Testing two theories of criminal careers: A Criminal Career Profile approach

by

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Abstract

Criminal career research has emerged as a field interested in determining the factors related to the onset, frequency, duration, maintenance, and desistance of criminal behaviour (Blumstein & Cohen, 1987; Blumstein, Cohen, & Farrington, 1988). Various theories have been developed to account for these components of the criminal career, and the present research aims to examine the desistance components of two such theories in a sample of high risk adult offenders. Looking first at Moffitt's (1993) adolescence-limited/life-course persistent perspective, and then at Laub and Sampson's (1993; Sampson & Laub, 2005) theory of informal social controls, there is limited evidence that either frequency of conviction or criminal career seriousness in high risk adult offenders can be explained well by reference to either of these theories alone. Although components of each theory appear to have some support within this sample, it is important to note that the prediction of future seriousness appears to be particularly difficult. Implications of these findings are discussed, with particular reference to policy concerns and areas for additional research.

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One of the most robust findings in criminological psychology is that of the aggregate age-crime curve. Across time periods and nationalities, research has consistently shown that very little crime is committed by pre-adolescent children or elderly adults; however, antisocial behaviour increases rapidly through the teenage years, peaking at approximately 17 years of age, before decreasing sharply into the early 20s and then more gradually through middle adulthood (e.g. Fagan & Western, 2005; Farrington, 1986; Wolfgang, Figlio, & Sellin, 1972). Whether this peak during late adolescence reflects a change in prevalence or in incidence has, however, been slightly more controversial.

For the most part, research has shown that rates of arrest and conviction remain consistent for individual offenders across time, and therefore the changes in crime statistics must be attributed to changing numbers of individuals involved with crime (Blumstein, et al., 1988; Farrington, 1986). This changing prevalence suggests that during the mid- to late-teenage years, greater numbers of individuals become involved with offending than are involved either in childhood or adulthood, but, for the most part, these teenaged offenders also desist relatively quickly. Indeed, the extent of this increased prevalence led Moffitt (1993) to propose that involvement in adolescent antisocial behaviour may, in fact, be developmentally normative.

Other studies, however, have suggested that, in addition to the involvement of more people in crime during adolescence, there are also changes to the rates at which individuals offend (Nagin & Land, 1993). Nagin and Land found significant heterogeneity in individual offence rates, some of which was encapsulated by time-stable

characteristics (i.e. variables that would remain constant for each individual across time and make them more or less likely to offend), as well as additional unmeasured heterogeneity (i.e. changes in offending rates unrelated to time-stable factors). Models that included a component allowing for periods of no offending were significantly better than those that assumed ongoing involvement with crime however, suggesting that both incidence and prevalence are important in explaining the age crime curve.

In addition to playing a role in explaining the aggregate curve, the concept of time-stable heterogeneity also relates to explanations of individual offending patterns, in that some individuals more than others appear to be disposed towards antisocial behaviour. For example, males are more likely to be involved in crime than females (Giordano, Cernkovich, & Rudolph, 2002; Moffitt & Caspi, 2001; Piquero, Brame, & Moffitt, 2005), but even amongst males who have already committed an offence there are differing levels of propensity to commit another. Wolfgang et al. (1972) found that only one third of the nearly 10,000 youths in their sample had any contact with Police; however more than 50% of the offences committed by the sample were attributable to 6% of the sample, indicating that a small number of individuals are responsible for a highly disproportionate amount of crime. These individuals would be considered to be persistent offenders. In reanalysing Wolfgang et al.'s data, Blumstein and Moitra (1980) found that after the third conviction the likelihood of re-conviction became stable, thus making it difficult to determine in advance which individuals would constitute the 6% who persist.

The criminal career debate

Determining the factors associated with involvement in crime has now developed into a significant field of research. In one school of thought, propensity for criminal

behaviour is considered to occur on a continuum across the entire population, such that the majority of the population has a low level of propensity and therefore commit very little, if any, crime, and a small number of individuals have a very high propensity for crime and therefore account for a large proportion of offences. Hirschi and Gottfredson (1983) propose that this criminal propensity can be explained by individuals' levels of self-control. Individuals with relatively well-developed self-control would, therefore, constitute the majority of the population, whereas offenders would represent the lower tail of the continuum, in that they have poorer self-control and subsequently engage in more offending. At the most extreme end of the continuum would be the chronic offenders who engage in very high levels of offending and have very low levels of self-control. The pattern of behaviour demonstrated in the aggregate age-crime curve is also explained by Hirschi and Gottfredson (1983) as being developmentally determined, in that the propensity to offend increases for all individuals up to the late teenage years, and then gradually decreases again. This occurs irrespective of initial levels of self-control and independently of any other factor, leading Gottfredson and Hirschi (1986) to conclude that terms such as prevalence and incidence, and onset and desistance, are not important in the discussion of offending.

   While Gottfredson and Hirschi's criminal propensity construct is proposed to exist, to some degree, in every person, the criminal career perspective suggests that offenders are qualitatively different from non-offenders, in that distinct causal factors differentiate those who offend from those who do not offend. Similarly, factors affecting the duration, termination, frequency and severity of an individual's criminal career and therefore the separate aspects of a criminal career (initiation, duration, termination,

frequency and severity) are each in need of explanation (Blumstein, et al., 1988). The criminal career perspective very much relates the age crime curve to a change in prevalence, whereby a group of individuals begin their criminal careers, some of whom continue only for the period of adolescence and then desist. Others, however, have an earlier onset, longer duration, and consequently, a later termination. These different patterns of offence careers suggest different groups of offenders; a concept that forms the basis of Moffitt's (1993) and Farrington's (1986, 1990) theories of crime development.

Methods of assessing careers

Assuming that criminal careers exist, a number of approaches have been taken to assessing different aspects of the career concept. For example, one of the traditional arguments in the field has been that research relying on official records of offending discounts the large proportion of offences that remain unresolved, as well as failing to include many of an offender's earliest offences (Kazemian & Farrington, 2005). In contrast, self-report measures of offending can be affected by memory errors or subjective biases in reporting that could also lead to a reduced or otherwise inaccurate recollection of an individual's offending history (Kazemian & Farrington, 2005). Brame, Fagan, Piquero, Schubert and Steinberg (2004), however, found that there is a positive correlation between the two methods of data collection, indicating that the patterns of offending are similar under both methods, even if the quantities reported differ.

Methods of determining an individual's career length have also differed across studies; from simple subtraction of the offender's age at first conviction from their age at last conviction (Farrington & Maughan, 1999) to more complex models of residual career length, estimating the number of additional years for which an individual is likely to

continue to offend (Francis, Soothill, & Piquero, 2007; Kazemian & Farrington, 2006). One notable difficulty in examining career length, and indeed in assessing desistance, however, is that measures have to assume both that the offender is not continuing to engage in undetected offending and that they will not offend again after the data collection is completed.

Just as desistance can be viewed as a static event (which occurs at the point the individual ceases offending permanently, subject to the assumptions above), or a dynamic process (resulting from a change in behaviour associated with reduced offending and leading towards permanent cessation), so too can the methods of assessing desistance be considered either static or dynamic. In a static approach, comparisons are made across discrete time periods, such as before and after treatment, or before and after a given age. These approaches provide a relatively crude measure of desistance (Bushway, Thornberry, & Krohn, 2003), but are theoretically consistent with the idea that changes in prevalence account for changes in crime statistics, and that rates of offending are relatively stable in individuals. Indeed, Barnett, Blumstein and Farrington (1989) found that their model of desistance, which included a static estimate of offending rates and a static probability of career termination in a given year, accurately fit their data. A small number of offenders, however, appeared to develop a second criminal career later in adulthood, after a period of apparent desistance, indicating that the model was not able to account for all outcomes.

Dynamic methods of assessing desistance, on the other hand, are better able to incorporate incomplete desistance, and to demonstrate patterns in the timing, consistency and age at which people desist from offending (Bushway, et al., 2003). These methods

generally adopt a trajectory approach, examining patterns of offending over time in a more continuous manner than is available when the data are averaged into two discrete time periods. In this way, different groups can be identified by their unique patterns of offence trajectories (e.g. Nagin & Land, 1993; Sampson & Laub, 2003), or specific events can be modelled to determine their effects on offending over time (e.g. Horney, Osgood, & Marshall, 1995; Laub, Nagin, & Sampson, 1998; Sampson & Laub, 2005).

One of the least studied components of the criminal career is seriousness and the way in which it changes across the course of a career. In discussing seriousness, studies will often use the number of violent offences for which a person has been convicted, the number of years spent in prison, or the number of sentences of imprisonment as a proxy for seriousness; however, few studies have developed specific techniques to assess this important area. One such technique is the Criminal Career Profile, as developed by Wong, Templeman, Gu, Andre and Leis (1996, cited in Mallillin, 2006).

The Criminal Career Profile (CCP) is generated by plotting, in a step-wise function, periods of incarceration versus periods in the community for an individual offender. A regression line is then applied to the graph, and the slope of that line is converted to an angle, which is the value used in subsequent analyses (for more detailed description of the CCP graph construction process, see Appendix A).

Consider the case of an individual (Individual A) who was first convicted at 16.5 years of age and first imprisoned at the age of 17 years, spending a period of six months in prison. Up to age 30 years, Individual A accumulates a further seven prison sentences, each of only a few months' duration, totalling four and a half years of imprisonment in total. Another individual (Individual B), who is also first convicted at age 16.5 years and

imprisoned at age 17 years, also spends a total of four and a half years in prison to age 30 years. Individual B, however, has only two sentences of imprisonment; the first for two years and the second for two and a half years. Using a model of seriousness that considers only the amount of time spent in prison, these two individuals would be equivalent in seriousness; assuming that longer individual prison sentences equate to more serious offences, Individual B appears to be the more serious offender. Counting the number of prison sentences each offender has accumulated reveals that Individual A is a more serious offender than Individual B; however, the number of sentences provides an inexact measure of seriousness, given that Individual B's sentences could each potentially have been for more than five years.

Figure 1 shows the CCP graphs, with associated regression equations, slopes and angles, for Individuals A and B. The time (in years) that each individual has spent in the community (i.e. not in prison) is plotted on the *x*-axis, and the time spent in prison is plotted on the *y*-axis. For both individuals, the first data point is located at (16.5,0) indicating they have spent 16.5 years without conviction. The second data point for each is at (17,0), indicating 17 years out of prison, and 0 years in prison. Each data point therefore represents a change in status, indicating either entry into, or release from prison, vertical lines indicate periods of incarceration, and horizontal lines show periods of time in the community. By the end of CCP graph time period (age 30 years in this example) both individuals have a final data point at (25.5, 4.5); however, Individual A has had more 'steps' than Individual B along the way.

Individual A

y = 0.5175x - 8.338:
Slope = 0.5175
Angle = 27.38

Individual B

y = 0.421x - 6.114£
Slope = 0.421
Angle = 22.84
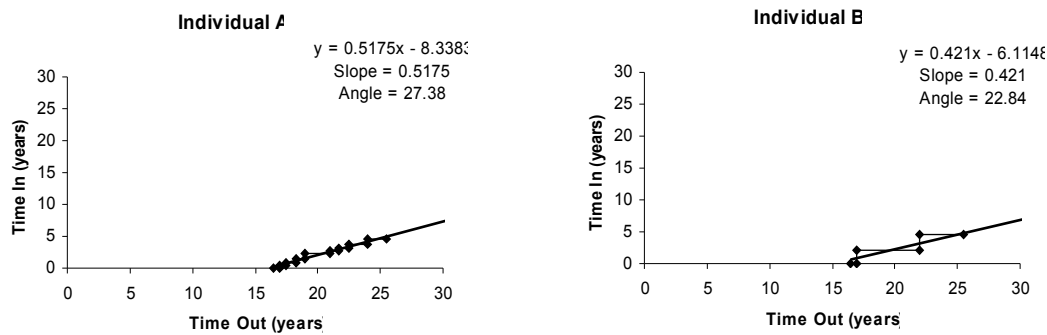
Figure 1. *Example CCP graphs for Individual A and Individual B.*

Generating CCP graphs in this way integrates the information provided by each of

the seriousness estimates considered above, and provides a quantitative value (the angle

of the regression line) for the seriousness of each individual's career: this value can then

be compared across the two offenders.

As well as making between group comparisons across the entire lifespan, separate

CCP graphs can be generated for different life periods (for example, before and after

treatment) to examine within-individual changes in seriousness. Although research using

the CCP has, to date, been limited, its use as a measure of seriousness has been validated

by comparing psychopaths to non-psychopaths, recidivists to non-recidivists, groups of

offenders at different levels of risk, offenders with different types of offence, offenders

pre-and post-treatment, and at different ages (Mallillin, 2006). In each of these studies,

larger CCP angles were associated with greater risk (i.e. psychopaths, recidivists, high

risk offenders, violent offenders, pre-treatment angles and younger offenders,

respectively). Some of the group categorisation variables used in these studies, such as

risk and recidivism, rely on conviction information that would also be related to the

generation of the CCP angle, however, suggesting that the two may not be entirely

independent. Two further studies have used the CCP measure to assess the efficacy of sexual offender treatment programmes in Canada (Looman, Abracen, & Nicholaichuk, 2000; Nicholaichuk, Gordon, Gu, & Wong, 2000). In both cases, the CCP angles for treated and untreated offenders were significantly smaller post-treatment, indicating reduced career seriousness; however, the treated offenders' angles were significantly smaller than those offenders who did not take part in the treatment, demonstrating positive treatment effect. These CCP results were also supported by, and consistent with, traditional treatment outcome measures, such as percentage of offenders who re-offended in each group (Looman, et al., 2000; Nicholaichuk, et al., 2000), and survival analyses (Nicholaichuk, et al., 2000), further suggesting that the CCP is a valid measure of seriousness.

The current research

There are two primary aims to the current research: first, to expand the research base relating to the Criminal Career Profile as a method of examining the seriousness of offending; and second, to evaluate the relative merits of two major theories of criminological psychology in a sample of high risk adult offenders. To date, research in this area has predominantly been conducted either using cohorts from the general population (e.g. Farrington, Ttofi, & Coid, 2009; Moffitt, 1993; Moffitt & Caspi, 2001; Moffitt, Caspi, Dickson, Silva, & Stanton, 1996) or in samples of high risk juvenile offenders (e.g. Ezell, 2007b; Glueck & Glueck, 1974; Laub & Sampson, 1993). While there are merits to these approaches, in that data can be collected from large numbers of individuals, the age crime curve suggests that the majority of people in a birth cohort will spend very little, if any, time involved with the criminal justice system (Wolfgang, et al.,

1972). Even within a high risk juvenile sample, many of those who do become involved in crime during adolescence will desist early in adulthood (Sampson & Laub, 2003). There is very little research, therefore, focussed exclusively on the relatively small number of individuals who remain at high risk for offending well into adulthood.

Further complicating the issue of research into high risk or serious offending, is the lack of consistency surrounding the definition of the terms serious and high risk. Often, adult outcomes are considered in relation to juvenile status, with no measure of the adult's statistical risk of re-offending based on their offending as an adult (e.g., Glueck & Glueck, 1974; Laub & Sampson, 1993). Similarly, the term 'serious' in relation to offending may relate to, for example, the number of offences, the likelihood of re-offending (Wilson, 2004), or the seriousness of an individual offence (DeLisi, 2001, 2006; DeLisi & Scherer, 2006).

One approach to research on serious adult offenders has been to focus on those who commit the most serious types of offences; for example, murder, rape, and kidnapping (DeLisi, 2001; DeLisi & Scherer, 2006). These offences, however, tend to have relatively low base rates (e.g. less than 1% of murderers, on average, commit a second murder; Sorensen & Pilgrim, 2000) and the individuals who commit these types of offences are therefore unlikely to commit them again. Although these serious offences might be indicative of a criminal lifestyle, evidence suggests that offenders at a high risk of committing further offences are more likely to have previously been involved in dishonesty offending than violence (Wilson, 2004). This indicates that high risk offenders are a more diverse group than those who commit the most serious types of offences.

Other approaches to the study of high risk offenders have utilised empirically derived models in identifying those individuals who are likely to commit further offences in future. Jennings (2006), for example, describes the validation of a risk assessment measure made up of the average of scores across six subjective rating scales, each assessing a different aspect of offending behaviour (property offending, person offending, drug/alcohol use, crime severity, repeat offending, and violence). This assessment is conducted by a member of the Police, based on all available information about the offender, and has been shown to accurately differentiate between low-, medium-, and high-risk offender groups in terms of numbers of re-arrests and likelihood of being re-arrested. When the crime severity and repeat offending scales were considered separately, those individuals categorised as high-risk on each scale were shown to have significantly more re-arrests, on average, than those in either the medium- or low-risk categories of the same scale, indicating that both severity and ongoing involvement with offending are important in identifying those at high risk of further offences.

Although Jennings' (2006) risk classification appears to be relatively straightforward, in that it can be completed by a single individual based on basic information available in a Police file, it also seems to be rather time consuming and subjective in nature, and its predictive validity has, to date, not been tested beyond a period of six months. The risk assessment model used within the New Zealand Department of Corrections context, the Risk of Conviction * Risk of Imprisonment (RoC*RoI), is an automated risk assessment tool, calculated using information on static risk factors available from the individual's official criminal history (Bakker, O'Malley, & Riley, 1999). The score generated using this model represents the likelihood that the

individual will be both re-convicted and re-imprisoned in the next five years, and a score

is automatically computed for each convicted offender managed by the New Zealand

Department of Corrections. Scores of less than 0.5 (indicating a 50% chance of being

reconvicted and imprisoned in the next five years) are considered "low risk", 0.5-0.69 are

moderate risk, 0.7-0.79 are high risk, and greater than 0.8 are very high risk. Research on

this measure is also limited, however Bakker et al. (1999) report a "near perfect" fit of the

predicted model to the observed offending of a sample of approximately 24,000 New

Zealand offenders. Nadesu (2007) also found strong correlations between risk bands, as

generated by the RoC*RoI measure, and actual reimprisonment over a 36-month period,

such that higher risk was associated with higher rates of reimprisonment. He also

identified that the RoC*RoI measure is based on a five-year prediction period, suggesting

that such strong correlations at 36-months might indicate the RoC*RoI is under-

predicting recidivism over longer periods of time.

Using RoC*RoI scores to identify offenders at high risk of reoffending, Wilson

(2004) conducted a relatively large scale study into the characteristics of high risk

offenders in New Zealand, and this study forms the starting point for the current research.

Wilson's research demonstrated that the individuals in this sample were, on average,

serving short sentences of imprisonment at the time the study was conducted, indicating

that their risk came from repeated minor offending, rather than being convicted for

serious offences with associated long prison sentences. This suggests that the different

definitions of serious offending (i.e. high risk of recidivism versus having committed a

serious offence) are targeting different groups of individuals, highlighting the importance

of developing clear definitions of what constitutes serious offending. Serious violent

offences were not uncommon in Wilson's sample, however, with 73% of the offenders

having previous convictions for assault, and 71% for serious assaults (such as grievous

bodily harm and aggravated wounding). Other common offence types included

dishonesty offending (99% of the sample had at least one previous conviction for

dishonesty offences), drug convictions (88%), and escapes/breaches of parole or

supervision (88%). Wilson notes that the majority of offences in the escapes/breaches

category were for breaches of parole or supervision, highlighting the difficulty these

individuals have in complying with community-based sentences.

Information about the offenders' backgrounds and psychosocial circumstances

prior to their incarceration at the time of the study suggests that these individuals often

have difficult histories characterised by early contact with Police; significant difficulties

in their education, including suspension or expulsion for many; early exposure to crime

through family members' involvement; and a lack of stability in their environments

(Wilson, 2004). With a mean age of 27 years, this sample demonstrated a relative lack of

stability in relationships with partners (mean longest relationship = 5 years), periods of

employment (mean longest time in employment = 1.8 years), and time spent living in any

given residence (mean longest time in one residence = 9 years). Encouragingly, more

than two thirds of participants who identified as Māori reported receiving support from

their hapu or iwi and over three quarters reported having a strong sense of their cultural

identity.

Further data collected included information about sentences and conviction

patterns, personality, motivation for change, and previous treatment (Wilson, 2004). As

expected, a high percentage (60%) of the participants showed elevations on the Antisocial

scale of the Millon Clinical Multi-axial Inventory – Edition Three (MCMI-III; Millon, Millon, & Davis, 1997); however there was a significant level of other personality pathology in the sample as well. In general, clinical syndromes were less often present; however high levels of alcohol abuse (61%), drug dependence (47%) and anxiety (61%) were observed in the sample (Wilson, 2004). Almost all (94%) participants had undertaken some form of treatment during their criminal career, ranging from Education and Life Skills, to Alcohol and Drug treatment, to Violence and other Criminogenic programmes, with over one third of participants also reporting at least one instance of treatment non-completion. Scores on the University of Rhode Island Change Assessment (McConnaughy, Prochaska, & Velicer, 1983) indicated that the majority of these offenders were in the contemplation stage of change, indicating they recognised that their offending was problematic.

In the current studies, a subset of the available data was linked to the offenders' official criminal histories to assess which variables can be linked to de-escalation and desistance from crime in this high risk sample. In Study 1, criminal history information is examined in light of Moffitt's (1993) theory of life-course persistent and adolescence-limited antisocial behaviour, with comparisons of frequency and seriousness of convictions being made across two time periods – before, and after, the age of 25 years. In the second study, a variety of background and psychosocial variables are considered as predictors of later recidivism, again in terms of both seriousness and frequency of convictions. The theoretical basis for the second study draws on the 'turning point' work of Laub and Sampson (1993). Frequencies are estimated as a rate per year of the offender's career, correcting for time spent in prison, and the angle associated with each

participant's Criminal Career Profile is used as a measure of seriousness. Further

information about the theories to be tested, as well as specific hypotheses for each study,

is presented in the Introductions to the respective studies.

General Method

Participants

The data used in these studies were extracted from an archival data set collected

by the New Zealand Department of Corrections in 2002 and 2003. The purpose of that

research project was to develop a comprehensive description of the New Zealand high

risk offender population. Preliminary analyses of all data collected were presented by

Wilson (2004). The current studies build on this previous work by examining a subset of

the available data in more depth, as well as collecting and analysing additional

reconviction data.

Participants for the original study were recruited from the population at Waikeria

Prison, near Hamilton, New Zealand, in late 2002 and early 2003. At that time, Waikeria

was New Zealand's largest prison and was selected for data collection purposes as it was

thought likely to produce a representative sample of the high-risk offender population

(Wilson, 2004). RoC*RoI (Risk of Conviction * Risk of Imprisonment) scores are the

Department of Corrections' measure of an offender's risk of being re-imprisoned within

five years. Using the prison's muster list, RoC*RoI scores were generated for each

inmate. Those with a RoC*RoI of .70 or above (indicating a 70% or higher chance that

the individual will be reconvicted and re-imprisoned within the next five years) were

considered high risk, and therefore eligible to take part in the study. Offenders in the 'at

risk' unit or who were being held on remand were excluded from the participant pool,

leaving 190 potential participants. Of these, 40 men declined to participate in the study, while the remaining 150 took part in a two-hour structured interview and completed a number of psychometric measures at Waikeria Prison. Wilson (2004) reports that the data for one participant was removed from the study after questions were raised about the integrity of his responses. No differences in demographic information were found between those who did or did not participate in the study (Wilson, 2004).

Of the remaining 149 participants, 80% identified themselves as Māori, 15% as European, and 5% Pacific Island. Whilst the percentage of Pacific Island offenders in this sample is consistent with the percentage of Pacific Island inmates within the North Island high risk offender population, the percentages of offenders identifying as Māori or European differed from the overall population. Seventy three percent of North Island high risk inmates identified as Māori at the time of the original data collection, and a further 21% identified themselves as European. At the time of the original data collection, the men had a mean age of 27 years ($SD = 6.6$), with ages ranging between 17 and 50 years. The mean RoC*RoI score for the sample was .79 ($SD=.07$).

On average, the men had completed 9.4 years of education ($SD = 1.2$); the equivalent of schooling up until almost half of Year 10 (Form 4). All but one individual had at least one conviction for a dishonesty offence, 95% of the sample had been convicted of at least one violent offence, and 94% of the men in the sample had administrative convictions, for offences such as breaches of sentence and escapes. Only 14% of the sample had been convicted of a sexual offence.

For the current study, extraction of follow up recidivism data was conducted between November 2008 and January 2009. At that time, the men had a mean age of 33

years (*SD* = 6.6), and a mean RoC*RoI of .73 (*SD*=.11). They had accumulated a mean of

79 convictions each (*SD* = 42), including a mean of 7.8 violent offences (*SD* = 6.1).

Twenty nine of the sample were incarcerated at the time their follow up data were

extracted, and four men had died prior to start of the data extraction.

Measures

For the purposes of these studies, the participants were divided into early- and

late-onset groups, on the basis of scores derived from a measure of the Moffitt (1993)

early versus late onset typology, which was administered during the original study. I also

collected information about the participants' criminal histories from the Department of

Corrections' official record of convictions, extracted through the Integrated Offender

Management System (IOMS).

Classification of groups. The measure used to classify the participants into early-

and late-onset groups is based on Moffitt's (1993) observation that antisocial behaviour

prior to the age of 13 years is an important risk factor for continued offending in

adulthood. It consists of 12 items that are scored from offender interview and file

information. The first 6 items relate to behavioural problems and criminal activity prior to

the age of 13 years, while the second 6 items relate to similar behaviours between 13 and

17 years of age. Areas assessed by the measure include the presence, severity, duration

and cross-situational nature of behaviour problems, and presence, duration and versatility

of criminal activity in each age range (see Appendix B for the items). Two items, those

relating to the severity of behavioural problems in each age group, were scored on a scale

of 1 (*not severe*) to 3 (*extremely severe*), whereas all other items were scored *yes* (1), or

no (0). Where there was insufficient evidence to score an item, it was given a rating of

not known (9). For the purposes of this research, an offender was considered to be late-onset if his behavioural problems were rated *not severe* (1) on the item relating to severity prior to age 13 years, or early-onset if he was showing *moderate* (2) or *extremely severe* (3) behavioural problems prior to age 13 years.

Criminal histories. Full criminal conviction histories were extracted for each of the men in this study, and the information contained within (dates of offences and convictions, names of offences, number of counts, and sentence lengths and start dates for sentences of imprisonment) was entered into a Microsoft Excel 2003 spreadsheet. Excel was also used to calculate release dates for each sentence of imprisonment for each offender. These were calculated using two thirds of the imposed sentence length as the time served, except in cases where another offence in the community had been committed prior to that date, or the dates did not cover the study interview date[1]. Following Wilson (personal communication), where a new offence had been committed prior to the two thirds point of the sentence, the release date was recorded as one week prior to the new offence. When the study date was not covered, the most recent release date prior to the interview was extended until one week following the interview. Each offence was classified into one of seven categories, based on the offence classifications used by Statistics New Zealand (dishonesty, drug and antisocial, violent, property damage, property abuse, administrative, or sexual offences). One additional category was created for traffic offences.

Data Analysis

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[1] Although it is possible that some of the men were released prior to the two thirds point in their sentence, this is not likely to have been a frequent occurrence. Exact release dates, or even the frequency with which these men were released prior to two thirds of their sentence, could not easily be extracted from the available information.

Two primary outcomes were examined in both studies presented here: frequency and seriousness of convictions. These two aspects of the men's conviction histories were evaluated for the entire sample, as well as for the early- and late-onset groups separately across various time periods. Comparisons were also made between the groups. Manipulation of the data required prior to analysis was conducted using Microsoft Excel 2003, and all statistical analyses were undertaken using the SPSS v. 17.0 software package.

Frequency. Rates of conviction per year were calculated for each offender, as an indicator of the frequency of the participants' offending. For each individual, rates of conviction were calculated from the date of the individual's first recorded offence to the end point of the period of interest for the given study. These rates were adjusted for time spent in prison by subtracting the number of years in prison from the total years for the period under consideration. The total number of offences in that time period was then divided by the years at liberty to generate an average rate of conviction per year. Where an individual died prior to the end of the period of interest, the recorded date of death was used as the end date.

Severity. Criminal Career Profile (CCP) angles (Wong et al., 1996 cited in Mallillin, 2006) were used as measures of seriousness in this study. The CCP angles were generated using the regression line of a step-wise function for the periods of time spent in, and out, of prison by each individual. Years spent in the community (i.e. not in prison) were plotted on the x-axis, while years spent in prison were plotted on the y-axis. Each horizontal line in the figure would therefore represent a period of time at liberty, whereas a vertical line indicates a period of incarceration. These figures were generated for each

individual, and a regression line was then fitted to each function. Regression line gradients were converted into angles, and these angles were used in the analyses as indicators of offending seriousness. Mallillin (2006) stated that the reporting of CCPs as slopes or angles is a convention of personal preference, as the two are functionally equivalent. Results are presented as angles in this research due to the more intuitive and linear nature of that scale. For a complete description of the process of CCP construction, see Appendix A.

Study 1

Since its development in 1993, Moffitt's theory of adolescence limited/life course persistent offending trajectories has become one of the most well-known and well-researched theories of antisocial behaviour. Designed to explain why many individuals become involved in crime but few persist with this behaviour into adulthood, the theory takes a developmental perspective in looking at the function of the offending behaviour at different time points in the life span. For some individuals, Moffitt found that crime is a part of life from a young age and their characteristic way of responding, whereas for others it is a temporary means of achieving a desired outcome in adolescence. In addition to conceiving of these two groups of individuals as using crime for different purposes, Moffitt proposed a number of hypotheses relating to the groups' early development and later outcomes, which have since been tested on samples throughout the world.

Moffitt's adolescence-limited/life course persistent offender typology

Moffitt's (1993) theory proposes that there are two etiologically distinct pathways to offending, the adolescence-limited (AL) pathway and the life-course persistent (LCP) pathway. Individuals in the LCP pathway begin demonstrating signs of antisocial

behaviour from a young age, and continue in a similar manner for much of their lives.

Although the behaviours considered to be antisocial change as the individual develops

(for example, biting other children at age four years as compared to robbery in

adulthood), the pattern of behaviours continue to suggest an underlying antisocial trait (a

concept known as heterotypic continuity). Moffitt hypothesised that the early

development of individuals in the LCP pathway would be characterised by difficult

temperaments, neuropsychological deficits, and parents whose own cognitive abilities

and social situations leave them ill-equipped to supportively manage their child's difficult

behaviours. These difficulties would likely build on each other from birth, compounding

the disadvantage the child experiences relative to the majority of their peers.

Moffitt (1993) predicted that, having been difficult to settle as infants and difficult

to manage as pre-schoolers, these children would enter school having already developed a

repertoire of antisocial behaviours and a problematic relationship with their parents. This

situation is unlikely to be improved in the classroom environment where deficits in

neuropsychological functioning would make learning more difficult, and therefore

increase the likelihood of the child becoming disruptive in class (Frick, et al., 1991).

Prosocial children in the class would be less likely to befriend these difficult children,

thus leading them to form friendships with similar others, who would reinforce their

antisocial behaviour. Poor school achievement would lead to decreased opportunities for

employment later in life, and associations with criminal peers would provide

opportunities for additional involvement in crime and substance abuse. Into adulthood,

these individuals would continue to use the skills and behaviours they had acquired

earlier in life, which at no point included a strong understanding of prosocial behaviour,

thus limiting their ability to desist from crime effectively. This pattern of increasingly

limited opportunities for a prosocial life demonstrates the concept of cumulative

continuity, whereby experiences associated with a greater likelihood of becoming

involved with offending compound upon each other, making offending an increasingly

likely outcome. Subsequent developmental research has validated many of Moffitt's

proposed processes, particularly those relating to friendships (Pedersen, Vitaro, Barker, &

Borge, 2007; Tremblay, Masse, Vitaro, & Dobkin, 1995).

Individuals on the AL pathway, however, would demonstrate antisocial behaviour

solely during the period of their adolescence, as the name suggests. Moffitt (1993)

hypothesised that individuals in this pathway displayed limited behavioural problems in

childhood, as well as performing within the normal ranges at school and forming

prosocial friendships. Upon reaching adolescence, however, these individuals reach what

Moffitt dubbed the 'maturity gap'.

According to Moffitt (1993), a maturity gap occurs when an individual reaches

physical maturity before reaching social maturity. In the Western world, physical

maturity occurs relatively early, at approximately age 12 to 13 years (Berk, 2008). Social

maturity, however, does not fully take place in many countries until the age of 18, or even

21 years. During the intervening period, adolescence, individuals would seek adult roles

and possessions, but not be able to achieve these through legitimate means. At this point,

the lifestyle of the LCP offender, who is already using drugs and alcohol and obtaining

whatever possessions he or she desires, becomes more attractive and the formerly

prosocial adolescent becomes temporarily involved with antisocial behaviour to achieve

their goals. In early adulthood, however, the maturity gap closes, and, for AL offenders,

antisocial behaviour would no longer be a necessary, or indeed even the most effective, means of achieving their goals. Reverting back to the prosocial skills they had developed in childhood, AL offenders would, therefore, desist from crime. In some cases, Moffitt (1993) hypothesised, the consequences of becoming involved with antisocial behaviour might create 'snares' that would delay the individual in returning to a prosocial lifestyle; for example, an individual with a history of incarceration might find it more difficult to obtain legitimate employment, or a substance dependence problem might inhibit the individual from returning to their former lifestyle. For early-onset offenders, snares act to further reduce available opportunities to break the pattern of cumulative continuity. In contrast, however, for late-onset offenders the effect of snares in delaying desistance is thought to be only temporary. Although greater numbers of snares would be expected to be associated with greater delays in desistance than would be predicted for individuals with fewer snares, the effects of snares remain surmountable, given time and a background of prosocial skills.

Results from the Dunedin Multidisciplinary Health and Development Study were, for the most part, consistent with Moffitt's (1993) theory in males to age 18 years (Moffitt, et al., 1996), and to age 26 years (Moffitt, Caspi, Harrington, & Milne, 2002). Although fewer females in the sample were found to be involved in offending, in particular on the LCP pathway, the theory also appeared to be applicable to female antisocial behaviour (Moffitt & Caspi, 2001; Odgers, et al., 2008). Beyond the Dunedin sample, patterns of offending consistent with Moffitt's theory have been found in studies internationally (e.g. Blokland, Nagin, & Nieuwbeerta, 2005; Kratzer & Hodgins, 1999), across time periods (Farrington & Maughan, 1999), and even in specific types of

offender. For example, Dobash, Dobash, Cavanagh, Smith and Medina-Ariza's (2007) study of the criminal histories of murderers, showed that, prior to committing their index murder, the offenders' histories indicated three distinct groups – those who showed difficulties in their behaviour from childhood, those whose offending began in adolescence, and those who had not offended prior to committing murder. Although various studies have identified additional pathways over and above those of the AL and LCP, for example low level persisters (e.g. Blokland, et al., 2005; Kratzer & Hodgins, 1999; Sampson & Laub, 2003), and late onset offenders (e.g. Kratzer & Hodgins, 1999; Zara & Farrington, 2009) who begin their antisocial behaviour in adulthood, the two core components of Moffitt's theory appear to be robust across studies.

In addition to assessing the applicability of the pathways aspect of the model to various populations, considerable research has been conducted testing Moffitt's etiological hypotheses during the different developmental periods.

Testing the theory in childhood. Within analyses of the Dunedin Study, Moffitt and her colleagues have found considerable support for the early developmental factors hypothesised to be associated with belonging to the LCP group. Across a number of studies using the Dunedin data, it has been shown that both individual factors, such as temperament, intellectual functioning, reading performance and tests of memory, and parenting factors (for example, teenaged single parents, and parents who used harsh or inconsistent disciplinary strategies) were differentially associated with membership in the LCP group (Moffitt, 2007). Childhood rejection by peers was also associated with LCP group membership (Moffitt, 2007).

Much of the research into Moffitt's (1993) early developmental hypotheses in samples other than the Dunedin study has focused on the proposition that children in the LCP, but not AL, pathway experience neuropsychological deficits. In one community study of 325 boys' neurocognitive abilities, Raine et al. (2005) found evidence supportive of Moffitt's hypothesis, in that neuropsychological impairments (as measured at ages 16 to 17 years) were more prevalent in the group classified as LCP than in either the control or AL groups. This was particularly evident in measures of spatial ability and memory. However, a fourth group, identified as those showing antisocial behaviour in childhood only, also showed significant impairment on the measures, suggesting that neuropsychological deficits may be related to childhood behavioural problems, whereas other factors (e.g., family level factors such as overprotection and changes in custody arrangements; Veenstra, Lindenberg, Verhulst, & Ormel, 2009) may be more directly related to whether or not these behaviours continue beyond childhood. The individual level factors of peer rejection and academic failure were also found to reduce concurrently with the antisocial behaviour of childhood-limited delinquents, suggesting that family level factors may be better predictors in the long term (Veenstra, et al., 2009).

Similar patterns of findings to those proposed by Moffitt (1993), suggesting poorer neuropsychological functioning in those individuals who become LCP offenders than those on the AL pathway, have also been demonstrated cross-culturally (e.g. Kratzer & Hodgins, 1999; Piquero & White, 2003); however, some studies have suggested that the relationship may be more complex. Although Piquero and White (2003) demonstrated that greater cognitive abilities appeared to be protective against becoming an LCP offender in a sample of African American children followed up into adulthood,

Donnellan, Ge and Wenk (2000) found that neuropsychological functioning was related to LCP antisocial behaviour in both Caucasian and Hispanic groups of participants, but not in African American juveniles. Donnellan et al. suggested that this failure to find a difference in the African American sample of offenders could relate to the opportunities in their environment, in that even higher functioning African American offenders may not be presented with the same opportunities to desist as those from other ethnicities. This idea is complicated further still, however, by Turner, Hartman and Bishop's (2007) finding that evidence for Moffitt's (1993) neuropsychological hypotheses was apparent within only the most disadvantaged neighbourhoods, and, within those neighbourhoods in only non-White ethnicities. Given Donnellan et al.'s finding that Moffitt's theory is supported in Hispanic offenders but not in those of African American descent, Turner et al.'s aggregation of all non-White ethnicities may be problematic. Additionally, Turner et al. reported using self-report measures of offending over a six year period with which to create their groups, whereas the other two studies were based on official report over longer periods of time. These methodological differences between studies make it difficult to draw conclusions about the status of neuropsychological deficits as a long term predictor of offending; however, it is apparent that other variables, such as ethnicity and environment, are likely to interact with these deficits in ways that are not yet well understood.

Testing the theory in adolescence. Moffitt has presented two papers outlining the adolescent behaviour of the males in her sample (Moffitt, et al., 1996; Moffitt, et al., 2002). In the first, outcomes between the ages of 3 and 18 years are presented, whereas the second paper provides follow up to 26 years. To the age of 18 years, Moffitt (1996)

found that the AL and LCP boys' self-reported antisocial behaviour differed significantly at the ages of 11 and 13 years, with AL boys' behaviour in the normative range with those boys who had not become involved in offending during adolescence. However, this gap had narrowed to marginal significance by 15 years and disappeared by age 18 years, suggesting that by the mid- to late-teenage years the two groups' behaviour was indistinguishable. Similarly, no differences were found between the AL and LCP groups in terms of age at first arrest or first conviction, or total number of convictions to age 18 years. The LCP group was also shown to have significantly more convictions for violent offences, however no comparisons were made for other offence categories.

According to the maturity gap perspective, adolescence-limited offenders should, from the age of approximately 18 years onward be reaching social maturity and therefore decreasing their offending and returning to a prosocial lifestyle (Moffitt, 1993). Moffitt, however, also proposed that changes in the individuals' environments due to their offending might act as snares to maintain their offending for a longer period than would initially be expected. Consistent with this, both LCP and AL males showed evidence of a number of snares, including viewing themselves as more likely to be involved in delinquency than other groups, lower perceived risk of detection for offending, increased associations with delinquent peers and lower levels of employment. Only LCP males showed lower levels of bonds with their families and lower school achievement than the non-offending groups, however, consistent with Moffitt's theory relating to the different developmental paths of the LCP and AL groups.

Given the presence of these snares, additional follow up was published at age 26 years when, it was hypothesised, the impact of the snares should have abated (Moffitt, et

al., 2002). By the age of 26 years, LCP men showed a significantly higher number of
self-reported offences than AL men; however both groups' reports were significantly
higher than those reported by the unclassified comparison group (Moffitt, et al., 2002).
No difference was found between the AL and LCP groups' self-reported violent offences,
and these were also significantly higher than the reports of the unclassified group. Only
the AL group showed significantly greater self-reported drug offending than the
unclassified group.

In terms of official convictions, similar patterns of offending were found, with
numbers of convictions being higher for the LCP group than the AL group, and both
groups showing elevations above the convictions recorded for the unclassified group
(Moffitt, et al., 2002). Violence offences and months sentenced to prison were also higher
for the LCP and AL groups than the unclassified group; however no differences between
the LCP and AL offenders were observed. Convictions for property, drug, and violence
offences, as well as court order violations were higher for the AL and LCP groups than
the unclassified group, and in all types of offending, with the exception of property crime,
the LCP group had more convictions than the AL group (Moffitt, et al., 2002).

Taken together, these findings indicate that in the period from 18 years (when
offending was similar between the AL and LCP groups, with the exception of violent
offences) to 26 years, a gap between the offending patterns of the LCP and AL groups is
re-emerging, consistent with Moffitt's (1993) theory. Moffitt et al. (2002) conclude that
the LCP men show both more frequent and more serious offending than the AL men at
age 26 years. Given the non-significant difference in violent convictions and lack of
reporting how seriousness was otherwise tested, however, the claim of greater seriousness

in LCP men does not appear to be fully supported. In addition, despite greater rates of

conviction for the LCP group over the AL group, Piquero, Brame and Moffitt (2005)

demonstrated considerable continuity in offending in the transition from 18 years to 26

years within this sample, suggesting that offending in adolescence continues to have

considerable predictive utility in adulthood, at least to age 26 years.

In addition to the impact of snares resulting in ongoing offending into adulthood,

research in the area of adolescent development provides further suggestion that the

transition to adulthood occurs at a later point in time than 18 years. Arnett (2000, 2007;

Arnett & Taber, 1994) discusses the period of development initially thought to be

associated with the closing of the maturity gap; the period from approximately 18 years

into the mid-20s. Arnett refers to this stage as the period of emerging adulthood, in which

individuals tend to have fewer responsibilities than adults, but greater freedom than

adolescents. There is evidence that marriage and parenthood are occurring later in life

than in previous generations (Arnett, 2000), leaving the period of emerging adulthood

free for greater exploration of self and identity. If these adult roles are not being taken up

until the mid-20s, this suggests that adolescent behaviour, including offending, might

continue to occur during this period, with desistance being delayed for a longer time.

Consistent with this proposition, Ezell (2007a) found that the behaviour of individuals

during the period of early adulthood is a better predictor of adult offending than

offending behaviour as a juvenile.

In contrast, however, Hayford and Furstenberg Jnr (2008) found that, even with

the protracted period of time during which individuals now take up adult roles in society,

adolescent behaviours, such as substance use and being arrested, have not increased in

people aged in their 20s over time. One explanation for this finding might be that it is not the acceptance of adult roles that signals the transition to adulthood, but the individual's maturity level (Monahan, Steinberg, Cauffman, & Mulvey, 2009). Monahan et al. found that levels of impulse control and suppression of aggression in adolescents were good predictors of ongoing offending. Hayford and Furstenberg Jnr's macro-level analysis of crime statistics is unable to provide information about the maturity level of individual offenders; however, given that a large number of individuals who come into contact with the justice system do so only once, it is likely that a number of the offences were committed by individuals who subsequently developed these psychological skills irrespective of their adult roles. These skills then protect them from further offending, rather than the adult role they have assumed in society.

Further support for this concept of psychological maturity as equally, if not more, important than social roles in relation to desistance, comes from an understanding of the demographics of individuals who remain involved with crime into adulthood. The phenomenon of emerging adulthood is considered to occur when adult responsibilities are not taken up until a later age (Arnett, 2000, 2007; Arnett & Taber, 1994), whereas in offender populations, early parenthood is a relatively common occurrence, with greater offending related to higher likelihood of having fathered a child (Khurana & Gavazzi, 2010). In addition, research has shown that early-onset offenders show considerable difficulty with impulsivity, however late-onset offenders also show increased impulsivity over non-offenders; an effect that is hypothesised to be due to the social mimicry of early-onset antisocial behaviour by late-onset offenders (Carroll, et al., 2006). Therefore,

the concept of emerging adulthood appears to have less validity in this population than does the concept of later development of psychological maturity.

Testing the theory in adulthood. Given that the participants of the Dunedin Multidisciplinary Health and Development Study (with whom Moffitt's (1993) theory was developed) are now aged in only their mid-30s, little longitudinal research has been conducted into the adult lives of individuals in each pathway, either in terms of ongoing offending or psychosocial outcomes. Published outcomes in terms of offending for the Dunedin Study are available only to the age of 26 years, as discussed above, and indicate that, at age 26 years, the LCP group was demonstrating significantly greater involvement with crime than the AL group in terms of numbers of self reported offences and numbers of convictions (Moffitt, et al., 2002). The AL group was not showing complete desistance, however, with significantly greater numbers of self-report offences and official convictions than the unclassified group (Moffitt, et al., 2002).

In a study assessing the validity of Moffitt's theory beyond the age of 26 years, Sampson and Laub (2003) examined the offence trajectories of individuals initially involved in research by the Gluecks, including additional follow up of their offending to the age of 70 years. Using latent class modelling, they identified a number of groups with unique offending trajectories, in excess of those predicted by Moffitt (1993). However, they also reported that none of the groups could reliably be predicted based on individual or developmental risk factors retrospectively, that no consistent group trajectories could be identified prospectively using developmental and individual factors, as would be suggested by Moffitt's theory, and that all of the groups showed desistance by middle adulthood.

These findings appear to undermine the AL/LCP typology, however White, Bates and Buyske (2001) have demonstrated that the factors predicting group membership in the transition from childhood to adolescence are not the same as those predicting continued offending into adulthood. As such, it is possible that as the Dunedin sample continues to age additional variables will become apparent in their relationship to desistance, and the theory will undergo revision to reflect this additional understanding. Alternatively, the number of LCP individuals in the Dunedin sample is small ($n = 47$) and it may be that Moffitt's (1993) theory fits better with the offending patterns of cohorts in the general population than with specifically higher risk samples, such as those in Sampson and Laub's study. Indeed, cohort research carried out by Farrington et al. (2009) with data from the Cambridge Study in Delinquent Development to the age of 48 years supported Moffitt's theory, in that early risk factors were able to predict continued offending beyond the age of 20 years.

In terms of psychosocial outcomes, published data is available to the age of 32 years for the participants in the Dunedin study (Odgers, et al., 2008). In looking at the mental health, physical health and economic wellbeing of LCP, AL and childhood limited groups of males and females at age 32 years, as compared to a group of individuals with low involvement with antisocial behaviour, Odgers et al. found that LCP men and women fared worst in all three classes of variables. They were more likely to experience physical health problems and mental health problems at age 32 years than were any of the other groups, and also had lower levels of economic wellbeing. Individuals in the AL group also showed increased levels of physical and mental health problems and lower economic attainment, relative to the low involvement group. In particular, both males and females

in the AL group were experiencing higher levels of substance use problems than those whose involvement with crime had been low. Although the AL group's outcomes were significantly worse than the low involvement group, they were also significantly better off in all three domains than were the LCP offenders. Childhood-limited antisocial behaviour appeared to have the lowest level of impact on adult psychosocial functioning, with few differences being observed between that group and the low involvement group. Males in the childhood-limited group showed evidence of lower economic wellbeing than the low involvement group, however neither males nor females in the childhood-limited group showed differences in their levels of physical or mental health difficulties. It is possible that, as noted above, when these individuals' antisocial behaviour declined, other variables such as peer rejection and academic performance improved also (Veenstra, et al., 2009), providing protection against later difficulties in the form of social support and increased employment prospects respectively.

In additional cohort studies, where data have been collected to age 42 years (Pulkkinen, Lyyra, & Kokko, 2009) and 48 years (Farrington, et al., 2009) similar patterns of outcomes are apparent, in that at all time points the LCP group appears to fare worst. Farrington et al, however, noted that across time points all groups also increased their level of life success. At age 42 years, in a sample of Finnish men, Pulkkinen et al. (2009) found that financial difficulties were more apparent in men who offended in adulthood than those who desisted earlier or who were not involved in crime. Similarly, LCP men showed more difficulties with psychological functioning than the AL group, who did not differ from the non-offender group, other than showing an increased number of psychosomatic symptoms. AL offenders' social functioning also appeared to be more

in line with that of the non-offenders, differing only in that they had more children than the non-offenders. LCP men, however, showed significantly poorer social functioning than either the AL or non-offender groups, particularly in terms of alcohol use, career stability, and relationship success.

Farrington et al.'s (2009) study revealed that, by age 48 years, the majority of participants in the Cambridge Study were leading successful lives, as defined by a combination of offending and psychosocial factors, including 65% of persistent offenders. Although continuing to display the worst outcomes overall, it is promising that a large percentage of these LCP men are able to improve their lives to this point. Consistent with Odgers et al. (2008), Farrington et al. found that AL men had poorer life success than non-offenders at age 32 years, but by the age of 48 years these differences had, for the most part, disappeared. Only alcohol use and drug use were shown to be somewhat higher in the AL group than the non-offender group. Differences between the LCP and AL men persisted between the ages of 32 and 48 years in four of five outcomes (accommodation, fighting, employment and drug use). Self-reported offending was no longer different between the two groups at age 48 years however, suggesting that although all groups appear to be desisting from offending prior to the age of 48 years, other psychosocial outcomes continue to be poorer in the LCP group than the AL men.

The current study

Although research into Moffitt's (1993) theory has been widespread, it has primarily been conducted in cohorts generated from either the general population, or groups of high risk juvenile delinquents followed into adulthood. Both of these forms of research provide important information about the development of offending behaviour

across time; however, they are also likely to include large proportions of individuals who desist relatively early in their lives. The present study aims to extend the study of high risk individuals' offending development by testing aspects of Moffitt's (1993) theory in a group of offenders identified to be at high risk of reoffending in adulthood.

Individuals in the sample were categorised as either early- or late-onset offenders (suggesting LCP and AL pathways, respectively) according to whether their behavioural problems in childhood (prior to age 13 years) were considered to be moderate or severe, or mild, respectively. The two groups were then compared on a number of criminogenic variables during adolescence (defined as the period from their first recorded conviction to the age of 25 years), as well as the frequency and seriousness of their offending in adolescence and from the age of 25 years onwards into adulthood. The age of 25 years was selected as the end of adolescence to contain the effects of any potential snares, emerging adulthood, or psychological immaturity within the sample. Consistent with Moffitt's (1993) hypotheses and later findings, five hypotheses are put forward in relation to the current study:

1. This sample of high risk adult offenders will consist primarily of early-onset offenders.

2. In adolescence, the two groups (early- and late-onset offenders) will not differ in their participation in different forms of offending up to age 25 years, with the exception of violent offences, which will be more common amongst the early-onset group.

3. Similarly, the two groups will not differ on variables relating to static risk (such as age at first conviction or time spent in prison) to age 25 years.

4. Measures of frequency and severity will not differ across the groups up to age 25 years, but both will be higher in the early-onset group than the late-onset group after age 25 years.

5. Both groups will show some degree of desistance or de-escalation after the age of 25 years, for measures of both seriousness and frequency.

Method

Participants

The data from 142 of the original 149 individuals who took part in the research were included in this study. Of the remaining seven, four were under 25 years of age at the time of the follow up data extraction, two had been incarcerated for all of the time between their 25th birthday and the date of data extraction, and one had been released from prison for the first time since reaching 25 years less than one month prior to data extraction. It was deemed that these individuals should be excluded from this study, given their limited opportunity to demonstrate recidivism or desistance in the second time period.

Measures

Classification using the Moffitt (1993) early versus late starter typology provided the independent samples for comparison in this study. All information used as dependent variables in this study was extracted from the criminal histories of the individual participants. No other measures were used in this study.

Data Analysis

For both frequency and seriousness analyses, comparisons were made across groups (early- versus late-onset offenders), and across two time points. The first time

point captured convictions for offences committed prior to the participants' 25th birthdays

and was considered to be assessing offending during adolescence. The second time period

covered offences committed after the individual reached 25 years of age, until the date of

the first data extraction (14 November 2008), or the date of the individual's death.

As the seriousness measure relates to periods of imprisonment (rather than

discrete events such as individual offences that can be considered to take place either

before or after the individual's 25th birthday), the time period distinction necessarily

interrupted either a period of time at liberty, or a period of time in prison. Using the exact

method described in Appendix A, calculations for CCP lines and angles after the age of

25 years would begin with the first data point after the 25th birthday (i.e. the next release

or imprisonment), rather than including all information from the birthday itself. To

remedy this, a data-point for the 25th birthday (0,0) was added to the beginning of each

participant's CCP function for the second time period. This meant that a sentence of

imprisonment during which the participant turned 25 years old would be included as part

of the CCP angle for both time periods, but as the two time periods did not overlap the

first angle used only time served prior to the 25th birthday, and the second angle from the

25th birthday on. As such, the resulting angles remain independent.

Results

Of the 142 individuals whose data were used in this study, 95 were categorised as

early-onset and the remaining 47 were late-onset offenders, according to the classification

criteria outlined in the General Method above. No differences in current age were found

across the two groups. These classification criteria were chosen to be in line with the

process used by Wilson (2004); however, analyses were also conducted using alternative

criteria relating to early criminal activity, as opposed to behavioural problems, to provide a more specific link to early-onset criminal behaviour.[2]

Up to age 25 years

Comparisons of the two groups on a number of common criminological variables showed that despite first being convicted at the same age, the early-onset offenders were sent to prison for the first time at a younger age than the late-onset men. At age 25 years, the early-onset men also had a greater number of convictions and sentences of imprisonment than the late-onset men, despite having spent similar lengths of time in prison. The early-onset offenders also had a higher rate of convictions per year (corrected for time spent in prison) up to age 25 years than did the late-onset offenders. Table 1 shows the means, standard deviations, *t*-tests and associated *p*-values, and Cohen's *d* effect sizes for these comparisons, as well as comparisons between groups for the mean number of offences in each offence category up to age 25 years. Of these, only dishonesty offences showed a significant difference, with the early-onset men having committed more dishonesty offences than the late-onset men. All effect sizes were in the small to moderate range.

Seriousness of offending (as measured by CCP angles) for the early- ($M = 27.18$, $SD = 18.11$) and late-onset ($M = 22.85$, $SD = 20.05$) groups, up to age 25 years, is shown

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[2] The sample was reclassified as early- or late-onset by their score on the Moffitt (1993) typology item relating to criminal activity prior to age 13 years (*yes* = early-onset, *no* = late-onset). This resulted in 121 men in the early-onset group, and 21 men in the late onset group. Patterns of results were similar across the two methods of classification. However, the early-onset group was found to be demonstrating more serious careers than the late-onset group both up to age 25 years, $t(140) = 2.638$, $p < .05$, and across time periods, $F(1, 140) = 12.12$, $p < .05$. In addition, the early-onset group was found to have spent more time in prison up to age 25 years $t(140) = 2.66$, $p < .05$, and been convicted of fewer drug offences to age 25 years $t(140) = 2.47$, $p < .05$. Differences in the total number of offences to age 25 years $t(140) = 1.00$, *ns*, number of dishonesty convictions to 25 years $t(140) = 1.75$, *ns*, and rates of offending per year at liberty up to 25 years $t(140) = 1.75$, *ns*, were all found to be non-significant using this method of classification.

Table 1

Comparisons of criminological variables between early- and late-onset offenders up to age 25 years

	Early Onset (*n*=95)		Late Onset (*n*=47)				
	M	*SD*	*M*	*SD*	*t*	*p*	*d*
Age at first conviction	15.99	1.39	16.12	1.75	.51	ns	-0.09
Age at first imprisonment	18.33	1.94	19.52	4.68	2.14	0.03	-0.38
Current age	33.82	5.56	34.98	8.04	1.00	ns	-0.18
# Convictions	55.22	30.65	45.21	20.93	2.02	0.04	0.36
Convictions/year at liberty	9.36	6.14	6.94	3.71	2.48	0.01	0.45
# Imprisonments	4.83	2.91	3.91	2.41	2.20	0.03	0.34
Time in prison	2.91	1.67	2.41	1.69	1.68	ns	0.30
# Dishonesty convictions	29.36	24.59	21.28	18.51	1.99	0.05	0.36
# Drug convictions	4.26	6.00	4.13	3.08	0.15	ns	0.03
# Violent convictions	4.52	3.88	4.30	2.80	0.34	ns	0.06
# Property damage convictions	1.35	1.66	1.34	1.74	0.02	ns	0.00
# Property abuse convictions	1.85	3.27	1.49	2.47	0.67	ns	0.12
# Administrative convictions	6.51	5.54	5.47	4.43	1.12	ns	0.20
# Sexual convictions	0.15	0.56	0.21	0.55	0.66	ns	-0.12
# Traffic convictions	7.22	7.22	7.00	6.44	0.18	ns	0.03

Note. Age at first conviction, age at first imprisonment and time in prison are reported in years.

in Figure 2. A *t*-test between the angles for the two lines indicated there was no

significant difference in seriousness, *t*(140) = 1.29, *ns*. This suggests that up to the age of

25 years, the two groups are demonstrating equally serious criminal careers.
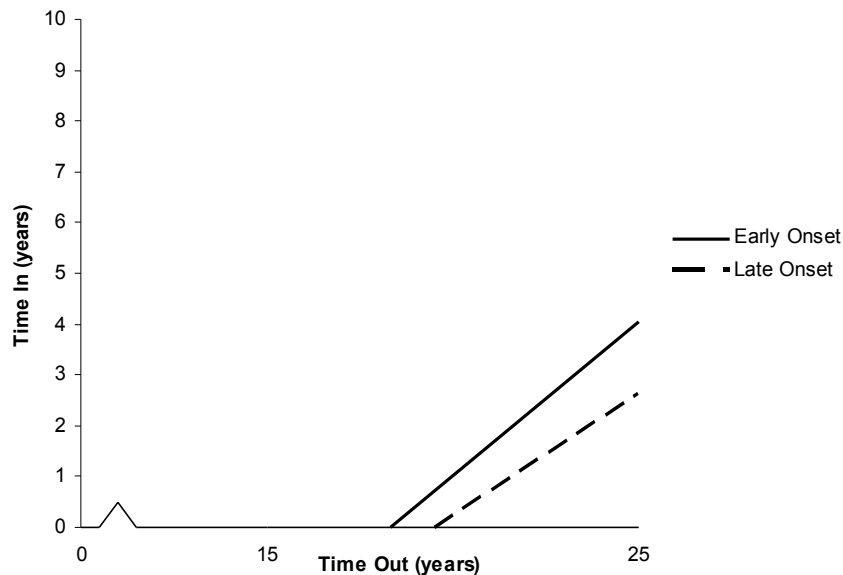
Figure 2. Average CCP functions for early- and late-onset offenders up to age 25 years.

After 25 years and across time periods

Figure 3 shows the frequency of conviction for the early- and late-onset groups,

before and after the age of 25 years. A 2 (Age) x 2 (Group) ANOVA was conducted on

these rates of conviction, showing main effects of Age, $F(1, 140) = 47.34$, $p < .05$, and

Group, $F(1, 140) = 7.81$, $p < .05$, but no interaction, $F(1, 140) = 0.96$, *ns*. These findings

indicate that the early-onset group ($M = 7.55$, $SD = 4.24$) is being convicted significantly

more often than the late-onset group ($M = 5.95$, $SD = 3.00$) across age ranges, and that

the frequency of convictions across groups is significantly lower after the age of 25 years

($M = 4.42$, $SD = 4.35$) than prior to age 25 years ($M = 8.56$, $SD = 5.56$).
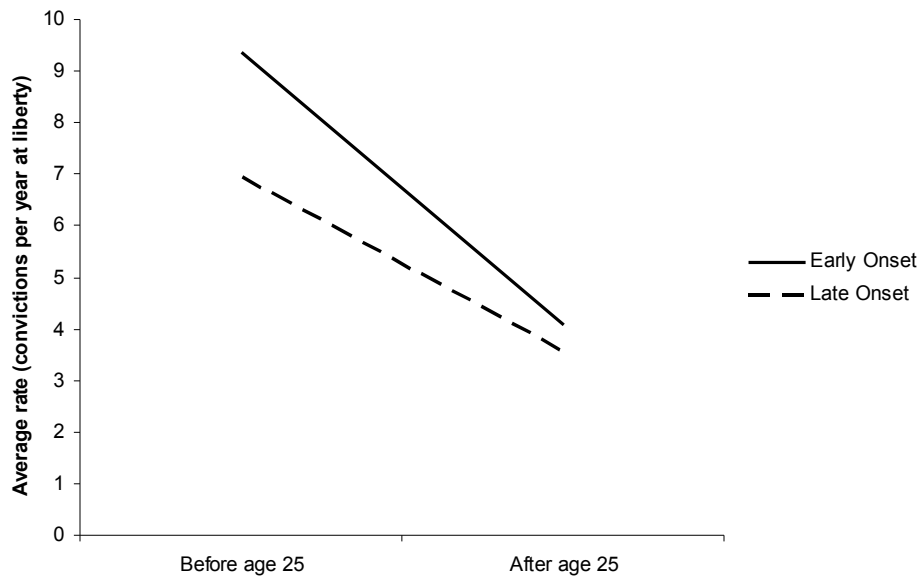
Figure 3. Average rates of conviction up to, and since, age 25 years for early- and late-onset offenders.

A 2(Age) x 2 (Group) ANOVA was also conducted on the CCP angles for both groups across the two age ranges. There was no main effect of Age, $F(1, 140) = 0.37$, *ns*, indicating that the criminal careers of both groups of offenders remained equally serious over time. There was also no main effect of Group, $F(1, 140) = 3.51$, $p = .06$, indicating that across ages the early- and late-onset offenders were showing similarly serious careers. No Age x Group interaction was found, $F(1, 140) = 0.08$, *ns*. These results can also be seen in Figure 4.
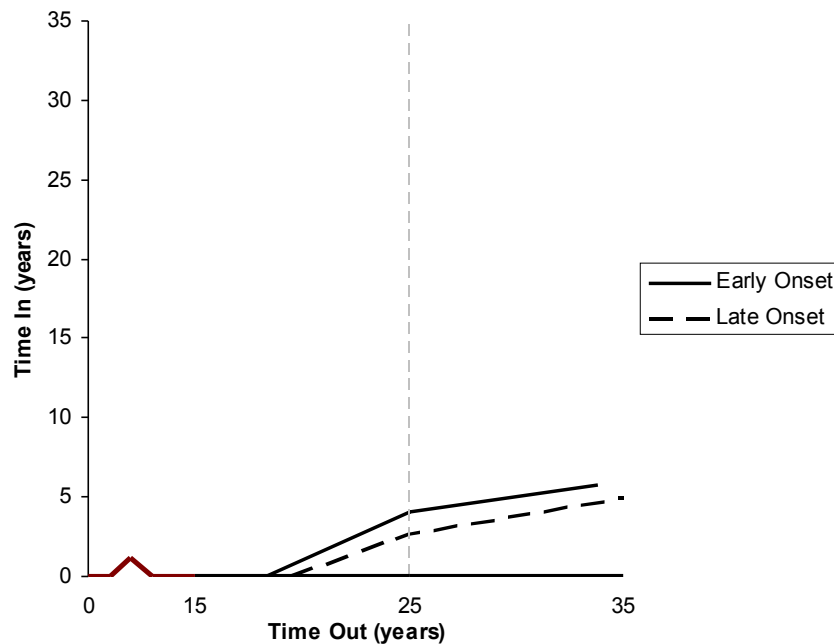
Figure 4. Average CCP functions up to, and since, age 25 years for early- and late-onset offenders.

Discussion

Of the five hypotheses proposed for the current study, only one was fully

supported: the sample was made up of predominantly early-onset offenders. Although the

majority of offenders in this sample were in the early-onset group, the extent to which

late-onset offenders were represented is somewhat surprising. This sample represents a

group of very high risk individuals who accumulated an average of 51.9 convictions (SD

$= 28.1$) each to the age of 25 years. At age 26 years, the LCP group of the Dunedin

Multidisciplinary Health and Development Study participants ($n = 47$) were reported to

have received an average of 6.9 convictions ($SD = 11.5$), suggesting that even the most

prolific offenders in Moffitt et al.'s (2002) sample were being convicted at rates well

below those recorded in this sample. If Moffitt's (1993) hypotheses were extrapolated to

these high risk levels, there should be no difference in the number of convictions between

AL and LCP offenders in adolescence; however, the fact that these late-onset individuals continue to be part of the high risk group beyond the age of 25 years immediately suggests that they have not desisted as quickly as those AL offenders at lower levels of risk.

The hypothesis relating to types of offending up to age 25 years was unsupported, in that there was no difference between the groups in the extent to which they were involved with violent offending, and the early-onset group showed more dishonesty offending than did the late-onset group. The early-onset group also showed a greater total number of convictions than the late-onset group. Although this finding is inconsistent with the study's hypothesis, and with Moffitt et al.'s (1996) findings to age 18 years, at age 26 years the Dunedin sample's LCP group also showed a greater number of offences in total than did the AL group, as well as differences in specific types of offending.

Similarly, on factors relating to static risk, the two groups showed some notable differences. First, although the age at first conviction and time spent in prison variables were equivalent to the age of 25 years, the age at first imprisonment and number of sentences of imprisonment were higher for the early-onset group than the late-onset group. This suggests that the early-onset group's offending increased in seriousness (either through greater frequency of convictions or more serious offences) more rapidly than the late-onset group's offending, resulting in them being sentenced to imprisonment sooner in their criminal careers. However, in order for the late-onset group to spend similar amounts of time incarcerated, their prison sentences would need to be longer, suggesting that the early-onset group received a high number of short prison sentences, whereas members of the late-onset group were given fewer sentences of longer duration.

Longer prison sentences have often been equated with more serious offending, and violent offences, which are often considered to be more serious than other types of offending, would therefore also be likely to attract longer sentences (Morrison, Soboleva, & Chong, 2008). In this study, however, the CCP angles of the two groups (used to measure seriousness) suggested that both groups showed similar levels of seriousness to age 25 years and, as discussed above, similar levels of violent offending were demonstrated across the groups. Also noted above, the early-onset group showed greater dishonesty offending than the late-onset group, and it may be that these offences more often attracted sentences of imprisonment than did other offence types. Examining the patterns of sentencing in New Zealand between 1997 and 2006, property offending (a category containing similar offences to those described here as dishonesty) incurred a sentence of imprisonment more often than any other offence category, with the exception of violent offences (Morrison, et al., 2008). Similarly, of the more serious offences (property, drug, violence and offences against the person), property offences resulted in shorter custodial sentences than the other offence categories (Morrison, et al., 2008). This would be consistent with the pattern of results found in this study.

In looking at the patterns of conviction frequency across the two groups and across time, early-onset offenders were being convicted more often than late-onset offenders during both time periods. The predicted interaction showing a separation in frequency trajectories after the age of 25 years was not found however, with the difference between groups after 25 years being accounted for by a continuation of the difference that existed prior to 25 years. This finding is inconsistent with Moffitt's (1993) theory, and with her findings (Moffitt, et al., 2002), in that late-onset offenders do not

appear to be desisting at a faster rate in adulthood than do offenders in the early-onset group. Given that no baseline data is available about the rate at which high risk offenders desist, it is not possible to determine whether the frequency of convictions for the late-onset group is decreasing at a similarly slow rate as would be expected for the early-onset group, or if the early-onset group has undergone a process of rapid de-escalation either alongside, or following the late-onset group. One way to assess this would be to consider the frequency levels of both groups over three time periods (i.e. adolescence, emerging adulthood, and adulthood) instead of combining adolescence and emerging adulthood into one period. If the late-onset group had desisted quickly from age 18 years, as would be predicted by Moffitt's theory, and then reached a plateau towards which the early-onset group de-escalated more slowly up to age 25 years, an analysis including a separate time period assessing frequency during emerging adulthood would make this apparent.

In contrast to the frequency findings however, where varying rates of offending across time are averaged to generate a single number, the CCP as a method of measuring seriousness allows all available information to be incorporated into the final angle in a meaningful way. Although an individual who successfully completely desisted from a high level of offending would have an average frequency suggesting a moderate level of offending, their CCP graph and resulting angle would show a decrease in the seriousness of their career for each day spent out of prison. This ability to incorporate information in a meaningful way reduces the difficulties inherent in a static approach to criminal career research, although group based analyses will always be less exact than models created based on individual change.

Despite the strength of the CCP as a measure of seriousness, analyses of seriousness patterns similarly showed limited support for the study's hypotheses. Both the early- and late-onset groups showed similar levels of seriousness in their offending to age 25 years, as was consistent with the hypothesis; however, no difference was found after the age of 25 years either, and there was no reduction in seriousness across time. This suggests that in terms of seriousness of offending, the two groups are indistinguishable, even into adulthood.

The fact that neither career seriousness nor frequency of convictions showed an interaction between time periods and group behaviour suggests that these findings are relatively robust. Using an alternative method of group classification also provided similar results, further supporting this conclusion. Although a main effect of Group is found in the seriousness analyses using the alternative classification, indicating that the early-onset offenders were offending more seriously across time than were the late-onset offenders, again no interaction is evident, which would be necessary in order for the study's hypothesis, and Moffitt's (1993) theory, to be supported in this sample.

Study 2

Although a great deal of work has been conducted looking at the relationship between early risk factors and later offending (e.g. Moffitt, 1993; Moffitt & Caspi, 2001; Zara & Farrington, 2009), including risk factors associated with later desistance (e.g. Gunnison & Mazerolle, 2007; Loeber, Pardini, Southamer-Loeber, & Raine, 2007; van Domburgh, Loeber, Bezemer, Stallings, & Southamer-Loeber, 2009), Laub and Sampson's (1993; Sampson & Laub, 2005) turning point theory adds something new: the factors associated with this theory both occur contemporaneously with the change in

offending behaviour, and are thought to be causally linked to that change. Embedded within a more general framework of informal social controls, which, in various forms, are thought to impact on an individual's involvement in crime across the life span, the concept of turning points relates to the occurrence of events in adulthood that change an individual's offending trajectory (Laub & Sampson, 1993). Initial work focused on the impact of marriage and employment; however more recent studies have expanded on these ideas to examine the impact of additional interpersonal and lifestyle factors both on offending and on marriage and employment as turning points.

Laub and Sampson's theory of informal social control

Laub and Sampson's (1993) theory of informal social control suggests that social bonds, both to individuals and to society, influence an individual's involvement in crime. Social bonds involve reciprocal relationships with others, which increase or decrease what Laub and Sampson refer to as social capital; investment in society. As an individual gains social capital, their risk of becoming involved in antisocial behaviour decreases, whereas losses in social capital increase offending risk. The nature of the bonds associated with change in social capital are necessarily reciprocal, in that expectations from others of behaviour consistent with a relationship (for example attendance and engagement at school) are unlikely to alter an individual's antisocial behaviour without some form of reciprocal attachment from the individual concerned (e.g. a desire to learn). Where these bonds are developed bi-directionally, the individual becomes more invested in society, having both prosocial obligations to uphold and the potential to lose valued relationships, thus creating a situation in which antisocial behaviour is less likely.

Although the majority of the research focussed on Laub and Sampson's (1993) theory has been devoted to its discussion of variables likely to influence desistance, Laub and Sampson (1993) also identified factors in childhood that would create social bonds likely to reduce initial involvement in antisocial behaviour. These include school, and family relationships. Given Moffitt et al.'s (1996; Moffitt, et al., 2002) finding, however, that few individuals completely abstain from antisocial behaviour throughout their lives, it is likely that social bonds are not the only factors involved in the development of antisocial conduct. Indeed, Boutwell and Beaver (2008) demonstrated that low exposure to drug using and delinquent peers, as well as high self control, were strong predictors of abstaining from antisocial behaviour, along with evidence of genetic markers for abstention. Family relationships and bonds to education were not included in that study, however, and so the relative contribution of informal social controls was not assessed.

Progressing into adulthood, however, considerable research has been conducted, and support found, for Laub and Sampson's (1993) proposed social bonds as they relate to desistance. Laub and Sampson's initial work involved a qualitative analysis of the comprehensive delinquent data set collected by the Gluecks (Glueck & Glueck, 1974), looking specifically at the roles of social bonds in changes to offending over time. Laub and Sampson found that events in individuals' life histories, in particular marriage, employment and military service, seemed to co-occur with periods of reduced, or no, offending, leading them to conclude that these prosocial events increased social capital and gave individuals motivation to desist from offending.

Although Laub and Sampson's (1993) initial theory posited the idea of turning points as static events that could alter an individual's offending trajectory, subsequent

work has highlighted the dynamic nature of social bonds, in that an individual may enter into multiple marriages across their lifespan, or go through multiple periods of employment and unemployment. As these bonds change across time, the changes can be linked to changes in offending propensity (Sampson & Laub, 2005). Horney, Osgood and Marshall (1995) identified that significant life events, such as beginning or ending relationships, substance use or cessation, and gaining or losing employment affect the likelihood of offending over the short term (examining offending and life events on a month-by-month basis), as well as accumulating to produce longer term desistance. Similarly, good quality marriages have been shown to be related to decreased offending in each of three consecutive time periods following the marriage taking place (Laub, et al., 1998). This suggests that the effects of these positive relationships are accumulating and compounding over time. This finding held only for marriages of good quality, however (Laub, et al., 1998), indicating that more is required for social bonds to have an effect on offending than just a marriage licence, or an employment contract.

Laub and Sampson's (1993; Sampson & Laub, 2005) theory suggested three main life events that could be identified as turning points in men's criminal careers: marriage, stable employment, and military service. Of these, marriage and employment have generated the majority of the research interest. Additional variables have also been included in studies, however, with mixed success.

Interpersonal factors

Marriage. Of the three social bonds initially presented by Laub and Sampson (1993) marriage is both the most well researched and the most supported (e.g. Blokland & Nieuwbeerta, 2005; Laub, et al., 1998; Wright, Caspi, Moffitt, & Silva, 2001), with

some research even suggesting a genetic link between marriage and desistance (Beaver, Wright, DeLisi, & Vaughn, 2008). Giordano, Cernkovich and Rudolph (2002), however, found only limited evidence for a link between marriage and desistance, stating that the individuals in their sample were less likely to have been married during the follow up period than the men in the sample utilised by Laub and Sampson (Laub, et al., 1998; Laub & Sampson, 1993; Sampson & Laub, 2005). Even in this study, however, where marriage had taken place there was a tendency for lower involvement in crime, both for males and females.

Despite the consistency with which marriage has been linked to desistance, there is evidence to suggest that the relationship is not entirely straightforward, and issues of both gender and age have been identified. For example, although romantic relationships after the age of 21 years were linked to desistance, Ouimet and LeBlanc (1996) demonstrated that cohabitation prior to 21 years of age was associated with continued offending into adulthood. In contrast, Theobald and Farrington (2009) found that marriage was predictive of lower rates of offending only in those aged 18 to 24 years. Later marriages did not predict reduced offending.

Laub et al. (1998) emphasise the importance of the quality of the relationship in linking marriage to desistance, and it appears that this is particularly important for female offenders' desistance. Although findings generally tend to indicate that marriage is a better predictor of desistance for males than females (Bersani, Laub, & Nieuwbeerta, 2009; King, Massoglia, & MacMillan, 2007), Thompson and Petrovic (2009) found that the quality of the relationship was more important for predicting females' desistance than males'. Relationship quality was also implicated in the findings of Savolainen (2009),

whereby cohabitation prior to marriage was associated with greater reductions in

offending than marriage itself. Savolainen attributed this finding to the Finnish cultural

norm of extended cohabitation prior to marriage, in that partners who are willing to marry

an antisocial partner without previously living with them might also be more accepting of

their antisocial lifestyle, reducing the protective nature of the relationship.

      Peers. Relationships with peers, both prosocial and antisocial, appear to also be

implicated in the process of desistance. Byrne and Trew's (2008) qualitative study

looking at both entry into crime and desistance from it suggested that increased

association with antisocial peers is linked to becoming involved with crime, whereas

reduced contact with antisocial peers, and increased exposure to prosocial peers are

implicated in desistance. Similarly, B.E. Wright et al. (2001) demonstrated that those

individuals who continue to associate with antisocial peers are more likely to persist in

offending than those who separate themselves from antisocial companions, and Mozirot

and LeBlanc (2007) reported that the presence of prosocial peer relationships was an

important factor in accelerating the desistance process in adolescence.

      The importance of both antisocial and prosocial peers in these processes appears

to be particularly relevant in a therapeutic sense, indicating that it is important for

individuals to continue developing positive interpersonal relationships with other peers,

and not just "knifing off" negative influences in order to successfully desist from crime

(Maruna & Roy, 2007). Evidence suggests that positive interpersonal interactions in a

variety of domains may be effective in altering associations with antisocial peers. For

example, Warr (1998) found that the association between marriage and desistance is

mediated by marriage's effect on peer relationships, in that married individuals have less

time to spend with antisocial peers than do their unmarried counterparts, and also have spouses who are likely to influence their choice of friends. Similarly, Wright and Cullen (2004) found that in those offenders who gain legitimate employment, associating with prosocial co-workers was linked to weaker relationships with antisocial peers, leading to reduced levels of offending.

One facet of associating with antisocial peers that has received limited attention in the literature is gang membership. Where membership has been considered, however, it has consistently been linked with persistent offending (e.g. Battin, Hill, Abbott, Catalano, & Hawkins, 1998; Southamer-Loeber, Wei, Loeber, & Masten, 2004). In addition, Battin et al. demonstrated that being a member of a gang has a link with offending over and above that explained by either previous delinquency or the associations with antisocial peers inherent in gang involvement. Gang involvement also elevates risk of recidivism for a period of approximately six months following release (Caudill, 2010), and active gang affiliation has been shown to facilitate juveniles' involvement in crime above that of individuals who are no longer gang affiliated (Bendixen, Endresen, & Olweus, 2006). This suggests that ceasing involvement with a gang could be an important turning point in relation to desistance from offending.

Family. Research looking at the impact of family members on offending behaviour has taken two different approaches. First, studies have examined ties to family members, including the effect of becoming a parent, on patterns of offending; and second, patterns of offending have been assessed across generations of the same families. Combined, these two types of research suggest that, like peers, both prosocial and

antisocial family members play a role in the progression of an individual's criminal career.

Byrne and Trew's (2008) qualitative study of pathways into, and out of, crime found that positive family relationships were implicated by offenders when discussing what was important in their decision to desist from crime. It should be noted, however, that the offenders who took part in this research were on probation at the time of the study, suggesting that their decision to desist had been of relatively brief duration. In support of the general premise that positive family relationships are associated with desistance, however, J. P. Wright, Cullen and Miller (2001) identified family investment as an important social bond for desistance in youth, and B. E. Wright et al (2001) found that family ties deterred crime in the Dunedin Study sample, at least to age 21 years. The effect of family relationships on crime does not appear to have been studied beyond that age, however.

Although the links between offending and relationships with prosocial family members have not been assessed into adulthood, some research has been conducted examining the effect of becoming a parent on patterns of offending. Findings in the area have been mixed with studies finding increased offending following parenting (e.g. Wakefield & Uggen, 2008, cited in Savolainen, 2009), decreased offending (Massoglia & Uggen, 2007; Savolainen, 2009), or no effect (Blokland & Nieuwbeerta, 2005). These diverse results have often been explained in reference to the offender's involvement in raising the child (Maldonado, 2006), and the external support received by the family. For example, Savolainen (2009) hypothesised that the strong welfare system in Finland, where his study took place, provides families with sufficient support to provide for their

child, whereas parenthood in other countries may cause additional financial strain, making desistance from offending more difficult. This is consistent with the finding of Moloney, McKenzie, Hunt and Joe-Laidler (2009), that parenthood was associated with decreased levels of offending in gang members, but only when the men were able to spend less time on the streets, and had a legitimate source of income with which to support their families.

Maldonado (2006), in addition to highlighting the importance of family connectedness in establishing parenthood as an important social bond for desistance, identified that delinquency is lower in the offspring of invested fathers than fathers who are disconnected from their children. Other studies of trans-generational offending patterns have further supported the idea of a link between an individual's offending behaviour and that of their parents, in terms of the likelihood of offending, the rate of offending (van de Rakt, Nieuwbeerta, & de Graaf, 2008), and the length of the criminal career (Kazemian & Farrington, 2006). Van de Rakt, Nieuwbeerta and Apel (2009), also found sibling antisocial behaviour to be related to an individual's conviction risk, such that it is a better predictor than parents' offending. Taken together, these findings suggest that family relationships can play an important role in various aspects of the criminal career.

Lifestyle factors

Employment. Although stable employment was proposed by Laub and Sampson (1993) as one of the key turning points in relation to an individual's desistance from offending, the research findings in this area have not unequivocally supported this position. Savolainen (2009) and Ouimet and LeBlanc (1996) found, in their analyses, that

employment was one of the strongest predictors of desistance whereas Massoglia and

Uggen (2007) and Giordano et al. (2002) each found no relationship between legitimate

work and offending. Between these two extremes, Southamer-Loeber et al. (2004) and B.

E. Wright et al. (2001) demonstrated that employment is one of a number of significant

predictors of desistance.

These inconsistent findings suggest that there is more to consider than the

presence or absence of a legitimate job in discussing the impact of employment on

offending patterns. The only study whose operationalisation of employment was a simple

dichotomy of having, or not having, employment, was that by Savolainen (2009);

however, this was within a society with high levels of welfare support and it was

hypothesised that obtaining and keeping a job in that setting, where employment is not

necessary for survival, indicates a high level of motivation to pursue an offence-free

lifestyle. Other studies attempted to assess job stability, by including measures of the

proportion of the past year that had been spent in employment (e.g. Ouimet & Le Blanc,

1996; B. E. Wright, et al., 2001), or the likelihood that the individual would leave their

current job, for any reason, in the following two years (Giordano, et al., 2002), and still

others included measures of either objective (Southamer-Loeber, et al., 2004) or

subjective (Massoglia & Uggen, 2007) job desirability, all with mixed success.

Age has also been shown to moderate the relationship between employment and

offending; however, the manner in which this takes place is somewhat unclear. Using an

event-history approach to evaluating employment, whereby participants recalled their

employment history for each year between research interviews, Mozirot and LeBlanc

(2007) found that employment was an important predictor of desistance, but only during

the period of emerging adulthood (i.e. early- to mid-20s). In contrast, Uggen (2000) found that employment (as measured by ongoing involvement in a work programme over time) was only predictive of reduced offending after the age of 27 years.

Taken together, the research on employment as a factor related to desistance from offending suggests a complex relationship. There is evidence that the impact of employment may vary across time, across methods of measurement, and may also interact with other predictive variables, such as peers (Wright & Cullen, 2004). Further research in this area to elucidate the complexities of the relationship is advised.

Education. Given the ongoing nature of education through childhood and into adolescence (and, in some cases, adulthood), it is unlikely to act specifically as a turning point in an individual's criminal career. There is a limited amount of research, however, suggesting that levels of education can be linked to later desistance from crime.

Both Southamer-Loeber et al. (2004) and B.E. Wright et al. (2001) found evidence that variables relating to education were significant predictors of desistance. Southamer-Loeber et al. showed that being employed or in school in early adulthood (20-25 years) was significantly associated with desistance from crime, and Wright et al. demonstrated that a variety of measures, relating to educational aspirations as well as attainment, at ages 15 to 21 years were associated with lower levels of offending at age 21 years. Even using a single measure at a single time point (school attendance at age 15 years), Mozirot and LeBlanc (2007) found that education approached significance as a predictor of later desistance, suggesting the relationship is quite robust.

Natsuaki, Ge and Wenk (2008) extended the study of education's impact on desistance by comparing early- and late-onset offenders' offending patterns as a function

of whether or not they graduated from high school. For late-onset offenders, high school graduation appeared to be a turning point in their offending trajectories, leading to decreased offending, whereas graduation was not linked to changes in offending for the early-onset group. As well as demonstrating that completing education can take the role of a turning point in the lives of some individuals, Natsuaki et al.'s study also shows the importance of considering how various components of different theories might interact to provide greater explanatory depth than would be possible using either theory alone.

Integration with other theories

Laub and Sampson's (1993; Sampson & Laub, 2005) theory has provided the basis for a number of studies that also take into account Moffitt's (1993) developmental trajectories or Hirschi and Gottfredson's (1983) self control model. For example, Bergman and Andershed (2009) included social bonds such as marriage and employment as outcome variables in their comparison of non offenders, adult-onset, adolescence-limited, and persistent offenders. They found that the persistent offenders consistently fared worse than the other groups, which suggests both that persistent offenders have poorer psychosocial outcomes than offenders who desist, and that those social bonds are being formed less frequently in this group, which may lead to them continuing to offend where others who form bonds more easily have desisted. Similarly, Gunnison and Mazzerolle (2007) compared adolescent desisters to persisters in both serious and general offending. In both groups, those individuals who desisted were more likely to be married than those who continued offending, as well as having less contact with antisocial peers. Amongst the group of less serious offenders, desisters were also more likely to be involved in conventional activities and to have graduated from high school. Contrary to

expectations, however, serious desisters were less attached to their families, which might suggest the presence of antisocial family members in the group of serious offenders, whereby better attachment leads to greater association with antisocial individuals and, therefore, more ongoing offending.

The evidence for the impact of social bonds over and above the level of offending that can be explained by stable traits such as self control is, at this stage, mixed. Although Kazemian, Farrington and LeBlanc (2009) found that cognitive factors such as self control and mentalisation skills were better predictors of desistance than were social bonds, Eggleston Doherty (2006) found evidence that both social integration (in the form of marriage, military service and/or employment) and self control independently predict desistance from crime. Contrary to the findings of B. E. Wright et al. (2001) however, no interaction was found between the two variables, and the relationship between self control and desistance became non-significant once control variables were added. The effect of social integration remained, suggesting that social bonds are better predictors of desistance than is self control.

B.E. Wright et al.'s (2001) finding of life course interdependence (a moderating effect between self control and social bond variables on offending) indicates a more complex relationship than is suggested by either of the other two studies (i.e. Eggleston Doherty, 2006; Kazemian, et al., 2009). In further support of a more complex explanation for desistance than is offered by social bonds alone , LeBel, Burnett, Maruna and Bushway (2008) showed that subjective cognitive factors at the time of release, for example efficacy beliefs, predict desistance both directly and indirectly through their effect on the development of social bonds. LeBel et al. propose that these cognitive

factors provide a conduit through which the individual can, to differing extents, take advantage of opportunities presented to them. This would also be consistent with Moffitt's (1993, 2007) neurocognitive deficit hypothesis in that the life-course persistent group is thought to have greater neurocognitive deficits than other types of offenders, and this same group has also been consistently found to show more offending and fewer social bonds than other groups.

The current study

The aim of the current study is to examine the role of social bonds on the frequency and seriousness of criminal careers in a high risk sample. Given the nature of the data available, examination of the timing of these bonds relative to any changes in trajectories will not be possible. This study does not, therefore, assess the impact of informal social control as it relates to turning points, for the most part, but considers whether having the capacity to engage in these meaningful social endeavours, as evidenced by longer periods of stability in relationships and lifestyle factors, is related to later offending.

In this study, the participants' criminal histories were separated into two time periods: before, and after, they took part in the semi-structured interview that was part of Wilson's (2004) original data collection process for this data set. Data collected in 2002-2003 were used as predictors of additional offending from the date of the research interview to the date of data extraction for the current study. From the interview responses, data were extracted and coded relating to nine variables: the longest period of time spent in a romantic relationship (*longest relationship*); whether or not that relationship is ongoing (*current relationship*); current associations with antisocial family

members (*antisocial family*); current associations with antisocial peers (*antisocial peers*); whether or not they have ever been involved with a gang (*gang involvement*); current gang involvement (*current gang member*); longest time spent in one residence (*longest home*); years spent in education (*years in school*); and longest period of employment (*longest job*). No information was available in relation to the participants' relationship status, except where their current relationship was also their longest relationship. As such, the *current relationship* variable likely excludes many participants who were, at the time of the research interview—in relationships of shorter duration that may, nonetheless, have an impact on their offending. This variable is, therefore, limited in its ability to provide meaningful information about the effect of relationship status on offending. Variables were either recorded in number of years (*longest relationship*; *longest home*; *years in school*; *job*) or dichotomously coded where 1 = yes, and 0 = no (*current relationship*; *antisocial family*; *antisocial peers*; *gang involvement*; *current gang member*).

 Using this data, the following hypotheses will be tested:

  1. In line with Laub and Sampson's (1993) theory of informal social control, *current relationship* is hypothesised to predict conviction frequency.

  2. Taking the perspective that the capacity for forming social bonds may also be implicated in changes to offending patterns, longer *longest relationship*s, longer *longest job*s, and greater *years in school* are also predicted to be negatively associated with conviction frequency. *Years in school* and *longest job* are also hypothesised to be correlated.

  3. Given Warr's (1998) finding that peer associations mediate the relationship between marriage and desistance, it is likely that relationships with

antisocial family members will also play a mediating role. As such, it is predicted that *antisocial family* and *antisocial peers* will each independently partially mediate the relationship between *current relationship* and conviction frequency.

       4.   In line with Wright and Cullen's (2004) finding that the influence of prosocial peers in a work environment leads to reduced association with antisocial peers, and therefore reduced offending, it is predicted that the relationship between employment *(longest job)* and conviction frequency will be mediated by relationships with antisocial peers *(antisocial peers)*.

       5.   It is hypothesised that *longest home* will not predict conviction frequency. Wilson (2004) reported that for the majority of the sample the residence in which they spent the longest period of time was their childhood home, and childhood factors are thought to play a minimal role in predicting desistance in adulthood, according to the theory of informal social controls.

       6.   It is hypothesised that *longest home* will, however, predict the years spent in education (*years in school*), suggesting continuity in social controls across time.

       7.   Patterns of results are hypothesised to be the same for both the early- and late-onset groups, with one exception: the education variable (*years in school*) is expected to predict outcomes in the late-, but not early-, onset group, in line with the findings of Natsuaki, et al. (2008).

Given the lack of previous research examining predictors of career seriousness, the hypothesised patterns of results for conviction frequency will also be tested with the

seriousness data to ascertain whether seriousness and frequency can be predicted using the same variables.

In addition to testing these specific hypotheses, this study will include a more general exploration of the relationships between the available variables. This exploration will include correlating the predictor variables with each other and with the outcome variables to determine the likely patterns of inter-relationships between variables for the entire sample, and the early- and late-onset groups separately. Where predictors are associated with the outcome variables, they will be entered into regression analyses with previous frequency (or seriousness, as appropriate) to assess the additional contribution they can make, over and above what is already known based on previous behaviour. If two independent predictor variables are related to each other and an outcome variable, mediated regression analyses will also be conducted. The nature of the interview data suggests, however, that a number of the variables are unlikely to be independent of each other (i.e. *longest relationship* and *current relationship* are based on non-independent data; similarly, individuals with current gang membership will also have a score of 1 in *gang involvement*, and are likely to have antisocial peers and family within the gang). Significant correlations between these non-independent variables will not, therefore, be reported. Similarly, conviction data are used to develop the CCP angle, meaning that the two outcome variables are not entirely independent. Consequently, correlations between them will not be reported either.

Method

Participants

Data from 148 of the 149 men who took part in the original research were used in this study's analyses. The individual whose data was not included in this study died prior to release from prison following his interview for the original study. As such, there are no follow up data to be included in the post-interview measures.

Measures

In addition to criminal history and Moffitt (1993) typology information used in this study, data were extracted from interviews with the participants conducted in 2002-2003 as part of the original study. This information was then coded for use in the present analyses.

Duration of longest relationship. *(longest relationship)* As part of the interview process, participants were asked about their romantic relationships, including the duration of their longest relationship and the reason for that relationship's cessation. For the purposes of this study, duration of longest relationship was coded as the participant's response in years. For individuals whose longest relationship had been less than one year, the number of months of the relationship was divided by 12 to convert it to years. Where a participant indicated they had never been in a relationship, this measure was coded as 0, and where a vague non-numerical response indicating only brief relationships, such as "a couple of weeks" was given, it was coded as 0.1. Relationship durations reported in the form of a range, such as "2-3 months", were coded as being the mid-point of the range (i.e. 2.5 months, or 0.21 years). Where a relationship was noted to be "on and off", half of the duration was recorded.

Current relationship. *(current relationship)* This measure was coded from the participants' reasons for the cessation of their longest relationship, and therefore relates to

whether or not they are currently in their longest relationship. No other information was available relating to current relationship status. Where a participant stated their longest relationship was ongoing, this item was coded as 1 (*yes*). If a reason for cessation was given, however, it was assumed that the relationship had ended and the item was therefore coded as 0 (*no*). One participant noted that his longest relationship had ended because he had formed a new relationship with his current partner. In order to maintain consistency with the available information for other participants, current relationship was scored as 0 (*no*), despite the participant's report that he was in a romantic relationship of a significant duration (more than five years) at that time.

Close relationship with antisocial family. *(antisocial family)* During the interview, participants were also asked about their relationships with family members. In a first question, participants were asked whether or not any of their family members were involved in crime and, if so, which members. Participants were then asked whether or not they maintained a close relationship with identified antisocial family members. Irrespective of the number of family members involved in crime, or the biological closeness of the relationship, participants who indicated a close relationship with at least one antisocial family member received a score of 1 (*yes*). Those indicating no antisocial family members, or no close relationship with those who were antisocial, received a score of 0 (*no*). Where a participant indicated a close relationship with only family members they reported had now desisted from crime their response was also coded as 0 (*no*).

Close relationship with antisocial peers. *(antisocial peers)* Similarly, participants were also asked about their relationships with peers involved in crime. As with the item relating to antisocial family members, participants were asked whether or

not they had friends who were involved with crime, and whether or not they maintained close contact with any of their antisocial peers. Those who indicated ongoing relationships received a 1 (*yes*) on this item, whereas those who indicated no antisocial peers, or no close contact with those who were antisocial, received a score of 0 (*no*). In some cases, individuals indicated they had formerly been close with antisocial peers but now intended to stay away from crime and those involved in it. Those participants were also given a score of 0 (*no*), unlike those who indicated they did not have close contact currently due to being incarcerated. These individuals showed the intention to remain involved with antisocial peers when possible and therefore received a score of 1 (*yes*).

Gang membership. *(gang involvement* **and** *current gang member)* Participants were asked three questions about gang membership. First, they were asked if they had ever been a member or associate of a gang. If yes, they were then asked if they were currently gang affiliated, and the reasons why they had left or chosen to remain in the gang. From these questions, two measures were created. The first assessed any gang membership (*gang involvement*) and was coded 0 for a '*no*' response to the first question, or 1 for a '*yes*' response. Current gang membership (*current gang member*) was coded in a similar way with 0 being recorded for a '*no*' response to the question about current membership, and 1 being recorded for a '*yes*' response. Where an individual indicated that they technically still held membership status but had otherwise left the gang, their response to the current gang measure was coded as 0, whereas an intention to leave was coded as 1. This system of coding was used to give more weight to the individual's perspective of their relationship with the gang than to their patch status.

Years in one residence. *(longest home)* Participants were asked about the stability of their home environment, reporting the longest period of time spent living in the same residence and their reason for leaving. This included family homes whilst growing up. Durations of residence were recorded in years with residences of less than one year duration being recorded as the number of months divided by 12 to convert them to years.

Years of education. *(years in school)* During the interview, participants were also asked about their experiences in education, including how many different schools they had attended, whether or not they got into trouble in class, and how far through their education they were when they left school. Responses to this final question were converted into years of education, such that completing Form 7 (currently known as Year 13) would be 13 years, completing Form 6 would be 12 years etc. Descriptions such as 'some', 'half' or 'most' of a year were coded as half a year. For example, a response such as 'most of Fourth Form' would be scored as 9 years for completing Form 3, and then half a year for 'most of' Form 4, resulting in 9.5 years being recorded. If, however, more specific information, such as 'a couple of weeks into Fifth Form' or 'just before the School Cert exams' was provided, these were coded to the closest full year (therefore, 10 years and 11 years for the two examples respectively).

Longest period of employment. *(longest job)* Participants were asked during the interview about their longest period of employment, and the reasons for its cessation. Similar coding rules were applied for this measure as for the duration of the longest relationship. The response was coded in years, with 0 being recorded for individuals who indicated they had never been employed. Periods of employment of less than one year

were converted into years by dividing the number of months by 12, and vague

descriptions of short-term employment, such as "a couple of weeks" were coded as 0.1.

Where ranges of time were given, the mid-point of the range was used as the recorded

response, and non-continuous work, such as seasonal jobs, when identified as such were

recorded as half of the time indicated.

Data Analysis

Regression models and correlations in this study were conducted using the SPSS

v.17.0 software package, and mediation models were fitted using MedGraph (Jose, 2003).

Microsoft Excel 2003 was used to produce the figures.

Results

Of the variables hypothesised to predict conviction frequency (*current*

relationship, *longest relationship*, *longest job* and *years in school*), *longest relationship*,

$r(146) = -.23$, $p < .05$, and *longest job*, $r(146) = -.25$, $p < .05$, were significantly correlated

with frequency (*current relationship*: $r(146) = -.04$, *ns*; *years in school*: $r(146) = -.08$,

ns). Longer longest relationships and longer longest periods of employment were both

associated with lower frequencies of conviction. *Longest job* was also significantly

correlated with *years in school*, $r(146) = .32$, $p < .05$, such that longer periods of time

spent in education were associated with longer longest periods of employment. *Antisocial*

peers was hypothesised to mediate the relationship between *longest job* and conviction

frequency; however, no direct relationship between *antisocial peers* and frequency was

found, $r(146) = .05$, *ns*. As predicted, *longest home* was not correlated with frequency,

$r(146) = -.005$, *ns*; however, contrary to expectations, it was not correlated with *years in*

school either, $r(146) = .06$, *ns*.

When previous conviction frequency was entered into regression analyses with longest relationship and with longest job, their independent relationships with subsequent conviction frequency were reduced to non-significance (see Table 2). This suggests that the inclusion of these variables within the regression models is unable to add any explanatory value over that provided by previous conviction frequency alone.

Table 2

Regression coefficients for predicting frequency, controlling for prior frequency

		b	SE b	β
Step 1	Constant	.29	.22	
	Frequency - pre	-.12	.02	.47***
Step 2	Constant	.66	.30	
	Frequency - pre	.11	.02	.44***
	Longest relationship	-.06	.03	-.07
Step 1	Constant	.29	.22	
	Frequency - pre	.12	.02	.47***
Step 2	Constant	.52	.29	
	Frequency - pre	.11	.02	.45***
	Longest job	-.09	.07	-.10

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

Analyses testing the study's hypotheses with career seriousness as the outcome variable revealed a different pattern of findings, whereby none of the hypothesised variables correlated significantly with seriousness (*current relationship*: $r(146) = -.16$, $p = .054$; *longest relationship*: $r(146) = -.12$, *ns; longest job*: $r(146) = -.13$, *ns; years in school*: $r(146) = -.04$, *ns*).

When the sample was separated into early- and late-onset groups, different variables were associated with conviction frequency in each group. In the early-onset group, only *longest job* was significantly correlated with frequency, $r(97) = -.21$, $p< .05$ (*current relationship*: $r(97) = -.11$, *ns; longest relationship*: $r(97) = -.19$, $p= .056$; *years in school*: $r(97) = -.15$, *ns).* In contrast, only *longest relationship* was significantly

correlated with frequency in the late-onset group, $r(47) = -.33$, p< .05 (*current relationship*: $r(47) = .06$, *ns*; *longest job*: $r(47) = -.26$, *ns*; *years in school*: $r(47) = -.001$, *ns*). These results indicate that for early-onset offenders, longer longest periods of employment were associated with lower conviction frequencies, whereas for late-onset offenders lower conviction frequency was associated with longer longest relationships. *Years in school* and *longest job* were significantly correlated in both groups: early-onset, $r(97) = .28$, *p*< .05; late-onset, $r(47) = .31$, *p*< .05. This suggests that the positive relationship between employment and education is relatively robust, such that across both groups greater time spent in education is associated with longer longest periods of employment.

Only the early-onset group's frequency was correlated with *longest job*; therefore, the relationship between those two variables could only potentially be mediated by *antisocial peers* in that group. As with the full sample, however, no direct relationship between antisocial peers and frequency was found, $r(97) = .17$, *ns*. Also consistent with the results of the full sample, neither group demonstrated a significant correlation between *longest home* and frequency (early onset: $r(97) = .08$, *ns*; late onset: $r(47) = .09$, *ns*) or *longest home* and *years in school* (early onset: $r(97) = .01$, *ns*; late onset: $r(47) = .13$, *ns*).

Tables 3 and 4 show the regression coefficients of the significant frequency predictors whilst controlling for previous frequency for the early- and late-onset groups , respectively. In the early-onset group, previous conviction frequency was not a significant predictor of later frequency; nor did the addition of the longest job variable improve the model to the point of significance.

Table 3

Regression coefficients for predicting frequency in the early onset group, controlling for previous conviction frequency

		b	SE b	β
Step 1	Constant	1.11	.28	
	Frequency - pre	.04	.02	.17
Step 2	Constant	1.47	.35	
	Frequency - pre	.03	.03	.11
	Longest job	-.15	.09	-.17

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

Table 4 shows that previous frequency is a significant predictor of subsequent conviction frequency; however, again the addition of the predictor variable (*longest relationship*) does not improve the model significantly. It is of note that the R^2 value for previous frequency as a control explains 60.4% of the variance. This indicates that, for late-onset offenders, prior conviction frequency is the best predictor of future reconviction frequency, suggesting considerable consistency in behaviour across time.

Table 4

Regression coefficients for predicting frequency in the late onset group, controlling for previous conviction frequency

		b	SE b	β
Step 1	Constant	-.59	.32	
	Frequency - pre	.21	.03	.78***
Step 2	Constant	-.37	.48	
	Frequency - pre	.21	.03	.77***
	Longest relationship	-.03	.05	-.06

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

In terms of career seriousness, one variable (*years in school*) was significantly correlated with seriousness for both the early- and late-onset groups: early onset, $r(97) =$ -.20, *p*=.05; late-onset, $r(47) = .32$, *p*< .05. None of the other variables were significantly

correlated with seriousness for either the early- (*current relationship*: $r(97) = -.17$, *ns*;

longest relationship: $r(97) = -.08$, *ns; longest job*: $r(97) = -.16$, *ns*) or late-onset groups

(*current relationship*: $r(47) = -.14$, *ns; longest relationship*: $r(47) = -.18$, *ns; longest job*:

$r(47) = -.02$, *ns*). For the early-onset group, the relationship between education and career

seriousness was negative, indicating that greater time spent in school was associated with

less serious criminal careers, as measured by the CCP angle. In contrast, however, for the

late-onset group the relationship between years in school and seriousness was positive,

indicating that more time spent in education was associated with more serious criminal

careers. As in all of the previous analyses, *longest home* was not a significant predictor of

career seriousness in either group: early-onset, $r(97) = -.01$, *ns*; late-onset, $r(47) = -.02$,

ns.

For the early onset group, previous seriousness did not predict future seriousness

alone, $F(1, 97) = 3.74$, $p = .056$; however, introducing *years in school* to the analysis

increased the overall model to significance, $F(2, 96) = 3.68$, $p < .05$, explaining 7.1% of

the variance in seriousness. Despite this, the individual predictors were not significant

(see Table 5). In contrast, the overall model for the late-onset group was not significant

with, $F(2, 46) = 3.12$, $p = .054$, or without, $F(1, 47) = .94$, *ns*, the *years in school* variable,

but the variable itself was a significant predictor (also see Table 5). This indicates that

while years in education is a significant predictor of future seriousness (able to explain an

additional 10% of the variance), the seriousness of a late-onset individual's prior criminal

history is unrelated to their later offending career.

Table 5

Regression coefficients for years in school as a predictor of seriousness, controlling for

prior seriousness, in the early- and late-onset groups

			b	SE *b*	β
Early-onset	Step 1	Constant	20.38	3.82	
		Seriousness - pre	.24	.12	.19
	Step 2	Constant	52.33	17.41	
		Seriousness - pre	.22	.12	.18
		Years in school	-3.43	1.83	-.19
Late-onset	Step 1	Constant	19.26	4.60	
		Seriousness - pre	.18	.19	.14
	Step 2	Constant	-28.81	21.51	
		Seriousness - pre	.17	.18	.13
		Years in school	5.00	2.19	.32*

Note. * $p< .05$, ** $p< .01$, *** $p< .001$. For late-onset, $R^2=.02$ for Step 1: $\Delta R^2=.12$ for Step 2

Exploratory analyses

Few independent relationships were identified in the exploratory analyses over

and above those hypothesised and tested earlier. Of note, however, the two significant

predictors of conviction frequency in the full sample (*longest relationship* and *longest*

job) were also correlated with each other, $r(146) = .34$, $p<.05$. Using mediated regression,

the relationships between *longest job*, *longest relationship* and frequency, were further

investigated. Values outside of parentheses, in Figure 5, indicate zero order correlations,

whereas figures in parentheses denote standardised beta weights with all variables entered

into the model. No mediation was identified within the model, Sobel's $z = -1.76$, *ns*,

indicating that the duration of a person's longest romantic relationship and the duration of

their longest period of employment each exert an independent effect on frequency of

conviction. These variables (*longest relationship* and *longest job*) were also correlated in

the early-onset, $r(97) = .24$, $p< .05$, and late-onset, $r(47) = .50$, $p< .05$, groups, suggesting

a robust association between them whereby more time spent in the longest period of

employment was associated with more time in the longest relationship. In addition,

longest home was also correlated with *longest job*, $r(146) = .18$, $p< .05$, and *longest*

relationship, $r(146) = .17$, $p< .05$, in the full sample, indicating that although school was

not included in this group of related variables, some continuity in social bonds across

time is apparent.
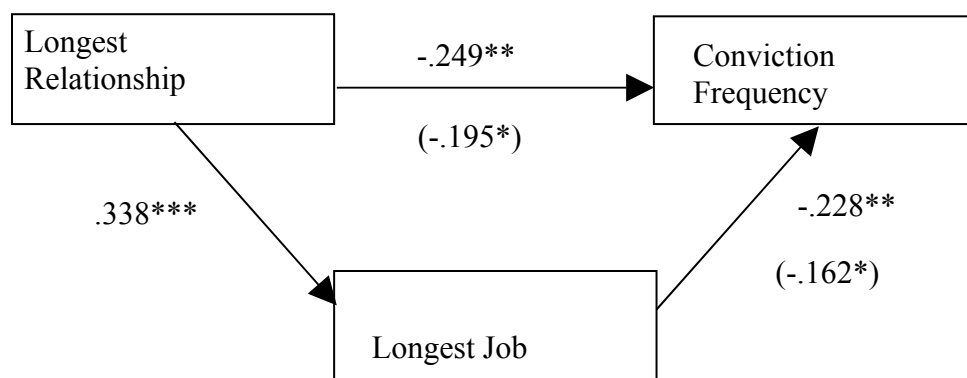
Figure 5. Mediated regression model for longest relationship, longest period of employment and frequency of conviction.

One additional variable (*current gang member*) was also found to be correlated

with conviction frequency in the full sample, $r(146) = .22$, $p< .05$, and the early-onset

group, $r(97) = .20$, $p< .05$.In both instances the relationship between variables was

positive, indicating that ongoing membership in a gang was related to higher reconviction

frequencies. Table 6, showing the regression coefficients when current gang membership

was used to predict frequency, controlling for previous frequency, indicates that previous

conviction frequency was a significant predictor in the full sample; however the addition

of the current gang member variable did not increase the explanatory value of the model

significantly ($R^2 = .22$ in Step 1; $\Delta R^2 = .01$, *ns*, in Step 2). In the early-onset group,

neither previous frequency nor current gang membership significantly predicted later

conviction frequency.

Table 6

Regression coefficients for current gang member as a predictor of frequency, controlling

for prior seriousness, in the full sample and early-onset groups

			b	SE b	β
Full sample	Step 1	Constant	.29	.22	
		Frequency - pre	.12	.02	.47***
	Step 2	Constant	.25	.23	
		Frequency - pre	.11	.02	.45***
		Current gang member	.46	.31	.11
Early-onset	Step 1	Constant	1.11	.28	
		Frequency - pre	.04	.02	.17
	Step 2	Constant	1.04	.28	
		Frequency - pre	.03	.02	.13
		Current gang member	.60	.34	.18

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

Taken together, the patterns of correlations suggest a model of offending

behaviour in high risk offenders such as that depicted in Figure 6. Despite the variety of

variables available in this study, only a small number were significantly associated with

each other or with the outcome variables. When previous frequency and seriousness were

entered as controls, even fewer relationships remained significant; Figure 6 shows the

relationships evident in the correlations, rather than the regression analyses. The variables

linked to conviction frequency were predominantly consistent with Laub and Sampson's

(1993) theory of informal controls, in that both *longest job* and *longest relationship* were

included, as well as the variables relating to education and homes. In addition, the

inclusion of the *current gang member* variable when all of the other family and peer

group variables were not significantly related demonstrates the importance of gang

membership in maintaining offending behaviour.
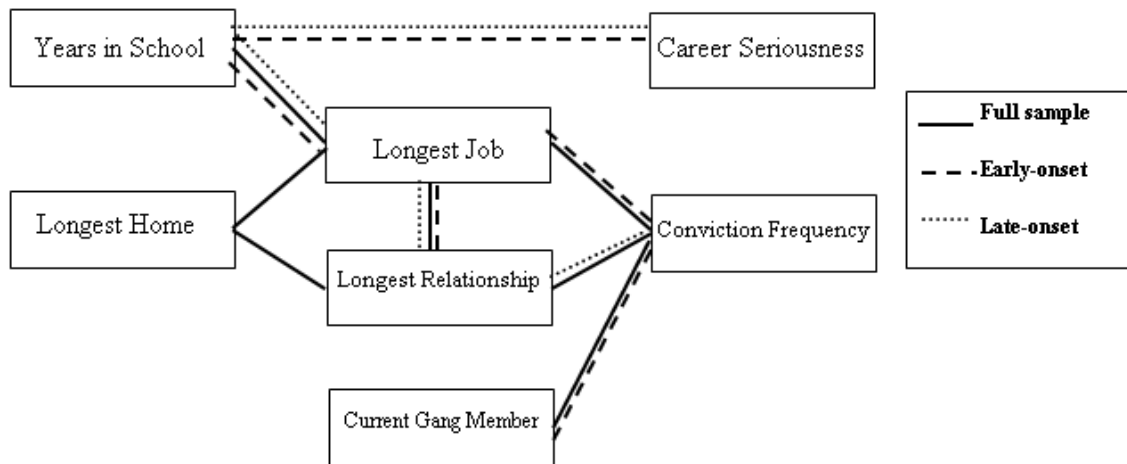
Figure 6. Relationships between variables relating to frequency and seriousness in the complete sample, early-onset group, and late-onset group.

Discussion

Of the seven hypotheses proposed in this study, only one was unequivocally

supported: that the longest time spent in one home would not predict either frequency or

seriousness. The second hypothesis relating to time spent in one home (that it would be

related to years in education) was not supported either in the full sample or either

subgroup, although it was linked to both employment and relationships in the full sample,

suggesting some continuity in social bonds across the lifespan. Also indicating continuity

in social bonds, greater numbers of years spent in education was consistently linked to

longer longest periods of employment in both groups and the full sample.

Education was further predicted to play a significant role in predicting offending

outcomes in late- but not early-onset offenders. In contrast, however, the number of years

spent in education was a significant predictor of career seriousness for both groups, but in

different directions. In the early-onset group, greater time spent in education was

associated with less serious criminal careers, although this relationship was reduced to non-significance with the addition of a previous seriousness control. Nonetheless, the initial correlational finding suggests that education may be something of a protective factor for those individuals who display significant behavioural problems in childhood. Although they still have a significant involvement in crime, the seriousness of their careers may be less than those of early-onset offenders who leave school earlier.

In the late-onset group, however, education was positively related to future seriousness, suggesting that more time spent in education was associated with more serious offending careers. This is contrary to the findings of Natsuaki et al. (2008) who showed that high school graduation acted as a turning point for late-onset offenders, leading to reduced offending. Within this higher risk sample, however, it is possible that the extent of the individuals' involvement in crime and consequent periods of imprisonment reduced their opportunities to gain meaningful, and financially profitable, legitimate employment in adulthood. Whereas individuals with lower levels of education might not have held high expectations in relation to their future careers, more educated offenders might be pursuing more serious offences (resulting in greater proportions of their lives spent in prison when caught) in attempts to achieve the relative wealth that could otherwise have been gained through legitimate employment. If this were the case, it would be expected that the late-onset group would have greater involvement in higher risk and higher profit offences, such as possession for supply of class A drugs, or burglaries of high value goods, than the early-onset group. Given the aggregate nature of offence coding used in these studies, in which high value burglaries would be categorised

with minor shoplifting offences, it is not possible to ascertain whether this hypothesised pattern of offending is supported in the current sample.

The hypothesis that currently being involved in one's longest relationship would be linked to the outcome measures was unsupported, in that *current relationship* was not correlated with any of the other variables, either in the full sample or the sub-groups. Laub and Sampson's (1993) theory of informal social controls links relationships to offending outcomes by conceptualising them as turning points that provide opportunities for changes in life trajectories. In the current study, however, it is noted that no information was available in relation to current relationships that were of shorter duration, or the quality of current relationships. It therefore seems that the operationalisation of current relationships available in the current study neglects a number of relationships that could potentially act as turning points. For example, it would be consistent with Laub and Sampson's theory if being involved in any good quality relationship, irrespective of its length, was related to reduced career seriousness. Supporting this concept, there was no direct link between the length of the longest relationship and career seriousness, suggesting the important component is the relationship involvement rather than the duration. Similarly, Laub et al. (1998) found that although the desistance associated with being married increased in magnitude over time, there was a significant reduction in crime even from the first time point following marriage. This effect was only apparent in good marriages, however, indicating that quality may be more important than duration.

Given that *current relationship* was not associated with either of the outcome variables, or with any of the other predictor variables, Warr's (1998) finding that peer

associations mediated the relationship between marriage and desistance was not able to be replicated in the current study, as was hypothesised. It is possible that this finding relates to the incomplete nature of the relationship variable; however neither close relationships with antisocial peers nor with antisocial family members was associated with either of the outcome variables, suggesting the finding is not just the result of a limitation in the study. Also given that having a close relationship with antisocial peers was not related to time spent in employment, Wright and Cullen's (2004) finding that prosocial peer relationship formed at work led to reduced associations with antisocial peers could not be supported in this study.

Within the full sample, both of the variables from Laub and Sampson's (1993) research on social bonds, employment and relationships, were significantly related to conviction frequency, as was current gang membership. Although employment and relationships were also correlated, there was no mediating effect between them, indicating that they each independently exert an influence on conviction frequency. This suggests that a reduction in frequency of conviction is not merely associated with an increasing level of general stability in an individual's life, but is specifically linked to changes associated with relationships and employment.

In the early-onset group, conviction frequency was significantly predicted by current gang membership and employment, as in the full sample, but not by relationship duration, which was the only significant predictor of frequency in the late onset group. Previous research has shown that early-onset offending is associated with poorer quality relationships than is the experience of late-onset offenders (Woodward, Fergusson, & Horwood, 2002), as well as demonstrating assortative mating in offenders, in that

individuals involved with antisocial behaviour are more likely to engage in relationships with partners who also behave antisocially and hold beliefs and attitudes that are accepting of antisocial behaviour (Krueger, Moffitt, Caspi, Bleske, & Silva, 1998). It is possible, therefore, that the relationships of the early-onset group in this sample, even those of longer duration, would not be of sufficient quality and prosocial orientation to act to deter crime.

When the control variable, previous frequency, was used as a control however, none of the variables remained significant predictors in the full sample, early-onset group, or late-onset group. Furthermore, in the late-onset group and full sample, previous frequency was a significant predictor of later conviction frequency, indicating strong continuity in offending over time. Based on the findings that very few of the predictors explained a significant amount of variance in the outcome measures, or continued to be predictive once control variables were entered, it could be concluded that, among this high risk sample, social bonds may not have the same impact as they have been found to have in lower risk samples. Alternatively, however, the results could be interpreted as suggesting that similar predictors are related to desistance in this sample as in the lower risk groups with whom this research is generally conducted; however, the impact of previous conviction frequency outweighs their predictive utility in this group of individuals.

As has been noted previously, the relationship and employment predictor variables do not reflect turning points as such, given that little is known about the temporal relationship between the longest relationship or period of employment and the research interview. Instead, it is likely that they better reflect the capacity to foster these

social bonds for extended periods of time. It is possible that, had the data been collected prospectively, the impact of contemporaneous employment and relationships would continue to be apparent even after previous frequency was included in the model.

Finally, in looking at the study's findings more broadly, the pattern of correlations between variables indicates that there may be two clusters of inter-related constructs that are related to conviction frequency. The first cluster, including relationships, employment, stable residence and education, appear to be protective factors, whereas current gang membership is a risk factor. Although the predictive utility of these proposed cluster relationships has been unable to be tested in the current study, the grouping of these variables suggests that both the "knifing off" of antisocial opportunities, and the development of prosocial alternatives independently play a role in the desistance process (Maruna & Roy, 2007). Unfortunately, however, in the current study these clusters may also reflect an artefact of the method by which the variables were coded, in that the correlated risk factor (*current gang membership*) is a dichotomous variable, whereas the protective factors are all recorded as a number of years' duration and therefore have a much larger potential range of responses. The fact that similar patterns of results were indicated in both subgroups gives some weight to the idea that they are meaningful clusters, but this confound cannot be ruled out nonetheless.

General Discussion

Neither Moffitt's (1993) life-course persistent/adolescence limited offender typology, nor Laub and Sampson's (Laub & Sampson, 1993) theory of informal social control, so far as it was possible to operationalise informal social control within the available data, appear to account well for the patterns of conviction frequency and career

seriousness evident in this sample of high risk offenders. In order to be consistent with Moffitt's typology, and to provide evidence that the late-onset group fits within the adolescence-limited framework, it would be expected that the two groups would be indistinguishable to age 25 years in both frequency and seriousness, but that the late-onset group would show accelerated desistance over the early-onset group in both outcome measures after 25 years.

Despite one third of the sample being classified as late-onset (and therefore, hypothetically adolescence-limited) offenders, the two groups were virtually indistinguishable both prior to, and after, the age of 25 years in terms of seriousness, although at both time points the early-onset group showed greater frequency of convictions than the late-onset group. Lower frequencies of conviction were observed after the age of 25 years for both groups, suggesting a process of desistance had started; however, no reduction across time was demonstrated in career seriousness, as measured by CCP angles, and neither frequency nor seriousness showed an interaction that would suggest the late-onset offenders were desisting any faster than were the early-onset group.

Findings relating to frequency were similarly more in line with the theory than seriousness findings in Study 2. Previous research relating to Laub and Sampson's (Laub & Sampson, 1993; Sampson & Laub, 2005) social bonds theory would suggest that nearly all of the variables included in this study should predict later conviction frequency and career seriousness. Taking a more restrictive view, based only on the research conducted by Laub and Sampson however, the variables relating to romantic relationships and employment should be the best predictors of the outcome variables.

Although none of the predictors remained significant after controlling for previous offence frequency, longest period of employment, longest duration of a romantic relationship, and current gang membership were all associated with conviction frequency following the research interview. Longer periods of employment and relationships were associated with lower conviction frequencies, whereas current gang involvement was linked to higher rates of re-conviction. When the sample was separated into early- and late-onset groups, two of the three variables (employment and gang membership) were associated with frequency in the early-onset group, whereas relationship was the only significant predictor of frequency in the late-onset group. These findings are consistent with Laub and Sampson's (1993) theory; however the inability of these variables to predict frequency over and above the level that can be predicted by knowledge of past conviction frequency, suggests that they do not fully account for the offending behaviour of this high risk group of offenders.

Given the operationalisation of Laub and Sampson's (1993) theory that was feasible within the limits of the available data, it is, at most, possible to state that the capacity to form social bonds, such as being capable of remaining employed long term, or maintaining a long term relationship, is not a strong predictor of subsequent conviction frequency. Were the temporal links between these social bonds and offending behaviour able to be more clearly delineated, it would provide better evidence of the extent to which Laub and Sampson's theory applies in this high risk sample.

In terms of predictors of seriousness, in the complete sample, none of the variables were significantly correlated. When the sample was separated into early- and late-onset groups, however, education was associated with seriousness in both groups. In

the early-onset group, a greater number of years spent in education was associated with less serious offending careers, whereas greater career seriousness in the late-onset group was predicted by a greater number of years spent in education. This suggests that the two groups are meaningfully different, in that the same variable was a significant predictor in each group, but in fundamentally opposite ways. This pattern of results would have been obscured were the analyses conducted only with the full sample.

In sum, although there has been some tentative evidence for both Moffitt's (1993) and Laub and Sampson's (1993) theories in this research, neither theory provided a comprehensive or particularly parsimonious explanation for the patterns of offending apparent in the sample. This suggests either that once individuals reach such a high level of risk the factors relating to their offending change and no longer fit within the current theories of offending, or the individuals who go on to become these high risk offenders constitute a distinct group, whose behaviour is not adequately explained by the current theories of crime. In either case, additional research on patterns of offending behaviour in the high risk adult offender population is strongly recommended.

In addition to assessing the fit of the current data to two major criminological theories, it was further the aim of the current study to contribute to the literature base surrounding the use of the Criminal Career Profile in assessing career seriousness. To date, published research using the CCP angle has been limited to evaluations of sex offender treatment programmes (Looman, et al., 2000; Nicholaichuk, et al., 2000), and to validations of the technique in various subsets of the offender population (Mallillin, 2006). The current study, therefore, represents a significant addition to the types of studies in which the technique has been utilised.

Kazemian's (2007) discussion of future directions for the field of criminal career research suggested that it will be important to give consideration to different components of the criminal career; for example, both frequency and seriousness. Although the majority of results in this research were not sufficiently robust as to continue meaningfully predicting the outcome measures once previous behaviour was included in the model, the patterns of correlations that were initially apparent suggested different predictors for frequency and seriousness. In turn, this suggests that the two measures (frequency and seriousness) are in fact assessing different components of the criminal career, giving weight to Kazemian's proposal that they should each be considered in future studies. It further indicates that the CCP measure is making a contribution to the findings that would not have been apparent using only a measure of frequency.

The finding that seriousness was less consistent with previous research and theory than conviction frequency further suggests that seriousness has not been well-considered in previous studies. In Study 1, there did not appear to be any reduction in career seriousness for either early- or late-onset offenders after the age of 25 years, in contrast to frequency of conviction, which significantly decreased in both groups after age 25 years. This suggests that although the offenders are all being convicted, and potentially offending, less frequently as they age, the seriousness of their careers is not decreasing over the same time period. Given that the CCP as a measure of seriousness is based on the incarceration histories of the offenders, it is possible that the lack of evidence regarding predictors or change over time suggests that career seriousness may be related less to individual factors and more to external forces, such as judicial discretion. For example, once an individual becomes familiar to the Court, as would be the case with

offenders of this risk level, imprisonment might become a more likely outcome of any Court proceedings.

Within the New Zealand context, sentencing rules limit the extent to which an individual's previous offending is permitted to influence sentencing. In contrast, however, the purpose of the Parole Board is to consider an individual's risk of re-offending, were they granted early release, and this would necessarily include a consideration of previous patterns of offending. Failure to obtain early release would have the same practical effect as increased sentencing, in that it would maintain the individual's career seriousness, as they are continuing to spend time in prison, without necessarily maintaining a high rate of offending. Similarly, the finding that few individual psychosocial variables were linked to seriousness would be consistent with patterns of seriousness being driven primarily by external factors. Consideration of the Parole Board statistics for the period from 2004 to 2009 (New Zealand Parole Board, 2009) shows that although the number of hearings considered by the Board has increased by 65%, the percentage of approved applications has remained relatively constant, ranging from 27.5% to 32%. This indicates that although the likelihood of being granted early release has remained the same over time, greater numbers of individual applications have been declined, resulting in longer periods of imprisonment. Such aggregate findings are unable to indicate whether these higher risk individuals are more likely to remain incarcerated, however.

Extrapolating this hypothesis further, poor continuity in career seriousness across time (i.e. non-significant correlations between past and future seriousness) would suggest that once an individual reaches this high risk status, the likelihood of their being

imprisoned for a given offence is less dependent on their own offence history and more of

a random process, or related to other external factors. This possibility could be assessed

by conducting similar analyses using the mean sentence length for each offence, as

opposed to the unique sentence a given offender served. This would provide a more

objective estimate of the likelihood of imprisonment for an offence, independent of the

offender's history. Similar results to those found in the current study would suggest that

factors relating to individuals' histories are not affecting the patterns of findings, whereas

differing results would suggest that the likelihood of imprisonment is linked to previous

offending.

Alternatively, it would be possible to conduct similar CCP analyses to those

presented in the current study with lower risk offenders, so as to determine whether or not

the patterns evident in the high risk sample are unique to high risk groups, and to assess

the patterns of likelihood that an offence will result in a sentence of imprisonment at

different times in an offender's career. This could be achieved using a Poisson model,

similar to that used by Blumstein and colleagues (Blumstein & Cohen, 1987; Blumstein,

et al., 1988) or Nagin and Land (1993) in assessing patterns of offending rates associated

with prevalence and incidence of criminal careers.

Nagin and Land's (1993) model provides a dynamic approach to assessing

offending behaviour, and it has been proposed that these dynamic techniques provide the

most detailed understanding of changes in the criminal trajectory across time and should

therefore be the method of choice in criminal career research (Bushway, Sweeten, &

Nieuwbeerta, 2009; Eggleston, 2004; Kazemian, 2007). Indeed, one limitation of the

current study is its static approach to desistance. Additional time points would have been

useful for comparison of changes in adolescence to those in emerging adulthood, and a more dynamic technique would also allow better understanding of the role of the timing of particular events in changing offending trajectories. Mozirot and LeBlanc's (2007) pattern of findings, whereby different predictors were important for desistance at different points in the lifespan, further points to the importance of using dynamic techniques.

Eggleston (2004) identified that, even within trajectory modelling techniques, there are a number of variables that also need to be controlled for, to ensure the analyses are reliable and valid. Notably, these include factoring in the deaths of any participants, controlling for time spent in prison, and considering the amount of follow up data that is available for each participant. In two of these three areas, the current research fares well. Information relating to the deaths of participants was extracted from the Department of Corrections' database, and rates of conviction frequency and CCP graphs were generated only until the date of the individual's death. Similarly, the CCP angle incorporates periods of incarceration into its construction, and rates of conviction were calculated as convictions per year, correcting for time spent in prison.

Given the nature of the participant selection process, however, whereby all of the high risk prisoners at Waikeria Prison were approached to take part in the study, the participants are necessarily of differing ages. Although the follow up period from the research interview to the criminal history extraction for the current studies was approximately the same for all of the sample, comparisons from the age of 25 years included data for a wide range of time frames (i.e. a few months for the youngest men to almost three decades for the eldest). This issue was countered by calculating the rates of

conviction per year individually, thus incorporating the specific criminal history durations

of each offender; however, patterns of changes in offending during adulthood are

obscured by this technique, and a dynamic trajectory model would address these

difficulties more appropriately. Alternatively, if age were included as a covariate in the

analyses, a clearer pattern of findings might have been established.

Similarly, life events occur at different ages for different individuals and suggest

different developmental processes at different times. For example, a longest romantic

relationship of only a few weeks for someone in their early 20s might reflect a more

normative development than a similar relationship history for an individual who is aged

in their 50s. Younger individuals would also have had less opportunity to display stability

in their lifestyles than older offenders, simply by virtue of their young age, and these life

event models could also be constructed in a more robust manner using trajectory

techniques. Nevertheless, the focus of the current study was less on the specific timing of

turning points than the idea that stability in social bonds could also be linked to changes

in offending, which received some level of support using a static approach to the

analyses.

Additional limitations in the current study include the limited sample size,

interdependent nature of many of the Study 2 variables, and imprecise operationalisation

of Laub and Sampson's (1993) theory. Given that the entire prison population in New

Zealand was approximately 6,000 people around the time the initial data set was

collected, and approximately 1,500 of those were considered to be high risk (Harpham,

2003), the current study included data from around 10% of the identifiable population.

Greater numbers of participants in this study would have permitted further analyses of

patterns of correlations (e.g. through path analyses), and more robust conclusions within the subgroups where the sample sizes were necessarily reduced even further. The nature of archival research limits the extent to which sample size can be controlled in subsequent studies, however, and also places restrictions on the research questions that can be asked. As discussed above, the available data limited the extent to which the results could be interpreted within the framework of Laub and Sampson's research, and the interdependent nature of the variables reduced the number of meaningful relationships that could be deduced from the findings. Such issues are recommended to be considered in the development of research proposals for future research in the area.

Despite the limitations of this research, a number of implications can be drawn from its findings. In support of the concept that higher risk individuals are likely to be qualitatively different to other offenders, DeLisi (2001) found that the patterns of offending evident in his sample of "extreme career criminals," who had been convicted of rape, murder and/or kidnapping, had less in common with general theories of crime than did the behaviour of the general serious recidivist group. His conclusion was that these most serious offenders should be selectively incapacitated in order to better protect the community. Previous research relating to individuals' risk of reconviction following their third conviction, however, suggests that identifying these individuals prospectively is a difficult, if not impossible task (Blumstein & Moitra, 1980), and Gottfredson and Hirschi (1986) argue that, given that all offenders desist eventually, selective incapacitation is not an effective policy. Similarly, the current studies' difficulties in predicting career seriousness, even from previous behaviour, suggest that selective incapacitation would be a difficult policy to implement in a meaningful way.

Lyngstad and Skardhamer (2010) warn against prematurely generating policy implications from research findings; however, one other finding in the current study could potentially be of interest to those working with offenders to help make meaningful change. Among the three variables associated with greater conviction frequencies was current gang membership. It is of note that the study also included variables assessing whether or not the offender had ever been involved in a gang and whether or not they maintain current associations with antisocial peers and family members, but only current affiliation was significantly linked to changes in frequency. Current gang affiliation was associated with higher conviction frequencies than was evident in those offenders who were not gang affiliated, and having ever been in a gang was not associated with frequency, suggesting that leaving the gang is a positive step in the process of desistance. This finding is consistent with both Battin et al.'s (1998) claim that gang affiliation has a link to offending over and above that explained by associations with antisocial peers, as well as Bendixen et al.'s (2006) finding that active involvement in gangs is associated with higher levels of antisocial activity than is shown by the same individuals after leaving the gang. It is therefore suggested that, for gang affiliated offenders, leaving the gang is an important step in desisting from crime and one that it would be beneficial to promote in working with them.

Further research with high risk offenders should also look more closely at their psychosocial outcomes, as well as their patterns of offending. Previous research in cohort studies has examined the outcomes in adulthood for persistent offenders, finding them to be consistently poorer than the outcomes of those who desisted from offending earlier (Bergman & Andershed, 2009; Odgers, et al., 2008; Pulkkinen, et al., 2009). Similarly

individuals' alcohol and drug use patterns have been linked to changes in offending (Horney, et al., 1995; Ouimet & Le Blanc, 1996; Southamer-Loeber, et al., 2004), and poorer life outcomes (Piquero, Daigle, Gibson, Leeper Piquero, & Tibbetts, 2007). Given the elevated risk levels and often protracted offending careers inherent in the current sample, these offenders are likely to have difficult life outcomes, and assessing outcomes other than offending will also have important implications in working with them. Ward's Good Lives Model (Ward & Brown, 2004) suggests that offender rehabilitation is likely to be more successful when therapy focuses on developing the valued goals of the individual offender, not just reducing the factors related to their offending. A more thorough understanding of the outcomes for individuals who become so deeply involved in crime can only assist with the task of developing personalised and relevant treatment approaches that will improve lives as well as reducing offending.

The current research expands upon the work of Wilson (2004) in exploring the characteristics of New Zealand's high risk offender population; a group who, based on the current findings, appears to differ in many respects from the general offender population studied to date. In considering both conviction frequency and criminal career seriousness, this research was able to demonstrate that the two facets of offending behaviour show different patterns of change over time and are predicted by different variables. It has also highlighted that the CCP is able to capture a different component of offending behaviour than conviction frequency, warranting its inclusion in future research. Notably, career seriousness showed little change over time, and was difficult to predict. This remained true even when the sample was separated into early- and late-onset offenders who, theoretically (Moffitt, 1993), should show distinct offending pathways.

Although a dynamic approach to the assessment of offending behaviour would be preferable (Kazemian, 2007), the current research was able to control for a number of important factors (e.g. death and exposure time; Eggleston, 2004) strengthening the conclusions that can be drawn. Furthermore, there are a number of other areas that can be assessed in this high risk sample, even within the data set collected by Wilson (2004), including individual variables, such as drug and alcohol use, and utilising the psychosocial information from the current study as outcomes rather than predictors. As well as providing an important initial understanding of the application of common criminological theories to a group of high risk offenders, the current research has demonstrated the importance of continuing investigations into high risk offenders as a distinct group. Future work comparing this group to those of lower risk will further identify the areas in which particular differences are evident.

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Appendices

Appendix A: Step-by-step instructions to generate CCP graphs[3]

I.   Set up data in Microsoft Excel spreadsheet

1. Create a file for each offender (the CCP graphs can all be completed in one file; however it can be easier to keep track of each individual using separate files). The following instructions should be completed for each file.
2. In each file, label the first row with the following field names and fill in Columns A to G on the spreadsheet:
    A. *ID* (ID Number)
    B. *DOB* (Date of Birth in the dd-mm-yyyy format)
    C. *Date In* (Date of Conviction in the dd-mm-yyyy format)
    D. *Sentence Length*
    E. *Date Out* (Date of Release, if information is available, in the dd-mm-yyyy format)
    F. *Time Out*
    G. *Time In*
3. Use information from each offender's official criminal history to determine sentence lengths. Use only the longest sentence of imprisonment for each conviction date to avoid including entries that encompass the same time period.
4. Where Date of Release is unavailable, calculate an approximate release date, based on sentence length and relevant jurisdictional information (for example, a twelve month sentence in a jurisdiction with a two-thirds of sentence statutory release would provide a Date Out eight months after the Date In).[4]
5. Double check against the offender's criminal history that no new offences have been committed prior to the approximate date of release. If this does occur, manually adjust the release date to a time prior to the next offence (e.g. one week before the new offence).
6. Enter formula used for INITIAL Time Out in Column F =(C2-B2)/365.25
7. Enter formula used for SUBSEQUENT Time Out in Column F =([C3-B3]/365.25)–G2. Drag (or copy and paste) this formula so that the references to columns B and C always match the row in which the formula is entered, and the reference to column G refers to the previous row.
8. Enter formula used for INITIAL Time In in Column G =(E2-C2)/365.25
9. Enter formula used for SUBSEQUENT Time In in Column G =([E3-C3]/365.25)+G2. Drag (or copy and paste) this formula so that the references to columns B and C always match the row in which the formula is entered, and the reference to column G refers to the previous row.
10. Save the file as Type: Microsoft Office Excel Workbook (*xls)

NOTE: This process will generate a CCP across the entire lifespan. Where a smaller timeframe is of interest (for example, the period since the completion of treatment) the

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[3] Adapted from "The Criminal Career Profile: A measure of criminal careers" by A.Z.C. Mallillin, 2006.
[4] To calculate an approximate Date Out in Microsoft Excel, convert the relevant portion of the sentence length (e.g. eight months of a twelve month sentence) into days, and add the number of days to the Date In

DOB column should be replaced with the first date in the period of interest (e.g., the date of release following treatment, or date of treatment completion).

II.   Transforming the Time In and Time Out columns

1. Copy the Time In and Time Out columns from the first spreadsheet.
2. In a new worksheet, use the Paste Special function to paste only the Values into columns A and B of the new sheet.
3. Repeat step 2 into empty cells below the first set of pasted values. There should now be two copies of the Time In and Time Out data in columns A and B of the new worksheet.
4. In the Data menu, select "Sort…" and a box will appear
5. Sort the data into "Ascending" order by either column. This will combine the two sets of data.
6. Insert a single cell into the top of column B, moving the other cells down.
7. Enter the value 0 into the new cell.
8. Insert a new row at the top of the columns and enter the individual's age at the date of their first conviction in column A and the value 0 in column B. This will ensure the regression line is computed from the time the individual first officially entered the criminal justice system.
9. Delete the additional unmatched number at the bottom of the columns, creating two even columns of numbers. These are coordinates for points on the graph, to be generated next.

NOTE: This process will create a regression line beginning at the first Date In. If the entire period is of interest (for example, the period in the community directly following treatment before any re-imprisonment takes place might also be important) an additional row should be inserted at the top of the sheet with the value 0 entered into both column A and B. This sets the regression line to include the coordinate (0,0) in the graph.

III.   Generate CCP graphs

1. Highlight all of the coordinates
2. Select "Chart Wizard" and a box will appear
    Step 1 of 4:
- Select "XY (Scatter)" under "Chart Type"
- Select "Scatter with data points connected by lines" under "Chart sub-type"
    Step 2 of 4:
- Under "Data Range" select "Series In: Columns"
    Step 3 of 4:
- Under "Titles", type "Time Out (years)" in "Value (X) axis"; type "Time In (years)" in "Value (Y) axis".
- Under "Gridlines", uncheck all gridlines
- Under "Legend" uncheck "Show legend"
    Step 4 of 4:
- Save as "New sheet"; a CCP graph is generated

3. Once the graph is generated, make the values on the x and y axes the same.
   Click on any number on the *x*-axis and a "Format Axis" box will appear.
   Under "Scale", uncheck "Auto" for all boxes and instead, type in
   >   0 for "Minimum"
   >   40 for "Maximum"
   >   5 for "Major Unit"
   >   1 for "Minor Unit"
   Resize the plot area such that the x and y axes are the same in length
4. To save on printer ink, take out the grayscale shade on the plot area.
   Right-click anywhere on the plot area.
   Choose "Format Plot Area" and a box will appear.
   Under "Area", choose "None".
5. To calculate the angle, first generate the slope.
   Right-click on the step-graph (i.e. connected horizontal and vertical lines).
   Choose "Add Trendline…"
   Under "Options" and under "Forecast:" type 20
   Check "Display equation on chart" and "R-squared value on chart"
   Once equation and R-squared value have been generated, convert slopes to angles
   using the formula $=ATAN(m)*180/3.14$, where m is the slope of the equation, as
   presented on the graph.

Appendix B: Early versus late starter typology items (Moffitt, 1993)[5]

<u>Participant Name:</u>_____<u>Date:</u>_____

[Score from interview and file information. However, most of the section will be rated primarily from the interview. If the offender's version and the official version conflict, try to reconcile differences. If differences cannot be reconciled use the more incriminating version]

2. Is there evidence of behavioral problems before age 12? *[Behavioral problems include initiating physical fighting, repeated lying, bullying, cruelty to animals or people, forcing sexual activity, running away, stealing, fire setting, skipping school, vandalism and other behaviors that would be classified as criminal. This definition was adopted from item 4 of the CAT & the antisocial scale from the Rutter Child Scales]*

    1. yes
    0. no
    9. not known

3. Is there evidence of criminal activity before age 12? *[includes crimes for which the offender was never caught]*

    1. yes
    0. no
    9. not known

4. Is there evidence of criminal versatility before age 12? *[includes crimes for which the offender was never caught. Versatility is defined as having committed four or more different types of crimes. Use PCL-R guidelines for offense groupings]*

    1. yes
    0. no
    9. not known

5. Duration of behavioral problems/criminal involvement lasted at least 6 months *[under age 12]*

    1. yes
    0. no
    9. not known

6. Behavioral problems evident in two or more different environments (e.g. home and school) *[under age 12]*

    1. yes
    0. no, only one environment, specify: _____
    9. not known

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[5] Adapted from "New Zealand high risk offenders: Who are they and what are the issues in their management and treatment?" by N.J. Wilson, 2004.

7. Severity of behavioral problems *[under age 12]*

    1. not severe *(parents did not seek outside intervention; misconduct at school was dealt with through detention, never suspension or expulsion)*
    2. moderately severe *(some intervention was sought either by school or home but not both)*
    3. extremely severe *(required intervention by police, CAS or other outside agency [group home, closed custody facility], parents sought professional help, or offender was expelled)*

8. Is there evidence of behavioral problems between ages 13 and 17? *[Behavioral problems include initiating physical fighting, repeated lying, bullying, cruelty to animals or people, forcing sexual activity, running away, stealing, fire setting, skipping school, vandalism and other behaviors that would be classified as criminal. This definition was adopted from item 4 of the CAT & the antisocial scale from the Rutter Child Scales]*

    1. yes
    0. no
    9. not known

9. Is there evidence of criminal activity between ages 13 and 17? *[includes crimes for which the offender was never caught]*

    1. yes
    0. no
    9. not known

10. Is there evidence of criminal versatility between ages 13 and 17? *[includes crimes for which the offender was never caught. Versatility is defined as having committed four or more different types of crimes. Use PCL-R guidelines for offense groupings]*

    1. yes
    0. no
    9. not known

11. Duration of behavioral problems/criminal involvement lasted at least 6 months *[ages 13-17]*

    1. yes
    0. no
    9. not known

12. Behavioral problems evident in two or more different environments (e.g. home and school) *[ages 13-17]*

    1. yes
    0. no, only one environment, specify: _____

9. not known

12. Severity of behavioral problems *[ages 13-17]*

      1. not severe *(parents did not seek outside intervention; misconduct at school was dealt with through detention, never suspension or expulsion)*
      2. moderately severe *(some intervention was sought either by school or home but not both)*
      3. extremely severe *(required intervention by police, CAS or other outside agency [group home, closed custody facility], parents sought professional help, or offender was expelled)*