Kammen, W. B. (1998). *Antisocial behavior and mental health problems: Explanatory factors in childhood and adolescence*. Mahwah, NJ: Lawrence Earlbaum.
- Loeber, R., Green, S., Lahey, B., & Stouthamer-Loeber, M. (1990). Optimal informants on childhood disruptive behaviors. *Development and Psychopathology*, 1, 317-337.
- Loeber, R., & Schmalings, K. B., (1985). Empirical evidence for overt and covert patterns of antisocial conduct problems: A metaanalysis. *Journal of Abnormal Child Psychology*, 13, 337-353.
- Loeber, R., & Stouthamer-Loeber, M. (1996). The development of offending. *Criminal Justice and Behavior*, 23(1), 12-24.
- Loeber, R., Stouthamer-Loeber, M., Van Kammen, W., & Farrington, D. P. (1989). Development of a new measure of self-reported antisocial behavior for young children: Prevalence and reliability. In M. Klein (Ed.), *Cross-national research in self-reported crime and delinquency* (pp. 203-226). Boston: Kluwer-Nijhoff.

- Lynam, D. R. (2002). Fledgling psychopathy: A view from personality theory. *Law and Human Behavior*, 26, 255-259.
- Manning, J. T., Koukourakis, K., & Brodie, D. A. (1998). Fluctuating asymmetry, metabolic rate and sexual selection in human males. *Evolution and Human Behavior*, 18, 15-21.
- Maxfield, M. G., Weiler, B., & Widom, C. (2000). Comparing self-reports and official records of arrests. *Journal of Quantitative Criminology*, 16(1), 87-110.
- Mazur, A., Halpern, C., & Udry, J. R. (1994). Dominant-looking male teenagers copulate earlier. *Ethology and Sociobiology*, 15, 87-94.
- McDermott, S., & Nagin, D. S. (2001). Same of different? Comparing offender groups and covariates over time. *Sociological Methods and Research*, 29, 282-318.
- McGlashan, T. H., Grilo, C. M., Skodol, A. E., Gunderson, J. G., Shea, M. T., Morey, L. C., et al. (2000). The Collaborative Longitudinal Personality Disorders Study: Baseline axis I/II and II/II diagnostic co-occurrence. *Acta Psychiatrica Scandinavica*, 102, 256-264.
- Meehl, P. E., & Golden, R. R. (1982). Taxometric methods. In J. N. Butcher & P. C. Kendall (Eds.), *The handbook of research methods in clinical psychology* (pp. 127-181). New York: Wiley.
- Mellor, C. S. (1992). Dermatoglyphic evidence of fluctuating asymmetry in schizophrenia. *British Journal of Psychiatry*, 160, 467-472.
- Mills, J. F. & Kroner, D. G. (under review). Criminal associates: A moderator of antisocial attitudes and psychopathy in the prediction of criminal behavior.
- Mills, J. F., & Kroner, D. G. (1997). The Criminal Sentiments Scale: Predictive validity in a sample of violent and sex offenders. *Journal of Clinical Psychology*, 53(4), 399-404.

- Mills, J. F., & Kroner, D. G. (1999). *Measures of Criminal Attitudes and Associates*. Unpublished User Guide.
- Mills, J. F., & Kroner, D. G. (2002a). *Early Childhood and Adolescent Behaviour Scale*. Unpublished Research Questionnaire.
- Mills, J. F., & Kroner, D. G. (2002b). *Inventory of Life Course Associates*. Unpublished Research Questionnaire.
- Mills, J. F., & Kroner, D. G. (2005). *ECABS preliminary data*. Unpublished manuscript.
- Mills, J. F., Kroner, D.G., & Forth, A.E. (2002). Measures of criminal attitudes and associates (MCAA): Development, factor structure, reliability, and validity. *Assessment*, 9, 240-253.
- Mills, J. F., Kroner, D. G., & Hemmati, T (2004) The Measures of Criminal Attitudes and Associates (MCAA): the prediction of general and violent recidivism. *Criminal Justice and Behavior* 31, 717–733.
- Mills, J. F., Loza, W., & Kroner, D. G. (2003) Predictive validity despite social desirability: evidence for the robustness of self-report among offenders. *Criminal Behaviour & Mental Health* 13, 140–150.
- Moffitt, T. E. (1990). The neuropsychology of delinquency: A critical review of theory and research. In N. Morris & M. Tonry (Eds.), *Crime and justice* (vol. 12, pp. 99-169). Chicago: University of Chicago Press.
- Moffitt, T. E. (1993a). Adolescent-limited and life-course-persistent antisocial behavior: A developmental taxonomy, *Psychological Review*, 100(4), 674-701.
- Moffitt, T. E. (1993b). The neuropsychology of conduct disorder. *Development and Psychopathology*, 5, 135-151.

- Moffitt, T. E., & Caspi, A. (2001). Childhood predictors differentiate life-course persistent and adolescence-limited pathways, among males and females. *Development and Psychopathology*, 13, 355-375.
- Moffitt, T. E., Caspi, A., Harrington, H., & Milne, B. J. (2002). Males on the life-course-persistent and adolescence-limited antisocial pathways: Follow-up at age 26 years. *Development and Psychopathology*, 14, 179-207.
- Moffitt, T. E., Caspi, A., Rutter, M., & Silva, P. A. (2001). *Sex differences in antisocial behaviour*. Cambridge: Cambridge University Press.
- Moffitt, T. E., & Henry, B. (1989). Neuropsychological assessment of executive functions in self-reported delinquents. *Development and Psychopathology*, 1, 105-118.
- Moffitt, T. E., & Silva, P. A. (1988). Neuropsychological deficit and self-reported delinquency in an unselected birth cohort. *Journal of the American Academy of Child and Adolescent Psychiatry*, 27, 233-240.
- Moore, C. S., & Rose, M. R. (1995). Adaptive and nonadaptive explanations of sociopathy. *Behavioral and Brain Sciences*, 18, 566-567.
- Morrison, D., & Gilbert, P. (2001). Social rank, shame and anger in primary and secondary psychopaths. *The Journal of Forensic Psychiatry*, 12, 330-356.
- Mylonas, A. D., & Reckless, W. C. (1963). Prisoners' attitudes toward law and legal institutions. *Journal of Criminal Law, Criminology, and Police Science*, 54, 479-484.
- Nasby, W., Hayden, B., & DePaulo, B. M. (1980). Attributional bias among aggressive boys to interpret unambiguous social stimuli as displays of hostility. *Journal of Abnormal Psychology*, 89, 459-468.

- National Crime Prevention Council. (1996). *Preventing crime by investing in families: Promoting positive outcomes in children prenatal to six years old*. Ottawa, ON: Ministry of Justice.
- National Crime Prevention Council. (1997). *Preventing crime by investing in families: Promoting positive outcomes in children six to twelve years old*. Ottawa, ON: Ministry of Justice.
- Naugler, C. T., & Ludman, M. D. (1996). Fluctuating asymmetry and disorders of developmental origins. *American Journal of Medical Genetics*, 66, 15-20.
- Neumann, C. S., Kosson, D. S., Forth, A. E., & Hare, R. D. (2006). Factor structure of the Hare Psychopathy Checklist: Youth Version (PCL:YV) in incarcerated adolescents. *Psychological Assessment*, 18(2), 142-154.
- Neumann, C. S., Vitacco, M. J., Hare, R. D., & Wupperman, P. (2005). Re-construing the “reconstruction” of psychopathy: A comment on Cooke, Michie, Hart, & Clark. *Journal of Personality Disorders*, 19, 624-640.
- Nufield, J. (1982). *Parole decision-making in Canada: research towards decision guidelines*. Ottawa, Canada: Ministry of Supply and Services Canada.
- Ogloff, J. R., & Lyon, D. R. (2000). Criminality. In A. E. Kazdin (Ed.), *Encyclopedia of psychology* (Vol 2, pp. 346-351). Washington DC: American Psychological Association; New York: Oxford University Press.
- Ogloff, J. R., Wong, S., & Greenwood, A. (1990). Treating criminal psychopaths in a therapeutic community program. *Behavioral Sciences and the Law*, 8, 81-90.

- Olds, D., Pettitt, L. M., Robinson, J., Henderson, C., Eckenrode, J., Kitzman, H., Cole, B., & Powers, J. (1998). Reducing risks for antisocial behaviour with a program of prenatal and early childhood home visitation. *Journal of Community Psychology*, 26(1), 65-83.
- Olds, D., Eckenrode, J., Henderson, C. R., Kitzman, H., Powers, J., Cole, R., Sidora, K., Morris, P., & Pettitt, L. M. (1997). Long-term effects of home visitation on maternal life course and child abuse and neglect: Fifteen-year follow-up of a randomized trial. *Journal of the American Medical Association*, 278(8), 637-643.
- Palmer, C. T., & Tilley, C. F. (1995). Sexual access to females as a motivation for joining gangs: An evolutionary approach. *Journal of Sexual Research*, 32, 213-217.
- Parker, J., Sitarenios, G., & Hare, R. D. (2003). *Large sample multigroup factor analyses of the Hare Psychopathy Checklist-Revised (PCL-R)*. Manuscript in preparation.
- Paternoster, R. & Brame, R. (1998). The structural similarity of processes generating criminal and analogous behaviors. *Criminology*, 36, 633-669.
- Patterson, G. R., & Dishion, T. J. (1985). Contributions of families and peers to delinquency. *Criminology*, 23, 63-79.
- Patterson, G. R., & Yoerger, K. (1993). Developmental models for delinquent behavior. In S. Hodgins (Ed.) *Mental disorder and crime*. Newbury Park: Sage.
- Patterson, G. R., Capaldi, D., & Bank, L. (1991). An early starter model for predicting delinquency. In D. J. Pepler & K. H. Rubin (Eds.) *The development and treatment of childhood aggression*. Hillsdale, N. J.: Erlbaum.
- Patterson, G. R., DeBaryshe, B. D., & Ramsey, E. (1989) A developmental perspective on antisocial behaviour. *American Psychologist*, 44, 329-335.
- Patterson, G. R., Reid, J. B., & Dishion, T. J. (1992). *Antisocial boys*. Eugene: Castalia.

- Paulhus, D. L., Hemphill, J. D., & Hare, R. D. (in press). *Self-Report Psychopathy Scale (SRP-III)*. Toronto/Buffalo: Multi-Health Systems.
- Pepler, D., & Rubin, K. (Eds.). (1991). *The development and treatment of childhood aggression*. Hillsdale, NJ: Erlbaum.
- Petras, H., Schaeffer, C. M., Ialongo, N. S., Hubbard, S., Muthen, B., Lambert, S. F., Poduska, J., & Kellam, S. (2004). *Development and Psychopathology*, 16, 919-941.
- Piatigorsky, A., & Hinshaw, S. P. (2004). Psychopathic traits in boys with and without attention-deficit/hyperactivity disorder: Concurrent and longitudinal correlates. *Journal of Abnormal Child Psychology*, 32, 535-550.
- Piquero, A. R., & Buka, S. L. (2002). Linking juvenile and adult patterns of criminal activity in the Providence cohort of the National Collaborative Perinatal Project. *Journal of Criminal Justice*, 30, 259-272.
- Porter, S., Birt, A. R., & Boer, D. P. (2001). Investigation of the criminal and conditional release profiles of Canadian federal offenders as a function of psychopathy and age. *Law and Human Behavior*, 25(6), 647-661
- Quinsey, V. L., Harris, G. T., Rice, M. E., & Cormier, C. (1998). *Violent offenders: Appraising and managing risk*. Washington, DC: American Psychological Association.
- Quinsey, V. L., Skilling, T. A., Lalumiere, M. L., & Craig, W. M. (2004). *Juvenile delinquency: Understanding the origins of individual differences*. Washington, DC: American Psychological Association.
- Raine, A. (1993). *Psychopathology of crime: Criminal behavior as a clinical disorder*. San Diego, CA: Academic Press.

- Raine, A., Venables, P. H., & Williams, M. (1995). High autonomic arousal and electrodermal orienting at age 15 years as protective factors against criminal behavior at age 29 years. *American Journal of Psychiatry*, 152, 1595-1600.
- Raine, A., Venables, P. H., & Williams, M. (1996). Better autonomic conditioning and faster electrodermal half-recovery time at age 15 years as possible protective factors against crime at age 29 years. *Developmental Psychology*, 32, 624-630.
- Rice, M. E., Harris, G. T., & Cormier, C. (1992). An evaluation of a maximum security therapeutic community for psychopaths and other mentally disordered offenders. *Law and Human Behavior*, 16, 399-412.
- Robins, L. N. (1966). *Deviant children grown up*. Baltimore, MD: Williams & Wilkins.
- Robins, L. N. (1978). Sturdy childhood predictors of adult antisocial behaviour: Replications from longitudinal studies. *Psychological Medicine*, 8, 611-622.
- Robins, L. N. (1985). Epidemiology of antisocial personality. In J. O. Cavenar (Ed.), *Psychiatry* (vol. 3, pp. 1-14). Philadelphia: Lippincott.
- Robins, L. N., & Rutter, M. R. (Eds.). (1990). *Straight and devious pathways from childhood to adulthood*. New York: Cambridge University Press.
- Ross, M. (1989). Relation of implicit theories to the construction of personal histories. *Psychological Review*, 96, 341-357.
- Rothbart, M. K., & Ahadi, S. A. (1994). Temperament and the development of personality. *Journal of Abnormal Psychology*, 103, 55-66.
- Rubin, D. C. (1982). On the retention function for autobiographical memory. *Journal of Verbal Learning and Verbal Behavior*, 21, 21-38.

- Rueter, M., Chao, W., & Conger, R. (2000). The effect of systematic variation in retrospective conduct disorder reports on antisocial personality diagnoses. *Journal of Consulting and Clinical Psychology, 68*(2), 307-312.
- Salekin, R. T., Brannen, D. N., Zalot, A. A., Leistico, A.-M., & Neumann, C. S. (2006). Factor structure of psychopathy in youth: Testing the applicability of the new four-factor model. *Criminal Justice and Behavior, 33*(2), 135-157.
- Salekin, R. T., Neumann, C. S., Leistico, A.-M. R., & DiCicco, T. M. (2004). Construct validity of psychopathy in a youth offender sample: Taking a closer look at psychopathy's potential importance over disruptive behaviour disorders. *Journal of Abnormal Psychology, 113*, 416-427.
- Salekin, R. T., Rogers, R., Ustad, K. L., & Sewell, K. W. (1998). Psychopathy and recidivism among female inmates. *Law and Human Behavior, 22*, 109-128.
- Saltaris, C. (2002). Psychopathy in juvenile offenders: Can temperament and attachment be considered as robust developmental precursors? *Child Psychology Review, 22*, 729-752.
- Sameroff, A., & Chandler, M. (1975). Reproductive risk and the continuum of caretaking casualty. In F. Horowitz, M. Hetherington, S. Scarr-Salapatek, & G. Siegel (Eds.), *Review of child development research* (Vol. 4, pp. 187-244). Chicago: University of Chicago Press.
- Sampson, R. J., & Laub, J. H. (1990). Crime and deviance over the life course: The salience of adult social bonds. *American Sociological Review, 55*, 609-627.
- Sampson, R. J., & Laub, J. H. (1992). Crime and deviance in the life course. *Annual Review of Sociology, 18*, 63-84.

- Schulsinger, F. (1972). Psychopathy: Heredity and environment. *International Journal of Mental Health, 1*, 190-206.
- Seitz, V., Rosenbaum, L., & Apfel, N. H. (1985). Effects of family support intervention: A ten-year follow-up. *Child Development, 56*, 376-391.
- Serin, R. C. (1991). Psychopathy and violence in criminals. *Journal of Interpersonal Violence, 6*, 423-431.
- Serin, R. C. (1996). Violent recidivism in criminal psychopaths. *Law and Human Behaviour, 20*, 207-217.
- Serin, R. C., & Amos, N. L. (1995). The role of psychopathy in the assessment of dangerousness. *International Journal of Law and Psychiatry, 18*, 231-238.
- Seto, M. C., & Barbaree, H. (1999). Psychopathy, treatment behavior and sex offender recidivism. *Journal of Interpersonal Violence, 14*, 1235-1248.
- Sherman, L. W. (1993). Defiance, deterrence, and irrelevance: A theory of the criminal sanction. *Journal of Crime and Delinquency, 30*(4), 445-474.
- Shields, I. W., & Simourd, D. J. (1991a). Predicting predatory behavior in a population of young offenders. *Criminal Justice and Behavior, 18*, 180-194.
- Shields, I. W., & Simourd, D. J. (1991b). *The Pride in Delinquency Scale*. Paper presented at the Eastern Ontario correctional Psychologists' Winter Conference, Burritts Rapids, Canada.
- Simons, R., Wu, C., Conger, R. D., & Lorenz, F. O. (1994). Two routes to delinquency: Differences between early and late starters in the impact of parenting and deviant peers. *Criminology, 32*(2), 247-275.

- Simourd, D. J. (1997). The Criminal Sentiments Scale-Modified and Pride in Delinquency Scale: Psychometric properties and construct validity of two measures of criminal attitudes. *Criminal Justice and Behavior*, 24(1), 52-70.
- Simourd, D. J., & Hoge, R. D. (2000). Criminal psychopathy: A risk-and-need perspective. *Criminal Justice and Behavior*, 27(2), 256-272.
- Skilling, T. A., Harris, G. T., Rice, M. E., & Quinsey, V. L. (2002). Identifying persistently antisocial offenders using the Hare Psychopathy Checklist and the DSM Antisocial personality disorder criteria. *Psychological Assessment*, 14, 27-38.
- Skilling, T. A., Quinsey, V. L., & Craig, W. M. (2001). Evidence of a taxon underlying serious antisocial behaviour in boys. *Criminal Justice and Behavior*, 28(4), 450-470.
- Squire, L. R. (1989). On the course of forgetting in very long-term memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 15(2), 241-245.
- Stattin, H., & Magnusson, D. (1991). Stability and change in criminal behaviour up to age 30. *The British Journal of Criminology*, 31(4), 327-346.
- Suedfeld, P., & Landon, P. B. (1978). Approaches to treatment. In R. Hare & D. Schalling (Eds.), *Psychopathic behaviour* (pp. 347-376). New York: Wiley.
- Sutherland, E., & Cressey, D. R. (1978). *Criminology*. Philadelphia: Lippincott.
- Sutherland, E. H., Cressey, D. R., & Luckenbill, D. F. (1992). *Principles of criminology*. Dix Hills, NY: General Hall.
- Tellegen, A. (in press). *Manual for the Multidimensional Personality Questionnaire*. Minneapolis, MN: University of Minnesota Press.
- Thompson, C. ., Skowronski, J. J., & Lee, D. J. (1988). Telescoping in dating naturally occurring events. *Memory and Cognition*, 16, 461-468.

- Tremblay, R. E. (1991). Aggression, prosocial behavior, and gender: Three magic words but no magic wand. In D. Pepler & K. Rubin (Eds.), *The development and treatment of childhood aggression* (pp. 71-77). Hillsdale, NJ: Erlbaum.
- Vazsonyi, A. T., Pickering, L. E., Junger, M., & Hessing, D. (2001). An empirical test of a general theory of crime: A four-nation comparative study of self-control and the prediction of deviance. *Journal of Research in Crime and Delinquency*, 38, 91-131.
- Vein, A., & Beech, A. R. (2006). Psychopathy: Theory, measurement, and practice. *Trauma, Violence, & Abuse*, 7(3), 155-174.
- Viding, E. (2004). Annotation: Understanding the development of psychopathy. *Journal of Child Psychology and Psychiatry*, 45(8), 1329-1337.
- Viding, E., Blair, J., Moffitt, T. E., & Plomin, R. (2005). Evidence for substantial genetic risk for psychopathy in 7-year-olds. *Journal of Child Psychology and Psychiatry*, 46(6), 592-597.
- Vitacco, M. J., Neumann, C. S., & Jackson, R. L. (2005). Testing a four-factor model of psychopathy and its association with ethnicity, gender, intelligence, and violence. *Journal of Consulting and Clinical Psychology*, 73, 466-476.
- Vitacco, M. J., Neumann, C. S., Robertson, A. A., & Durrant, S. L. (2002). Contributions of impulsivity and callousness in the assessment of adjudicated male adolescents: A prospective study. *Journal of Personality Assessment*, 78, 87-103.
- Vitaro, F., Gagnon, C., & Tremblay, R. E. (1990). Predicting stable peer rejection from kindergarten to grade one. *Journal of Clinical Child Psychology*, 19, 257-264.
- Warr, M. (1993). Age, peers, and delinquency. *Criminology*, 31, 17-40.

- Warr, M., & Stafford, M. (1991). The influence of delinquent peers: What they think or what they do? *Criminology*, 29, 851-866.
- White, J., Moffitt, T. E., Earls, F., Robins, L. N., & Silva, P. A. (1990). How early can we tell? Preschool predictors of boys' conduct disorder and delinquency. *Criminology*, 28, 507-533.
- Williams, K. M., Nathanson, C., & Paulhus, D. L. (2003). *Structure and validity of the Self-Report Psychopathy Scale-III in normal populations*. Poster presented at the 111th annual convention of the American Psychological Association, Toronto, Canada.
- Wilson, M., & Daly, M. (1985). Competitiveness, risk taking, and violence: The young male syndrome. *Ethology and Sociobiology*, 6, 59-73.
- Wilson, M., & Daly, M. (1993). Lethal confrontational violence among young men. In N. J. Bell (Ed.), *Adolescent risk taking* (pp. 84-106). Thousand Oaks, CA: Sage.
- Wilson, J. Q., & Herrnstein, R. J. (1985). *Crime and human nature*. New York: Simon & Schuster.
- Wolfgang, M. E., Figlio, R. M., & Sellin, T. (1972). *Delinquency in a birth cohort*. Chicago: University of Chicago Press.
- Wong, S. (1984). The criminal and institutional behaviours of psychopaths. *Programs Branch User Report*, Ottawa, Ontario, Canada: Ministry of the Solicitor General of Canada.
- Wong, S. (1988) Is Hare's Psychopathy Checklist reliable without the interview? *Psychological Reports*, 62, 931-934.
- Wong, S. & Hare, R. D. (2005). *The guidelines for a psychopathy treatment program*. Toronto, Canada: Multi-Health Systems.

- Wootton, J. M., Frick, P. J., Shelton, K. K., & Silverthorn, P. (1997). Ineffective parenting and childhood conduct problems: The moderating role of callous-unemotional traits. *Journal of Consulting and Clinical Psychology*, 65, 301-308.
- Wormith, J. S., & Goldstone, C. S. (1984) The clinical and statistical prediction of recidivism. *Criminal Justice and Behavior* 11, 3-34.
- Wyshak, G., & Frisch, R. E. (1982). Evidence for a secular trend in age of menarche. *New England Journal of Medicine*, 306, 1033-1035.
- Zimmerman, M. (1994). *Interview guide for evaluating DSM-IV psychiatric disorders and the Mental Status Examination*. Providence, RI: Psych Products Press.

Participant #: _____ Date: _____

Demographic Information

Age _____ years

Ethnicity (check one):

- ☐ White
- ☐ Black
- ☐ Asian
- ☐ Native
- ☐ Other (specify _____)

Education _____ years

Criminal History Information

Number of prior convictions _____

Number of prior incarcerations _____

Most serious (confining) offence _____

Participant #: _____ Date: _____

Early Childhood and Adolescent Behaviour Scale - Modified

The purpose of this questionnaire is to determine how often you engaged in certain kinds of behaviours when you were young and as an adult. The next few pages list a variety of behaviours that you may or may not have engaged in. When you are completing the questionnaire, please include **ALL** activities that you have engaged in.

A sample question and explanation are given below:

	IN MY CHILDHOOD (12 YEARS AND YOUNGER)	DURING MY TEENAGE YEARS (13 TO 17 YEARS OF AGE)	DURING MY ADULTHOOD (FROM 18 YEARS TO THE PRESENT)
Have you ever shoplifted items worth less than \$50?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+

The numbers 0, 1, 2-5, 6-10, 11-20, 21+, are choices for the number of times you have engaged in a certain behaviour. Circle the choice that applies to you for each behaviour. Under the column labelled **IN MY CHILDHOOD**, we are interested in behaviours that you have engaged in when you were 12 years old and under. For example, if you shoplifted something under \$50 when you were 10 and you did this 2 to 5 times, you would circle 2-5 under that column.

Under the second column, labelled **DURING MY TEENAGE YEARS**, you would circle the appropriate response if you have engaged in that behaviour as a teenager. For example, if you never shoplifted as a teenager you would circle 0 under that column. Under the third column, labelled **DURING MY ADULTHOOD**, you would circle the appropriate response if you have engaged in that behaviour as an adult. For example, if you never shoplifted as an adult you would circle 0 under that column.

ECABS – Modified (cont'd)

	IN MY CHILDHOOD (12 YEARS AND YOUNGER)	DURING MY TEENAGE YEARS (13 TO 17 YEARS OF AGE)	DURING MY ADULTHOOD (FROM 18 YEARS TO THE PRESENT)
1. Did you ever cheat on a test at school?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
2. Did you ever get into fights with other kids at school?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
3. Have you ever pulled a fire alarm in school?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
4. Did you ever have a physical altercation with a teacher?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
5. Have you ever vandalized school property?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
6. Have you ever put graffiti on walls, toilet doors, etc.?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
7. Have you ever looked at pornography?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
8. Did you ever bully other kids?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
9. Did you commit minor traffic violations? (e.g., running stop signs, red lights, use old plates, etc.)	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
10. Have you ever damaged a parked vehicle without notifying the owner or police?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
11. Have you ever injured a pedestrian while driving and left without checking to see if he/she was alright?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+

ECABS – Modified (cont'd)

	IN MY CHILDHOOD (12 YEARS AND YOUNGER)	DURING MY TEENAGE YEARS (13 TO 17 YEARS OF AGE)	DURING MY ADULTHOOD (FROM 18 YEARS TO THE PRESENT)
12. Have you ever driven while impaired?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
13. Have you ever assaulted anyone?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
14. Have you ever engaged in vandalism? (e.g. breaking windows, defacing/damaging property etc.)	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
15. Have you ever make harassing phone calls?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
16. Have you ever verbally assaulted someone? (e.g. police officers, teachers, security guards etc.)	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
17. Have you ever committed arson?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
18. Have you ever shoplifted items worth less than \$50?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
19. Have you ever shoplifted items worth more than \$50?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
20. Have you ever trespassed?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
21. Have you ever committed a break and entry?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
22. Have you ever engaged in 'purse snatching'?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
23. Have you ever mugged someone <u>without</u> using a weapon?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+

ECABS – Modified (cont'd)

	IN MY CHILDHOOD (12 YEARS AND YOUNGER)	DURING MY TEENAGE YEARS (13 TO 17 YEARS OF AGE)	DURING MY ADULTHOOD (FROM 18 YEARS TO THE PRESENT)
24. Have you ever mugged someone <u>with a weapon</u> ?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
25. Have you ever stolen a bicycle or bicycle parts?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
26. Have you ever stolen a car?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
27. Have you ever stolen a car stereo, speakers, or any other property from a vehicle?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
28. Have you ever been in possession of stolen property?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
29. Have you ever robbed a store, gas station, bank or any other 'business' <u>without using a weapon</u> ?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
30. Have you ever robbed a store, gas station, bank or any other 'business' <u>using a weapon</u> ?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
31. Have you ever threatened someone with a gun, knife, or any other weapon?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+

ECABS – Modified (cont'd)

IN MY CHILDHOOD (12 YEARS AND YOUNGER)	DURING MY TEENAGE YEARS (13 TO 17 YEARS OF AGE)	DURING MY ADULTHOOD (FROM 18 YEARS TO THE PRESENT)
32. Have you ever been in possession of a weapon, e.g., gun knife (excluding pocketknife) for which you were not licensed to carry?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
33. Have you ever injured someone using a weapon? (e.g. knife, gun, rock, baseball bat, etc.)?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
34. Have you ever injured someone badly? (e.g. left bruises, cased visible bleeding or broken bones, etc.)	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
35. Have you ever hit a girl or woman?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
36. Have you ever hurt an animal? (other than hunting)	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
37. Have you ever tried marijuana and/or hashish?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
38. Have you ever tried LSD, psychedelics, cocaine, heroin, or crack?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
39. Have you ever used uppers or downers? (excludes prescription medication)	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
40. Have you ever sold drugs?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
41. Have you ever consumed alcohol in public places illegally?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+

ECABS – Modified (cont'd)

	IN MY CHILDHOOD (12 YEARS AND YOUNGER)	DURING MY TEENAGE YEARS (13 TO 17 YEARS OF AGE)	DURING MY ADULTHOOD (FROM 18 YEARS TO THE PRESENT)
42. Have you ever bought alcohol for minors?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
43. Have you ever engaged in prostitution?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
44. Have you ever lived off money from prostitution?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
45. Have you ever resisted arrest?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
46. Have you ever violated the conditions of your release?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
47. Have you ever used a stolen credit card?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
48. Have you ever forged a cheque?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
49. Have you ever 'conned' someone out of money, drugs, or possessions?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+
50. Have you ever forced or coerced someone into having sex with you?	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+	0, 1, 2-5, 6-10, 11-20, 21+

Participant #: _____ Date: _____ -

Research Questionnaire (MCAA)

Instructions: You will note that each statement in this scale has five possible answers. Please read the statement. Choose the answer you think is the best and circle it on the corresponding answer sheet.

Disagree Somewhat Somewhat Agree
 Disagree Agree

1-----2-----3-----4

By choosing 1, you disagree with the statement. Choosing 4 would mean agreement with the statement. Read each statement carefully, decide just how much you disagree, or agree, with it and then select your answer that indicates how you feel about the statement.

1. I have a lot in common with people who break the law.
2. It's understandable to hit someone who insults you.
3. Any money I find in a wallet rightfully belongs to me.
4. I am not likely to commit a crime in the future.
5. It's none of my business, if I saw a store being robbed.
6. If you can't get a job, then you have to do crime to get by.
7. I can see myself becoming law-abiding.
8. None of my friends have committed crimes.
9. Sometimes a person may have to carry a weapon to protect themselves.
10. A hungry man has the right to steal.
11. I would keep any amount of money I found.
12. It is understandable for a person to fight when they are threatened.
13. It's not wrong to steal, if it lets you keep your self-respect.
14. I could not see myself buying stolen goods.
15. I know several people who have committed crimes.
16. Child molesters get what they have coming.
17. A person is right to take what is owed them, even if they have to steal it.
18. I could see myself lying to the police.
19. Sometimes you have to fight to keep your self-respect.
20. Only I can decide what is right and wrong.
21. In certain situations I would try to outrun the police.

Research Questionnaire (MCAA) Continued

22. I would not steal, and I would hold it against anyone who does.
23. If you make someone really angry, you shouldn't complain if you get hit.
24. Only I should decide what I deserve.
25. I would not cheat on an exam.
26. People who get beat up usually had it coming.
27. It would be wrong if I didn't get what I needed.
28. I would be open to cheating certain people.
29. I am most comfortable around people who obey the law.
30. It is reasonable to expect a fight from someone you cheated.
31. No one has the right to pass judgment on me.
32. I am likely to get away with any future crime I may commit.
33. It's not wrong to hit someone who puts you down.
34. No matter what I've done, it's only right to treat me like everyone else.
35. If I were a salesman, I would never lie to a customer.
36. I always feel welcomed around criminal friends.
37. Ignoring a store being robbed is not wrong.
38. It's wrong for a lack of money to stop you from getting things.
39. I could easily tell a convincing lie.
40. There is nothing wrong with carrying a weapon to protect yourself.
41. Sometimes you have to break the law.
42. I could not see myself as a professional thief.
43. Most of my friends don't have criminal records.
44. A person is completely right to fight back if they have been threatened.
45. If someone found a wallet, its O.K. to keep the money as a reward before turning it in.
46. Rules will not stop me from doing what I want.
47. There is nothing wrong with beating up a child molester.
48. Sometimes you have to break the law to survive.
49. I would not enjoy getting away with something wrong.
50. I have friends who have been to jail.

Research Questionnaire (MCAA) Continued

51. It's not wrong to fight to save face.
52. Stealing to survive is understandable.
53. Someone who makes you very angry deserves to be hit.
54. Anyone with self-respect would rather steal than have to live off of charity.
55. I would run a scam if I could get away with it.
56. None of my friends has ever wanted to commit a crime.
57. There is nothing wrong with beating up someone who asks for it.
58. Taking what is owed you is not really stealing.
59. For a good reason, I would commit a crime.
60. It's all right to fight someone if they stole from you.
61. People should be allowed to decide what is right and wrong.
62. If it put money in my pocket, I would take advantage of someone.
63. I have committed a crime with friends.
64. A person should decide what they deserve out of life.
65. I should be given what I need.
66. I will not break the law again.
67. You should not judge what other people do.
68. I should be treated like anyone else no matter what I do.
69. I have friends who are well known to the police.
70. I would be happy to fool the police.
71. A lack of money should not stop you from getting what you want.
72. Most people break the law in some way.

Participant #: _____ Date: _____

Inventory of Life Course Associates

This inventory will ask questions about who you hung out with as you grew up. Your answers are confidential and we DO NOT want you to name your friends or associates. There are 3 sections to cover when you were 12 and under, 13 to 17, and 18 or older as your friends and associates may have changed over time.

Section 1: When you were 12 years of age and under.

Please remember back to your childhood when you were 12 years of age or younger. Think about who you hung out with and classify them as either.....

Associates: Kids you hung out with and did things with.

1 A. On average how many kids did you associate with? _____

B. Circle the types of things that the kids you associated with regularly may have gotten into trouble for:

Stealing	Skiping School	Fighting	Drinking	Having Sex
Drugs	Vandalism	Setting Fires	None of these	

C. How many of the kids you hung out with would have done these types of things? _____

D. Did you and the kids you associated with ever get into trouble for something you did together? If yes then circle what it may have been:

Stealing	Skiping School	Fighting	Drinking	Having Sex
Drugs	Vandalism	Setting Fires	None of these	

E. When you got into trouble whose idea was it? Circle one answer.

Yours	Theirs	Ours
-------	--------	------

2 A. When you were 12 years of age and under did you ever get into trouble by yourself? If yes then circle what it may have been:

Stealing	Skiping School	Fighting	Drinking	Having Sex
Drugs	Vandalism	Setting Fires	None of these	

B. Were you ever arrested?

Alone?	Yes	No
With an associate?	Yes	No
With a friend?	Yes	No
With your best friend?	Yes	No

Section 2: When you were 13 to 17 years of age.

Think about the time you were a teenager between the ages of 13 to 17. Think about who you hung out with and classify them as either.....

Associates: Teenagers you hung out with and did things with.

1 A. On average how many teenagers did you associate with? _____

B. Circle the types of things that the kids you associated with regularly may have gotten into trouble for:

Stealing	Skippping School	Fighting	Drinking	Having Sex
Drugs	Stealing Cars	Other Crime	Vandalism	Setting Fires
None of these				

C. How many of your teenage associates would have done these types of things? _____

D. Did you and the teenagers you associated with ever get into trouble for something you did together? If yes then circle what it may have been:

Stealing	Skippping School	Fighting	Drinking	Having Sex
Drugs	Stealing Cars	Other Crime	Vandalism	Setting Fires
None of these				

E. When you got into trouble whose idea was it? Circle one answer.

Yours	Theirs	Ours
-------	--------	------

2 A. When you were a teenager did you ever get into trouble by yourself? If yes then circle what it may have been:

Stealing	Skippping School	Fighting	Drinking	Having Sex
Drugs	Stealing Cars	Other Crime	Vandalism	Setting Fires
None of these				

B. Were you ever arrested?	Alone	Yes	No
	With an associate	Yes	No
	With a friend	Yes	No
	With your best friend	Yes	No

Section 3: As an adult.

Think about the time you have been an adult (since you were 18 years old). Specifically think about the people who you hung out with over the 5 years prior to coming to prison and classify them as either.....

Associates: People you hung out with and did things with.

1 A. On average how many people do you associate with? _____

B. Circle the types of things that the people you associated with regularly may have gotten into trouble for:

Stealing Fighting Drinking to excess Drugs Other Crime

C. How many of your associates would have done these types of things? _____

D. Did you and the people you associated with ever get into trouble for something you did together? If yes then circle what it may have been:

Stealing Fighting Drinking to excess Drugs Other Crime

E. When you got into trouble whose idea was it? Circle one answer.

Yours Theirs Ours

2 A. As an adult did you ever get into trouble by yourself? If yes then circle what it may have been:

Stealing Fighting Drinking to excess Drugs Other Crime

B. Were you ever arrested?	Alone?	Yes	No
	With an associate?	Yes	No
	With a friend?	Yes	No
	With your best friend?	Yes	No

Section 4: This is a general section that applies to your whole life.

1. Have any members of your immediate family (Mother, Father, Brother, Sister) been in trouble with the law?

Yes No If Yes, How many? _____

2. Have you ever committed a crime with a member of your immediate family?

Yes No

3. Have you ever been told that the people you hang out with were bad or bad for you?

Yes No

4. Have you ever tried to change your friends or associates because you knew they were bad or bad for you?

Yes No

Section 5:

1. Do you have any friends or associates that have NEVER been in trouble with the law?

Yes No

2. How many associates/friends have never been in trouble with the law? _____

3. How much of your free time do you spend in these associates and friends company?

0-25% 25-50% 50-75% 75-100%

4. What types of things do you do together? (Please list)

6. Have they ever told you to stop criminal behaviour?

Yes No

SRP III - R7

1
Disagree
Strongly

2
Disagree

3
Neutral

4
Agree

5
Agree
Strongly

1. I'm a rebellious person.
2. I often feel guilty about hurting other peoples' feelings.
3. I think I could "beat" a lie detector.
4. I have never been fired from a job.
5. Most people are wimps.
6. I purposely flatter people to get them on my side.
7. I've often done something dangerous just for the thrill of it.
8. It tortures me to see an injured animal.
9. I have pretended to be someone else in order to get something.
10. I always plan out my weekly activities.
11. I am sometimes mean to people who love me.
12. I *don't* think of myself as tricky or sly.
13. I'd be good at a dangerous job because I make fast decisions.
14. My friends would probably say that I am a warm person.
15. I would get a kick out of 'scamming' someone.
16. I will break dates or appointments if something more interesting comes along.
17. I avoid horror movies.
18. I tend to trust other people to be honest.
19. I hate high speed driving.
20. I look after my own needs and other people have to look after theirs.
21. It's fun to see how far you can push people before they get upset.
22. I enjoy doing wild things.
23. When I do something wrong, I feel ashamed afterward.
24. I find it difficult to manipulate people.
25. I rarely follow the rules.
26. I never cry at movies.
27. Most people have stolen something from a store.
28. I don't enjoy gambling for real money.
29. People sometimes say that I'm cold-hearted.
30. People can usually tell if I am lying.

31. I like to have sex with people I barely know.
32. I love violent sports and movies.
33. Sometimes you have to pretend you like people to get something out of them.
34. I am an impulsive person.
35. I'm a soft-hearted person.
36. I can talk people into anything.
37. I don't enjoy taking risks.
38. People are too sensitive when I tell them the truth about themselves.
39. Most people tell lies everyday.
40. I keep getting in trouble for the same things over and over.
41. People cry way too much at funerals.
42. You can get what you want by telling people what they want to hear.
43. I easily get bored.
44. I never feel guilty over something I've done.
45. A lot of people are "suckers" and can easily be fooled.
46. I admit that I often "mouth off" without thinking.
47. I sometimes dump friends that I don't need any more.
48. I would never step on others to get what I want.

Everyone misbehaves during their teenage years. Of course, different people misbehave in different ways and different amounts.

The following information will be used for survey purposes only. It cannot be used against you in any way because your name and other identification will be removed from the data.

1	2	3	4	5
Disagree Strongly	Disagree	Neutral	Agree	Agree Strongly

During my teenage years I have...

- 49. Stolen money from my parents.
- 50. Tried to force someone to have sex.
- 51. Skipped out on paying for things such as movies, bus or subway rides, or food.
- 52. Cheated on school tests.
- 53. Spread an untrue story about someone else.
- 54. Handed in a school essay that I copied at least partly from someone else.
- 55. Been involved in delinquent gang activity.
- 56. Stolen (or tried to steal) a motor vehicle, such as a car or motorcycle.

During my teenage years I NEVER...

- 57. Broke into a building or vehicle in order to steal something or to vandalize.
- 58. Attacked someone physically with the idea of hurting him or her.
- 59. Talked back to a teacher.
- 60. Swore at my mother or father.
- 61. Took an illegal drug.
- 62. Shoplifted from a store.
- 63. Sneaked out of the house at night.
- 64. Got arrested.

Participant #: _____ Date: _____

Childhood & Adolescence Taxon Scale

I'm going to ask you a few questions about your childhood and adolescence. Please answer as accurately as possible, and remember that your answers are confidential.

0 1	1. In elementary school, were you ever disruptive or have problems with discipline or attendance? NO or slight/moderate problems If YES (a) how often were you disruptive? _____ (b) did your attendance or behaviour problems ever result in expulsion or suspension? Y / N
0 1	2. When you were a teenager, did you use alcohol? NO or not often If YES (a) how often did you use alcohol? _____
0 1	3. As a child, were you ever aggressive toward other people? NO or occasional moderate aggression If YES (a) how were you aggressive? _____ (b) how often were you aggressive?
0 1	4. More than 3 DSM Conduct Disorder symptoms circled (<i>from next page</i>) NO YES
0 1	5. Were you ever expelled or suspended from school? NO If YES , how many times?
0 1	6. Were you ever arrested before the age of 16? NO YES
0 1	7. During your childhood or adolescence, did either of your parents have a problem with alcohol? NO YES
0 1	8. Did you live with both biological parents up to age 16? YES (or no, but only due to death of parents) NO
	Total CATS score (sum of circled scores from items 1-8)

Conduct Disorder Symptoms

Now I'm going to ask you about some different types of behaviours that might have gotten you into trouble as a child or teenager (before the age of 18).

1	<p>Did you pick on other kids? Y / N</p> <p>How often? _____</p> <p>Did you pick on other kids that were younger or smaller than you? Y / N</p> <p>Were you a bully? Y / N</p> <p>Did you ever threaten other kids so that they would buy you things, give you money, or do other things for you? Y / N</p>
2	<p>Did you get into fights (more than other kids)? Y / N</p> <p>How often did you get into fights? _____</p> <p>How often did you start the fights? _____</p>
3	<p>Did you ever use a weapon in a fight? Y / N</p> <p>What did you use? _____</p> <p>For what reason? _____</p> <p>How often did that happen? _____</p>
4	<p>Did you ever hurt people physically? Y / N</p> <p>What did you do to them? _____</p> <p>For what reason? _____</p>
5	<p>Did you ever hurt, torture, or kill an animal? Y / N</p> <p>What did you do? _____</p> <p>Did you have a pet? Y / N</p> <p>Did you ever deliberately hurt it? Y / N</p>
6	<p>Did you ever take things from people like snatching a purse, jewellery, or chains? Y / N</p> <p>Did you ever hold anyone up, or rob a store? Y / N</p> <p>Did you ever threaten anyone if they didn't give you money? Y / N</p>
7	<p>Did you ever force anyone to have sex with you? Y / N</p> <p>Were you ever part of a group or gang that forced someone to have sex against their will? Y / N</p>
8	<p>Did you ever set things on fire? Y / N</p> <p>Why did you set things on fire? _____</p>
9	<p>Did you ever damage someone's property by breaking windows, spraying graffiti on walls, or other things like that? Y / N</p> <p>What did you do? _____</p>
10	<p>Did you ever break into anyone's house, store, building or car? Y / N</p> <p>For what reason? _____</p> <p>Did you do it alone or with someone? _____</p>
11	<p>Did you ever make up stories that weren't truthful? Y / N</p> <p>What kinds of things did you make up stories about? _____</p> <p>Did you tell lies? Y / N</p> <p>Did you often lie to get things that you wanted? Y / N</p> <p>Did you often lie to avoid chores or other responsibilities? Y / N</p>
12	<p>Did you steal from stores, your parents, or other people? Y / N</p>

	How often? _____ What did you steal? _____ What was the most you stole? _____ Did you ever get caught stealing? Y / N Did you ever pick anyone's pocket, write a forged cheque, or use a credit card without permission? Y / N
13	Did you argue about how late you could stay out at night? Y / N Did you often stay out later than they said you could? Y / N Did you ever stay out all night? Y / N How old were you when you first began doing this? _____
14	Did you ever run away from home overnight? Y / N How often? _____ How long did you stay away? _____
15	Did you ever play hooky or skip school? Y / N How many times did you do it? _____ How old were you when you started to skip school? _____

Informed Consent

The purpose of informed consent is to make sure that you know the purpose of the study as well as what will be asked of you as a participant. The following should give you adequate information to ensure that you can make an informed decision as to whether you want to participate in the study.

Research personnel: The following people are involved in this research project and may be contacted for further information: Dr. Jeremy Mills (Research Supervisor, 613-351-8399), Tamara Jensen (Principal Investigator, Psychology Department, Carleton University, 520-2600, ext. 1408). Should you have any ethical concerns about this study then, please contact Dr. Janet Mantler (Chair, Carleton University Ethics Committee for Psychological Research, 520-2600, ext. 4173, janet_mantler@carleton.ca). Should you have any other concerns about this study then, please contact Dr. Mary Gick (Chair, Department of Psychology, mary_gick@carleton.ca, 520-2600, ext. 2648).

Purpose: In conducting this study we hope to gain a better understanding of the variables involved in the development of criminal behaviour across the lifespan.

Task requirements and Duration: If you choose to participate in this study you will be asked to fill out four questionnaires. The approximate duration is between 45 and 60 minutes. Questions will be in regards to the types of people and activities you have been involved with over the course of your life.

Location: To be determined upon approval of application.

Potential risk/discomfort: This study contains questions of a personal nature thus you may experience some distress. Therefore please know that your participation in this study is entirely voluntary and you may withdraw at any time without penalty. Should you withdraw none of your information will be used or given to the university researcher (Tamara Jensen).

Anonymity/confidentiality. All of the data that will be collected is confidential and will only be seen by the researchers who are working on this project. This consent form will also be kept separate from all of your data so that you cannot be identified. There are, however, limits to confidentiality and should you indicate that you might harm yourself or someone else, this must be reported. This also applies if you report committing undisclosed crimes against children for which you have not been convicted.

Follow-up. Please note that in giving your consent here it also permits us to examine information collected by Correctional Service of Canada in the Offender Management System regarding assessments completed at intake as well as program information. This consent will also allow us to conduct follow-up research for 24 months or until your warrant expiry date to better understand successful release to the community.

I have read the above form and understand the conditions of my participation. My participation in this study is voluntary, and if for any reason, at any time, I wish to leave the

experiment I may do so without having to give an explanation. Furthermore, I am also aware that the data gathered in this study are confidential and anonymous with respect to my personal identity. My signature indicates that I agree to participate in this study.

Participant's Name: _____ Participant's Signature: _____
Researcher's Name: _____ Researcher's Signature: _____
Date: _____

Debriefing

What are we trying to learn?

The purpose of this study is to examine the differences between individuals who show antisocial behaviour across the lifespan and those who show antisocial behaviour for a restricted period of time. Up to now, studies show that associating with criminal others and having antisocial attitudes, as well as having an antisocial personality, are important predictors of criminal behaviour. However, researchers lack the understanding of how these characteristics might be associated with different patterns of criminal behaviour over the lifespan. Therefore, in conducting this study we hope to gain a better understanding of how these variables might predict the criminal behaviour of individuals across the life course.

Why is this important?

This study is important to researchers because an understanding of the variables that predict criminal behaviour for different individuals can assist in earlier identification and more efficient and effective intervention.

What are our hypotheses and predictions?

This research tests the hypothesis that the criminal behaviour of those individuals who began behaving antisocially early in life will be associated with antisocial personality characteristics more so than with their associates and attitudes. Also, the criminal behaviour of those who began showing antisocial behaviour during adolescence is expected to be predicted by antisocial attitudes and associates more so than by antisocial personality characteristics.

Where can I learn more?

If you have any questions regarding this study in terms of the research you can contact Dr. Jeremy Mills, Bath Institution, 613-351-8399, or Tamara Jensen (Principal Investigator, Psychology Department, Carleton University, tjensen@connect.carleton.ca, 520-2600, ext. 1408).

If you have any ethical concerns about this study then please contact Janet Mantler (Chair, Carleton University Research Ethics Committee for Psychological Research, janet_mantler@carleton.ca, 520-2600, ext. 4173). Should you have any other concerns about this study then, please contact Dr. Mary Gick (Chair, Department of Psychology, mary_gick@carleton.ca, 520-2600, ext. 2648).

What if I have questions later?

If thinking about the questions that were asked in this study has made you feel upset or sad, you may want to talk with someone. Good options of people to talk to would be your parole office or the prison chaplain.

THANK YOU FOR YOUR PARTICIPATION!

Table I1

Correlations between Adult Criminal History Variables, Antisocial Attitudes and Associates, and Childhood and Adolescent Variables

(N = 126)

Variables	1	2	3	4	5	6	7	8	9
1 Official adult convictions	—								
2 Self-report adult convictions	0.78**	—							
3 G-SIR	-0.69**	-0.65**	—						
4 CATS	0.31**	0.43**	-0.53**	—					
5 MCAA Violence	0.15	0.22*	-0.31**	0.28**	—				
6 MCAA Antisocial Intent	0.36**	0.40**	-0.46**	0.38**	0.79**	—			
7 MCAA Entitlement	0.08	0.12	-0.27**	0.26**	0.68**	0.56**	—		
8 MCAA Associates	0.32**	0.40**	-0.63**	0.45**	0.54**	0.63**	0.39**	—	
9 MCAA total	0.28**	0.35**	-0.50**	0.41**	0.91**	0.91**	0.75**	0.77**	—
Childhood antisocial									
10 associates	0.24**	0.43**	-0.41**	0.56**	0.34**	0.43**	0.30**	0.49**	0.47**
Adolescent antisocial									
11 associates	0.25**	0.41**	-0.47**	0.62**	0.37**	0.52**	0.26**	0.58**	0.53**
12 Adult antisocial associates	0.29**	0.50**	-0.47**	0.40**	0.29**	0.30**	0.16	0.58**	0.40**
13 SRP-III Lifestyle	0.36**	0.47**	-0.51**	0.49**	0.49**	0.66**	0.35**	0.65**	0.65**
14 SRP-III Affect	0.22*	0.30**	-0.39**	0.41**	0.50**	0.55**	0.38**	0.55**	0.60**
15 SRP-III Manipulative	0.24**	0.33**	-0.36**	0.40**	0.49**	0.64**	0.39**	0.53**	0.62**
16 SRP-III Antisocial Behaviour	0.35**	0.43**	-0.57**	0.57**	0.30**	0.52**	0.25**	0.66**	0.53**
17 SRP-III total	0.36**	0.47**	-0.56**	0.58**	0.51**	0.70**	0.40**	0.72**	0.70**
18 SRP-III modified	0.32**	0.43**	-0.49**	0.50**	0.56**	0.70**	0.44**	0.66**	0.71**

Table II

Continued

Variables	10	11	12	13	14	15	16	17	18
Childhood antisocial associates	—								
Adolescent antisocial associates	0.74**	—							
Adult antisocial associates	0.55**	0.57**	—						
SRP-III Lifestyle	0.46**	0.59**	0.47**	—					
SRP-III Affect	0.46**	0.44**	0.41**	0.60**	—				
SRP-III Manipulative	0.44**	0.48**	0.31**	0.72**	0.70**	—			
SRP-III Antisocial Behaviour	0.52**	0.62**	0.53**	0.63**	0.48**	0.59**	—		
SRP-III total	0.56**	0.65**	0.53**	0.88**	0.77**	0.87**	0.85**	—	
SRP-III modified	0.51**	0.58**	0.45**	0.90**	0.83**	0.92**	0.65**	0.95**	—

Table II

Continued

Variables	1	2	3	4	5	6	7	8	9	10
Childhood antisocial										
19 behaviour	0.19*	0.34**	-0.27**	0.52**	0.18*	0.41**	0.14	0.40**	0.35**	0.59**
20 Childhood criminal behaviour	0.22*	0.39**	-0.35**	0.50**	0.42**	0.47**	0.34**	0.39**	0.49**	0.68**
21 Childhood violent behaviour	0.08	0.30**	-0.18**	0.26**	0.23**	0.30**	0.16	0.18*	0.27**	0.51**
22 Total childhood behaviour	0.22*	0.41**	-0.34**	0.53**	0.36**	0.48**	0.28**	0.41**	0.47**	0.71**
Adolescent antisocial										
23 behaviour	0.30**	0.38**	-0.38**	0.58**	0.28**	0.54**	0.16	0.50**	0.46**	0.63**
Adolescent criminal										
24 behaviour	0.34**	0.49**	-0.50**	0.61**	0.42**	0.57**	0.32**	0.61**	0.59**	0.75**
25 Adolescent violent behaviour	0.09	0.27**	-0.22*	0.37**	0.39**	0.43**	0.33**	0.36**	0.45**	0.61**
26 Total adolescent behaviour	0.32**	0.47**	-0.47**	0.62**	0.42**	0.59**	0.31**	0.60**	0.58**	0.76**
27 Adult antisocial behaviour	0.38**	0.41**	-0.44**	0.40**	0.33**	0.50**	0.24**	0.54**	0.49**	0.50**
28 Adult criminal behaviour	0.47**	0.58**	-0.59**	0.53**	0.34**	0.56**	0.25**	0.65**	0.55**	0.58**
29 Adult violent behaviour	0.24**	0.36**	-0.38**	0.42**	0.35**	0.42**	0.26**	0.43**	0.44**	0.53**
30 Total adult behaviour	0.46**	0.57**	-0.58**	0.54**	0.37**	0.58**	0.27**	0.66**	0.58**	0.61**

Table I1

Continued

Variables	11	12	13	14	15	16	17	18	19	20
Childhood antisocial behaviour	0.63**	0.39**	0.44**	0.31**	0.36**	0.53**	0.51**	0.43**	—	—
Childhood criminal behaviour	0.58**	0.49**	0.42**	0.46**	0.49**	0.45**	0.54**	0.51**	0.63**	—
Childhood violent behaviour	0.38**	0.34**	0.24**	0.24**	0.35**	0.27**	0.33**	0.32**	0.50**	0.76**
Total childhood behaviour	0.64**	0.49**	0.45**	0.44**	0.48**	0.51**	0.57**	0.52**	0.82**	0.96**
Adolescent antisocial behaviour	0.66**	0.45**	0.61**	0.41**	0.53**	0.65**	0.68**	0.60**	0.72**	0.55**
Adolescent criminal behaviour	0.79**	0.60**	0.60**	0.54**	0.61**	0.67**	0.73**	0.66**	0.71**	0.75**
Adolescent violent behaviour	0.53**	0.43**	0.31**	0.42**	0.50**	0.36**	0.46**	0.46**	0.49**	0.63**
Total adolescent behaviour	0.79**	0.59**	0.61**	0.53**	0.62**	0.68**	0.74**	0.67**	0.75**	0.74**
Adult antisocial behaviour	0.54**	0.43**	0.62**	0.38**	0.49**	0.52**	0.61**	0.58**	0.51**	0.50**
Adult criminal behaviour	0.65**	0.56**	0.66**	0.47**	0.52**	0.66**	0.70**	0.63**	0.64**	0.61**
Adult violent behaviour	0.50**	0.52**	0.45**	0.39**	0.45**	0.46**	0.52**	0.49**	0.42**	0.53**
Total adult behaviour	0.67**	0.58**	0.69**	0.48**	0.55**	0.67**	0.72**	0.66**	0.64**	0.63**

Table I1

Continued

Variables	21	22	23	24	25	26	27	28	29	30
21 Childhood violent behaviour	—									
22 Total childhood behaviour	0.79**	—								
Adolescent antisocial										
23 behaviour	0.43**	0.66**	—							
Adolescent criminal										
24 behaviour	0.51**	0.79**	0.76**	—						
25 Adolescent violent behaviour	0.63**	0.66**	0.46**	0.73**	—					
26 Total adolescent behaviour	0.56**	0.81**	0.85**	0.98**	0.76**	—				
27 Adult antisocial behaviour	0.33**	0.54**	0.73**	0.68**	0.45**	0.72**	—			
28 Adult criminal behaviour	0.43**	0.67**	0.65**	0.79**	0.49**	0.77**	0.70**	—		
29 Adult violent behaviour	0.47**	0.54**	0.48**	0.64**	0.70**	0.66**	0.49**	0.64**	—	
30 Total adult behaviour	0.45**	0.69**	0.70**	0.82**	0.56**	0.82**	0.81**	0.98**	0.72**	—

Note. * $p < .05$, ** $p < .01$.

Table I2

Correlations between Adolescent and Adult Variables for Early-onset and Late-onset Offenders

	Early-onset offenders (n = 65)	1	2	3	4	5	6	7	8	9
1 Adolescent antisocial behaviour	—									
2 Adolescent criminal behaviour	0.72**	—								
3 Adolescent violent behaviour	0.53*	0.78**	—							
4 Total adolescent behaviour	0.82**	0.98**	0.82**	—						
5 Adolescent antisocial associates	0.62**	0.76**	0.58**	0.76**	—					
6 CATS	0.36**	0.42**	0.31*	0.43**	0.48**	—				
7 Official adult convictions	0.19	0.32**	0.08	0.28*	0.18	0.26*	—			
8 Risk for general recidivism	-0.18	-0.41**	-0.19	-0.35**	-0.30*	-0.35**	-0.74**	—		
Self-report number of prior										
9 convictions	0.27*	0.47**	0.32*	0.43**	0.32*	0.32*	0.83**	-0.66**	—	
10 Adult antisocial behaviour	0.73**	0.64**	0.39**	0.68**	0.48**	0.16	0.36**	-0.36**	0.38**	
11 Adult criminal behaviour	0.55**	0.73**	0.52**	0.71**	0.53**	0.34**	0.43**	-0.49**	0.53**	
12 Adult violent behaviour	0.47**	0.62**	0.63**	0.64**	0.44**	0.29*	0.15	-0.26*	0.30*	
13 Total adult behaviour	0.63**	0.77**	0.57**	0.77**	0.56**	0.33**	0.42**	-0.48**	0.52**	
14 MCAA Violence	0.21	0.42**	0.41**	0.40**	0.32**	0.24	0.18	-0.36**	0.18	
15 MCAA Antisocial Intent	0.47**	0.56**	0.46**	0.57**	0.45**	0.23	0.34**	-0.45**	0.34**	
16 MCAA Entitlement	0.03	0.25*	0.32*	0.23	0.12	0.20	0.04	-0.13	-0.00	
17 MCAA Associates	0.46**	0.60**	0.35**	0.57**	0.49**	0.30*	0.31*	-0.61**	0.34*	
18 MCAA total	0.37**	0.56**	0.47**	0.55**	0.43**	0.29*	0.28*	-0.48**	0.28*	
19 Adult antisocial associates	0.43**	0.60**	0.46**	0.59**	0.52**	0.25*	0.30*	-0.37**	0.48**	
20 SRP-III Lifestyle	0.56**	0.55**	0.37**	0.57**	0.52**	0.29*	0.30*	-0.34**	0.37**	
21 SRP-III Callous Affect	0.37**	0.53**	0.49**	0.53**	0.42**	0.37**	0.25*	-0.43**	0.27*	
22 SRP-III Manipulation	0.49**	0.62**	0.62**	0.64**	0.43**	0.33**	0.21	-0.30*	0.24	
23 SRP-III Antisocial Behaviour	0.56**	0.58**	0.36**	0.59**	0.52**	0.34**	0.24	-0.36**	0.31*	
24 SRP-III total	0.63**	0.72**	0.56**	0.73**	0.61**	0.43**	0.32*	-0.45**	0.38**	
25 SRP-III modified	0.55**	0.66**	0.57**	0.68**	0.54**	0.40**	0.30*	-0.41**	0.35**	

Table I2

Continued

	Early-onset offenders (<i>n</i> = 65)	11	12	13	14	15	16	17	18
11 Adult antisocial behaviour	—								
12 Adult criminal behaviour	0.67**	—							
13 Adult violent behaviour	0.40**	0.63**	—						
14 Total adult behaviour	0.77**	0.98**	0.70**	—					
15 MCAA Violence	0.31*	0.23	0.25*	0.27*	—				
16 MCAA Antisocial Intent	0.48**	0.47**	0.30*	0.49**	0.76**	—			
17 MCAA Entitlement	0.12	0.08	0.13	0.10	0.71**	0.55**	—		
18 MCAA Associates	0.58**	0.59**	0.33**	0.61**	0.48**	0.59**	0.23	—	
19 MCAA total	0.46**	0.42**	0.31*	0.46**	0.91**	0.90**	0.74**	0.70**	
20 Adult antisocial associates	0.46**	0.53**	0.51**	0.57**	0.25*	0.25*	0.05	0.55**	
21 SRP-III Lifestyle	0.65**	0.56*8	0.35**	0.61**	0.40**	0.64**	0.12	0.61**	
22 SRP-III Callous Affect	0.37**	0.39**	0.36**	0.42**	0.57**	0.58**	0.38**	0.58**	
23 SRP-III Manipulation	0.41**	0.42**	0.42**	0.47**	0.50**	0.65**	0.35**	0.53**	
24 SRP-III Antisocial Behaviour	0.46**	0.57**	0.37**	0.58**	0.22	0.39**	0.05	0.55**	
25 SRP-III total	0.59**	0.62**	0.47**	0.66**	0.51**	0.69**	0.27*	0.70**	
26 SRP-III modified	0.56**	0.54**	0.44**	0.58**	0.56**	0.72**	0.34**	0.66**	

Table I2

Continued

	Early-onset offenders (<i>n</i> = 65)	19	20	21	22	23	24	25	26
19 MCAA total	—								
20 Adult antisocial associates	0.33**	—							
21 SRP-III Lifestyle	0.56**	0.45**	—						
22 SRP-III Callous Affect	0.65**	0.43**	0.57**	—					
23 SRP-III Manipulation	0.63**	0.34**	0.65**	0.68**	—				
24 SRP-III Antisocial Behaviour	0.37**	0.52**	0.45**	0.39**	0.48**	—			
25 SRP-III total	0.67**	0.56**	0.83**	0.78**	0.86**	0.76**	—		
26 SRP-III modified	0.71**	0.47**	0.88**	0.84**	0.90**	0.51**	0.94**	—	

Table I2

Continued

	1	2	3	4	5	6	7	8	9
Late-onset offenders (<i>n</i> = 39)									
1 Adolescent antisocial behaviour	—								
2 Adolescent criminal behaviour	0.54**	—							
3 Adolescent violent behaviour	-0.05	0.56**	—						
4 Total adolescent behaviour	0.65**	0.97**	0.62**	—					
5 Adolescent antisocial associates	0.35*	0.56**	0.23	0.53**	—				
6 CATS	0.60**	0.44**	0.15	0.52**	0.34*	—			
7 Official adult convictions	0.32*	0.06	-0.08	0.12	0.00	0.08	—		
8 Risk for general recidivism	-0.27	-0.20	0.03	-0.21	-0.26	-0.31	-0.59**	—	
Self-report number of prior convictions	0.34*	0.22	-0.08	0.23	0.28	0.37*	0.64**	-0.66**	—
9 Adult antisocial behaviour	0.49**	0.64**	0.40*	0.68**	0.26	0.33*	0.31	-0.26	0.30
10 Adult criminal behaviour	0.56**	0.63**	0.11	0.61**	0.56**	0.28	0.39*	-0.46**	0.51**
11 Adult violent behaviour	0.10	0.49**	0.77**	0.56**	0.27	0.21	0.23	-0.27	0.3
12 Total adult behaviour	0.55**	0.71**	0.34*	0.73**	0.51**	0.33*	0.41*	-0.45**	0.49**
13 MCAA Violence	0.24	0.52**	0.34*	0.50**	0.47**	0.25	0.01	-0.11	0.31
14 MCAA Antisocial Intent	0.58**	0.65**	0.31	0.68**	0.62**	0.37*	0.34*	-0.37*	0.48**
15 MCAA Entitlement	0.25	0.51**	0.29	0.49**	0.42**	0.20	0.02	-0.24	0.34*
16 MCAA Associates	0.35*	0.52**	0.22	0.50**	0.46**	0.17	0.08	-0.37*	0.41*
17 MCAA total	0.42**	0.64**	0.34*	0.64**	0.58**	0.3	0.15	-0.32	0.45**
18 Adult antisocial associates	-0.07	-0.03	0.13	-0.01	0.28	0.08	-0.11	-0.23	0.19
19 SRP-III Lifestyle	0.56**	0.47**	-0.03	0.47**	0.42**	0.44**	0.30	-0.35*	0.62**
20 SRP-III Callous Affect	0.25	0.37*	0.13	0.35*	0.25	0.13	0.09	-0.09	0.28
21 SRP-III Manipulation	0.52**	0.58**	0.19	0.59**	0.39*	0.23	0.21	-0.17	0.46**
22 SRP-III Antisocial Behaviour	0.64**	0.53**	0.09	0.57**	0.38*	0.41*	0.34*	-0.49**	0.54**
23 SRP-III total	0.62**	0.59**	0.10	0.60**	0.44**	0.38*	0.30	-0.36*	0.59**
24 SRP-III modified	0.53**	0.55**	0.10	0.54**	0.42*	0.33*	0.25	-0.26	0.54**

Table I2

Continued

Late-onset offenders (<i>n</i> = 39)		11	12	13	14	15	16	17	18
11	Adult antisocial behaviour	—							
12	Adult criminal behaviour	0.60**	—						
13	Adult violent behaviour	0.45**	0.42**	—					
14	Total adult behaviour	0.79**	0.94**	0.62**	—				
15	MCAA Violence	0.30	0.63**	0.50**	0.62**	—			
16	MCAA Antisocial Intent	0.53**	0.79**	0.53**	0.80**	0.82**	—		
17	MCAA Entitlement	0.33*	0.54**	0.39*	0.54**	0.72**	0.65**	—	
18	MCAA Associates	0.34*	0.67**	0.33*	0.62**	0.60**	0.55**	0.58**	—
19	MCAA total	0.45**	0.78**	0.52**	0.76**	0.92**	0.89**	0.84**	0.78**
20	Adult antisocial associates	-0.05	0.11	0.31	0.12	0.27	0.10	0.22	0.40*
21	SRP-III Lifestyle	0.39*	0.76**	0.33*	0.70**	0.76**	0.83**	0.66**	0.55**
22	SRP-III Callous Affect	0.28	0.45**	0.18	0.43**	0.50**	0.53**	0.45**	0.41*
23	SRP-III Manipulation	0.51**	0.68**	0.36*	0.68**	0.68**	0.82**	0.60**	0.51**
24	SRP-III Antisocial Behaviour	0.40*	0.58**	0.27	0.57**	0.46**	0.71**	0.52**	0.58**
25	SRP-III total	0.48**	0.75**	0.35*	0.72**	0.72**	0.88**	0.67**	0.62**
26	SRP-III modified	0.46**	0.74**	0.34*	0.71**	0.75**	0.85**	0.66**	0.56**
Late-onset offenders (<i>n</i> = 39)		19	20	21	22	23	24	25	26
19	MCAA total	—							
20	Adult antisocial associates	0.28	—						
21	SRP-III Lifestyle	0.82**	0.18	—					
22	SRP-III Callous Affect	0.55**	0.01	0.53**	—				
23	SRP-III Manipulation	0.77**	-0.10	0.77**	0.69**	—			
24	SRP-III Antisocial Behaviour	0.66**	0.14	0.66**	0.33**	0.62**	—		
25	SRP-III total	0.85**	0.09	0.90**	0.71**	0.91**	0.81**	—	
26	SRP-III modified	0.83**	0.05	0.91**	0.79**	0.93**	0.64**	0.97**	—

Note. * $p < .05$, ** $p < .01$