

**Criminal Predictors and Protective Factors in a  
Sample of Young Offenders:**

**Relationship to Offending Trajectories**

by

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## **Executive Summary**

Research evidence suggests that exposure to certain factors may predispose an individual to engage in delinquency and criminal behaviour. What is missing, however, is an understanding of the relationship between the factors linked to the onset and maintenance of offending and patterns of criminal behaviour across the life course. While some research has examined this association in community and high risk samples, few studies have utilized an offender-based population, and research using Canadian samples is particularly scarce.

### **The Present Study:**

As an extension of the work by Day, Bevc, Theodor, Rosenthal, and Duchesne (2008), this report summarizes the results of a study aimed at identifying the predictors of criminal behaviour and protective factors of four criminal trajectory groups. A retrospective chart review of the client files of 362 male young offenders comprising the “Toronto” sample was conducted, with criminal correlates and protective factors coded from the individual, family, peer, and school domains during the developmental periods of childhood and adolescence. The relationship between the factors and criminal trajectories was analyzed using backward stepwise multinomial logistic regression.

### **Summary of Main Findings:**

#### **In childhood:**

- Experiencing a broken home or family transitions placed a youth at increased odds of following a moderate trajectory of offending.
- Experiencing contact with alternative care (e.g., the child welfare system) placed a youth at increased odds of following a high rate trajectory of offending.

**In adolescence:**

- Experiencing familial abuse, a broken home or family transitions, or having poor relations with peers placed the youth at increased odds for a lower rate offending.
- Having criminal family members (e.g., a parent or sibling) increased the youth's odds of placement in a moderate to high rate trajectory of offending.
- Experiencing contact with alternative care increased the youth's odds of placement in a high rate offending trajectory.

**General Conclusions:**

Within the population of young people at high risk for delinquency and criminality, there may be subgroups of children and adolescents who have distinct targets and needs for prevention and intervention. Prevention and intervention programs should consider the specific factors that either give rise to or maintain the behavior and be provided during the developmentally appropriate periods of the life course. With better knowledge of the factors linked to the onset and maintenance of criminal careers and their effects at different developmental stages, preventative and intervention efforts may be more appropriately matched with the youth's needs, thereby providing more effective treatment and reducing the devastating effects of delinquency and criminal recidivism.

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## **1.0 Introduction**

For a certain number of individuals, crime is not a one-time event, nor is it limited to one type of offence or a constant frequency of engagement. Since the introduction of the criminal career paradigm by Alfred Blumstein and his colleagues (Blumstein, Cohen, Roth, & Visser, 1986; Blumstein & Farrington, 1988), dozens of longitudinal studies on offending from numerous countries worldwide have been completed, sampling community, high risk, and offender populations. The body of literature amassed from this research provides robust support for the continuity and variability of criminal behaviour over the life course (for a review, see Piquero, 2008). Insight into the study of life-course offending has been gained using the trajectory analysis procedure, which accommodates the changes and continuities of offending through the use of a group-based framework (Nagin, 1999; Piquero, 2008). This methodology assumes that distinct patterns of offending exist within the aggregated age-crime curve as a result of the influence of factors (e.g., individual, familial, peer, neighbourhood, situational, etc.) at different developmental stages of life (e.g., infancy, childhood, adolescence, adulthood). The results of studies utilizing trajectory analysis support this notion, and mounting research evidence suggests that exposure to certain factors may predispose an individual to follow a certain pattern of criminal behaviour.

Discovering the factors in childhood and adolescence that are linked to the onset and maintenance of criminal careers and their effects at different developmental stages is of great interest to researchers, policy makers, and the general public. If we can better understand the needs of youth at risk for developing and maintaining different patterns of delinquency, we may be able to more effectively match preventative and intervention efforts with the youth's needs and reduce the staggering financial and emotional effects of criminal recidivism. Cohen and

Piquero (2009) estimated that the financial cost saved by effectively intervening on the antisocial behaviour of a 14-year-old high risk adolescent falls between \$2.6 to \$5.3 million (USD).

At the present time, the factors in childhood and adolescence related to the onset of delinquency are well documented in the psychological and criminological literature, using both cross-sectional and prospective designs (e.g., Borum, 2000; Farrington & Welsh, 2007; Hawkins, Herrenkohl, Farrington, Brewer, Catalano, & Harachi, 1998; Leschied, Chiodo, Nowicki, & Rodger, 2008; Lipsey & Derzon, 1998). What is missing, however, is an understanding of the relationship between the factors linked to the onset and maintenance of offending and patterns of criminal behaviour *across the life course*. While some research has examined this association in community and high risk samples, few studies have utilized an offender-based population, and research using Canadian samples is particularly scarce. Additionally, little is known about the influence of protective factors on longitudinal criminality, an area of focus that has been understudied in criminal trajectory research. The aim of this study was to expand on the body of knowledge about the relationship between criminal predictors and protective factors and offending trajectories using the four trajectory groups identified by Day, Bevc, Theodor, Rosenthal, and Duchesne (2008).

### **1.1 Predictors of Offending Trajectories**

Similar to research on criminal careers, the last few decades have witnessed rapid growth in literature exploring the relationship between offending trajectories, criminal risk factors, and protective and desistance factors. Several factors from the individual, family, peer, school, and neighbourhood domains have been found to differentiate criminal trajectories. It appears that certain factors commonly predict trajectory groups while other factors uniquely relate to specific

trajectories of offending. The results of research from several investigations sampling community and criminal justice system populations are reviewed below.

Using an elementary school sample of youth from two-parent families, Simons, Wu, Conger, and Lorenzo (1994) found that, for youth with late onset delinquency, inadequate parenting predicted affiliation with deviant peers, which further predicted heightened delinquent behaviour. For youth who began their delinquency earlier in life, however, inadequate parenting predicted oppositional defiant behavior, which then predicted affiliation with deviant peers and involvement with delinquency. Reportedly, criminal behaviour was highest among oppositional defiant youth who had deviant friends. In their study, Fergusson, Horwood, and Nagin (2000) analyzed data from the Christchurch Health and Development Study (CHDS), which followed an unselected birth cohort to age 18. The results revealed that varied levels of exposure to social disadvantage, family dysfunction, and individual difficulties predicted nonoffenders, adolescent-onset offenders, moderate offenders, and chronic offenders. However, deviant peer affiliation was found to uniquely predict the moderate rate offending group. White, Bates, and Buyske (2001) utilized a sample of adolescents from the Rutgers Health and Human Development Project (HHDP) and reported that, compared to nondelinquents, persistent, escalating, and adolescence-limited delinquency groups overall were related to higher disinhibition, impulsivity, parental hostility, lower harm avoidance, and less intact family structure. Also, persistent delinquents were higher in disinhibition during adolescence compared to the adolescence limited trajectory group.

Chung, Hill, Hawkins, Gilchrist, and Nagin (2002) analyzed the risk factors and criminal behaviour of a sample of elementary school youth from the Seattle Social Development Project (SSDP), with an overrepresentation of the sample from low-income, high-crime areas. The



authors found that individual factors, such as aggressive behavior and anxiety/depression, distinguished late onset offenders from nonoffenders. Youth displaying an escalated pattern of offending were distinguished from desisters by factors including antisocial peers, school bonding, and availability of drugs in the local neighbourhood. Hoeve, Blokland, Semon Dubas, Gerris, and van der Laan (2008) studied the impact of parenting style on delinquent trajectories of a sample of public school youth from the Pittsburgh Youth Study (PYS) (Loeber, Farrington, Stouthamer-Loeber, & van Kammen, 1998). Neglectful parenting occurred more frequently for moderate desisters, serious persisters, and serious desisters. Reportedly, serious persisting delinquents came from authoritarian families significantly more often than did nondelinquents.

In an Australian study that utilized an offending cohort, Livingson, Stewart, Allard, and Oglivie (2008) found between-group differences in Indigenous status and sex for trajectory group membership, with Indigenous and male offenders more likely to belong in their chronic offender group than non-Indigenous and female offenders. Natsuaki, Ge, and Wenk (2008) analyzed the criminal careers of 2,350 young male offenders from the Wenk Study (Wenk, 1990). Their analysis showed that a late-starter offending model was significantly related to high school graduation, but this effect was not found among the early starters. Violent and nonviolent delinquent trajectories and their relationship to adolescent risk factors were studied by MacDonald, Haviland, and Morral (2009) using a sample of delinquent adolescents from the RAND Adolescent Outcomes Project (AOP) (Morral, Jaycox, Smith, Becker, & Ebener, 2003). Delinquent peer exposure was found to predict membership in both of their high rate offending groups, and substance abuse was associated with the nonviolent high rate chronic group.

Monahan, Cauffman, Steinberg, and Mulvey's (2009) study of criminal careers involved a sample of serious juvenile offenders from the Pathways to Desistance Study (Mulvey et al.,

2004). Youths who desisted from delinquency displayed increasing or stable impulse control as well as anger suppression over time. Conversely, individuals who continued to engage in antisocial behaviour showed deterioration in these factors over time. Using another sample from the Pathways to Desistance Study (Mulvey et al., 2004), Monahan and Piquero (2009) examined two dimensions of offending frequency and variety, their interactions over time, and risk factors relating to frequency and variety. Joint trajectory analysis revealed a strong relationship between frequency and variety of offending (e.g., high frequency offenders expressed greater variability in their criminal behaviour). The low variety/frequency joint trajectory showed a decreased association with antisocial peers. Parents also had greater knowledge of their child's activities in the low/low group compared to those in the persisting/moderate joint trajectory. Individuals with greater resistance to peer influence belonged to the desisting/early-peak trajectory compared to the desisting/declining group.

van der Geest, Blokland, and Bijleveld (2009) investigated the development of criminal careers using a sample of Dutch males who received residential treatment for delinquency and behaviour problems. Adolescence-limited serious offending and low-frequency desistence patterns were both correlated with birth complications, ADHD (hyperactive/impulsive subtype), parents with psychopathology, good social skills and peer contact, good conscience development, lack of drug use, and absence of problems with authority. Membership in the late bloomers group was predicted by the presence of ADHD (inattentive subtype), combined psychopathology, poor social skills, high daring, and early and excessive alcohol use. The two high rate offending groups were related to experiencing a criminogenic social environment, including contact with criminal family members and delinquent peers. The high-frequency chronic offending group also was predicted by suicide attempts. Last, Yessine and Bonta (2009)

examined the criminal trajectories and predictors of trajectory group membership in a sample of Aboriginal and non-Aboriginal juvenile offenders from Manitoba, Canada. The chronic high trajectory group was distinguished from the stable low group on factors such as negative peer associates, unstable family environment, and substance use. For the non-Aboriginal group, only accommodation differentiated the chronic high trajectory group from the stable low trajectory group. It is important to note that, overall, youth in the Aboriginal group more frequently encountered family dysfunction, lower levels of parental supervision, and substance use than did the non-Aboriginal group.

While it is challenging to draw firm conclusions from this diverse scope of literature, some consistencies may be highlighted. Offenders who begin their criminal careers earlier in life tend to report early aggressive behaviour, disinhibition, and hyperactivity/impulsivity. Deviant or negative peer association, low school bonding, substance use, harsh and dysfunctional parenting practices, and criminogenic family members have been reported in individuals following a moderate to high rate offending trajectory. Low rate offending is associated with some of these factors, but to a lesser extent or amount of exposure (e.g., fewer or less frequent exposure to antisocial peers; dysfunctional yet high-supervision parenting styles, etc.). Desistance was related to greater presence of factors such as resistance to negative peers, social skills, academic achievement, and stable impulse and anger control. Notably, these relationships have been found in community and offender samples.

## **1.2 The Toronto Criminal Careers Study**

Day et al. (2008) investigated the nature and pattern of offending in a sample of male young offenders. More specifically, the study analyzed the changes and continuities in offending across adolescence and early adulthood and examined the relationship between crime-related

events in adolescence (e.g., rate of offending, receiving a custody disposition, etc.) and the rate of offending in adulthood. The sample consisted of 378 male youth offenders who were sentenced to one of two Phase II open custody facilities owned by a children's mental health centre in Toronto, Ontario, Canada between January 1986 and April 1996. This was a 50% random selection of all of the young offenders who resided at both facilities during the aforementioned time period. At the time of their admission into the open custody facility, individuals in the Toronto sample were between 16 and 18 years of age ( $M = 17.6$ ,  $SD = .85$ , range = 16.1 – 24.4 years). The sample's court contacts were tracked for an average of 12.1 years ( $SD = 3.0$ , range = 4.9 – 22.8), beginning in late childhood or early adolescence and continuing into adulthood. The Toronto sample was an average 27.6 years of age at the time of the last follow-up ( $SD = 2.6$ , range = 22.2 – 33.5 years). Seventy-three percent of the sample's criminal activity was tracked for 10 or more years.

Day et al.'s (2008) trajectory analysis yielded four unique patterns or groups of offending, including the Moderate, Low Rate, High Rate Adult-Peaked, and High Rate Adolescence-Peaked groups. The first group, termed the Moderate Rate (MR) group, was comprised of 21.7% of the total sample. Their criminal career was an average of 12.0 years in length, and, compared to the three other groups, they had the greatest number of drug offenses such as trafficking and possession. This group's average age of first court contact was 15.1, and they were approximately 27.1 years at the time of their last court contact. The average number of court contacts (corrected for time-at-risk) accumulated by the MR group was 7.6 in adolescence and 23.6 in adulthood, averaging 31.2 court contacts overall. Additionally, members of this group spent an average of 3.7 years in closed custody.

The second group, the Low Rate (LR) group, consisted of 65.1% of the total sample. Compared to the three other offending groups, this group had the shortest criminal trajectory length, lasting only 6.7 years. The age of first court contact was 15.9 years on average, and the average age of their last court contact was 22.5 years. This group incurred the least amount of (corrected) court contacts in adolescence ( $M = 4.5$ ) and adulthood ( $M = 4.8$ ) and engaged in the fewest types of offences. Also, those in the LR group spent an average of less than one year ( $M = .9$ ) in closed custody. It is interesting to note that this group had the greatest number of psychiatric disorders ( $M = 1.33$ ) compared to the MR ( $M = .95$ ), High Rate Adult-Peaked ( $M = .48$ ), and High Rate Adolescence-Peaked ( $M = .81$ ) groups.

The third group, the High Rate Adult-Peaked (HRADL) group, was 7.7% of the total sample. This group had the longest criminal career length, spanning an average of 12.1 years. Members in the HRADL group had their first court contact at age 14.1 years on average, and their typical age of last court contact was 26.6. Individuals within this trajectory group amassed the greatest (corrected) number of court contacts during adulthood ( $M = 73.3$ ) and for the entire follow-up period ( $M = 84.7$ ). Additionally, this group committed the greatest number of violent and property offenses, and served the greatest number of years in closed custody ( $M = 13.3$ ) compared to the other three trajectory groups.

The fourth group, the High Rate Adolescence-Peaked (HRADOL) group, was comprised of 5.6% of the total sample. The average criminal trajectory duration for members in this group was shorter relative to the MR and HRADL groups, averaging 9.8 years, with the first court contact occurring, on average, at age 14.3, and the average last court contact at age 24.1. Individuals in this group accumulated the largest number of court contacts in adolescence ( $M = 21.5$ ) and had an average number of 56.5 (corrected) court contacts in total. They spent an

average of 5.1 years in secure custody. This group is characterized by a large number of property and breach offenses and a sharp decline in offending around age 18. The next step of the research by Day et al. (2008) was to determine what factors in childhood and adolescence differentiated the four trajectory groups.

### **1.3 The Present Study**

The purpose of the present study was to expand on the body of knowledge about the relationship between criminal predictors in childhood and adolescence, protective factors, and longitudinal patterns of offending. In doing so, the study expanded on the work of Day et al. (2008) by examining their sample's client files from open custody for childhood and adolescent criminal predictors and protective factors and examining their relationship with the four criminal trajectories identified by Day et al.

## **2.0 Method**

### **2.1 Design and Rationale of the Study**

A retrospective chart review of the client files of 362 male young offenders from the Toronto criminal career study (Day et al., 2008) was conducted to identify relationships between childhood and adolescent predictors of offending and trajectory group membership.

### **2.2 Procedure**

Prior to data collection, the study was approved by Ryerson University's Psychology Department and Research Ethics Board, and agreement from the children's mental health centre was obtained to access the sample's client files. As well, to preserve the sample's confidentiality, the principal investigator signed a confidentiality form with the children's mental health centre. To further protect the identity of the sample, all data collection took place in a secluded room at the children's mental health centre and each file was assigned a unique identification number for the purposes of statistical analysis. The statistical results reported in the current thesis were based on aggregated data only.

Of a possible 378 client files, 362 files were reviewed and coded. Documents that were reviewed for coding included admission/intake forms, predisposition or presentencing reports (PDR), psychological reports, psychiatric reports and notes, Youth Management Assessments (YMA), Plan of Care reports, discharge reports and summaries, and other pertinent information sources such as case notes, reports from child protection services, and police synopses. For the purpose of this study, the PDRs, psychological reports, and psychiatric reports were considered important documents for coding, as they typically contained a broad range of information about the youth, such as their family and developmental history, current familial and peer relationships, significant life events, school performance, and individual characteristics.

### **2.3 Coding Schemes**

A dichotomized (i.e., present/absent or yes/unknown) checklist-style coding scheme was developed and utilized to extract the data for the childhood and adolescent criminal predictors. Dichotomization was considered to be the most appropriate method for gathering the predictor data. Given the type of sources and styles of information contained in the files, dichotomization represented an efficient and objective method of extracting the data and was best suited for the analyses with the outcome variable. As well, the results provide statistics that are meaningful and uncomplicated for many audiences to interpret (Farrington & Loeber, 2000).

All predictors in the study were selected based on a review of the literature on the causes and correlates of criminal behaviour as well as factors that protect against involvement in delinquency. A set of items was developed for the childhood and adolescent variables and, within each age period, risk factors and protective factors (see Appendices A through D for coding schemes). For all variables, items fell into the four domains: (1) individual (e.g., low intelligence, impulsivity-hyperactivity, antisocial behaviour, etc.); (2) family (e.g., poor parenting, broken home/family transitions, involvement with child welfare agencies, criminal family members, parental psychopathology, etc.); (3) peer (e.g., difficulty socializing with peers, peer rejection, deviant peer affiliation, etc.); and (4) school (e.g., low motivation, truancy, suspensions, expulsions). Inter-rater reliability (i.e., Cohen's kappa), completed by two independent coders who coded approximately 20% of the files over two time periods, was found to be acceptable and ranged from .54 – 1.00.

### **2.4 Plan of Analysis**

Multinomial regression analyses were performed to determine the predictive relationships between the criminal predictors and trajectory group membership; specifically, a backward



stepwise procedure was applied. For all regression models, the independent variables were the criminal predictors collected from the sample's childhood and adolescent information and the dependent variable was trajectory group membership. Predictor variables with zero cell counts and base rates of 10% or less were not included in the backward stepwise analyses. Given the overall low base rate of protective factors in both childhood and adolescence, as well as zero cell count occurrences, the protective factors were not included in these analyses. However, significant effects are reported for the univariate cross tabulation results. All data analyses were performed using SPSS 17.

### 3.0 Results

#### 3.1 Cross Tabulation Analyses

**3.1.1 Childhood predictors.** Table 1 shows the frequency of the broad childhood criminal predictors across the trajectory groups based on cross tabulation analyses. Significant differences were found among the four groups regarding antisocial behaviour. Specifically, 72% of the HRADL group engaged in antisocial behaviour in childhood compared to 54.4% of the MR group, 44.4% of the LR group, and 40% of the HRADOL group ( $p = .02$ ). There was also a greater prevalence of relationship difficulties among the HRADL group (41.4%) compared to 26.6% of the MR group, 20% of the HRADOL group, and 17.9% of the LR group ( $p = .02$ ). Additionally, involvement with alternative care was statistically significant, occurring in 62.1% of the HRADL group, 60.0% in the HRADOL group, 43.0% in the MR group, and 34.6% in the LR group ( $p = .006$ ). Within the set of childhood protective factors, none of the analyses reached statistical significance.

**3.1.2 Adolescent predictors.** The results of the cross tabulation analyses for the broad adolescent criminal predictors across the four trajectory groups are shown in Table 2. Criminal family members was found to be significant ( $p = .028$ ), with an occurrence of 25% in the HRADOL group, 20.7% in the HRADL group, 20.3% in the MR group, and 9.8% in the LR group. Broken home or family transitions was marginally significant ( $p = .053$ ), occurring in 51.7% in the HRADL group, 44.3% in the MR group, 38.5% in the LR group, and 15% in the HRADOL group. As well, poor peer relations was marginally significant ( $p = .059$ ); this factor was present for 65% in the LR group, 55.2% in the HRADL group, 50.6% in the MR group, and 45.0% in the HRADOL group.

Table 1

*Cross Tabulation of Childhood Criminal Predictors Across the Four Trajectory Groups.*

Criminal Predictor	Trajectory Group				$\chi^2(df)$
	MR <sup>a</sup> ( <i>n</i> = 82)	LR <sup>b</sup> ( <i>n</i> = 246)	HRADL <sup>c</sup> ( <i>n</i> = 29)	HRADOL <sup>d</sup> ( <i>n</i> = 21)	
Low intelligence or poor academic achievement	35.4	36.3	51.7	25.0	4.06(3)
Hyperactivity-impulsivity-inattention	25.3	22.2	37.9	25.0	3.53(3)
Antisocial behaviour	54.4	44.4	72.4	40.0	9.87(3) <sup>*</sup>
Alcohol and/or drug use	6.3	6.0	10.3	5.0	.89(3)
Health problems	7.6	11.5	13.8	5.0	1.96(3)
Low self-esteem	2.5	3.8	3.4	5.0	.42(3)
Extra-familial sexual abuse	7.6	4.7	6.9	10.0	1.69(3)
Criminal family members	10.1	10.7	10.3	5.0	.65(3)
Parental psychopathology	32.9	30.3	20.7	20.0	2.47(3)
Poor child-rearing methods	38.0	34.2	34.5	35.0	.38(3)
Familial abuse	39.2	38.5	37.9	25.0	1.51(3)
Relationship difficulties	26.6	17.9	41.4	20.0	9.65(3) <sup>*</sup>
Broken home or family transitions	68.4	53.0	62.1	45.0	7.13(3)
Involvement with alternative care	43.0	34.6	62.1	60.0	12.34(3) <sup>**</sup>
Biological mother was age 17 or younger at childbirth	2.5	4.3	3.4	.0	1.32(3)
Poor relations with peers	10.1	10.3	6.9	10.0	.33(3)
Poor behaviour towards school	21.5	19.7	27.6	35.0	3.26(3)

Note. <sup>a</sup>MR = Moderate rate offender group. <sup>b</sup>LR = Low rate offender group. <sup>c</sup>HRADL = High rate adult-peaked offender group. <sup>d</sup>HRADOL = High rate adolescence-peaked group.

\*  $p \leq .05$ , \*\*  $p \leq .01$ , \*\*\*  $p \leq .001$

With regard to the protective factors occurring in adolescence, a positive response to authority was found to vary significantly across the groups. Specifically, this predictor occurred in 17.9% in the LR group, 10.3% in the HRADL group, 3.8% in the MR group, and 0% in the HRADOL group.

Table 2

*Cross Tabulation of Adolescent Criminal Predictors Across the Four Trajectory Groups.*

Criminal Predictor	Trajectory Group				$\chi^2(df)$
	MR <sup>a</sup> (n = 82)	LR <sup>b</sup> (n = 246)	HRADL <sup>c</sup> (n = 29)	HRADOL <sup>d</sup> (n = 21)	
Low intelligence or poor academic achievement	68.4	60.7	72.4	50.0	4.04(3)
Hyperactivity-impulsivity-inattention	32.9	31.2	51.7	35.0	4.92(3)
Antisocial behaviour	91.1	85.0	89.7	85.0	2.18(3)
Callousness	26.6	32.9	41.4	45.0	3.70(3)
Lacks responsibility or accountability	48.1	44.9	51.7	40.0	.93(3)
Alcohol and/or drug use	70.9	57.3	75.9	65.0	7.32(3)
Health problems	10.1	13.2	13.8	15.0	.66(3)
Low self-esteem	26.6	26.9	27.6	20.0	.47(3)
Extra-familial sexual abuse	3.8	3.0	.0	.0	1.75(3)
Criminal family members	20.3	9.8	20.7	25.0	9.13(3)*
Parental psychopathology	8.9	13.7	13.8	10.0	1.42(3)
Poor child-rearing methods	30.4	35.0	31.0	20.0	2.27(3)
Familial abuse	11.4	16.7	3.4	5.0	5.91(3)
Relationship difficulties	44.3	43.6	41.4	45.0	.09(3)
Broken home or family transitions	44.3	38.5	51.7	15.0	7.71(3)
Involvement with alternative care	50.6	45.3	65.5	60.0	5.50(3)
Poor relations with peers	50.6	65.0	55.2	45.0	7.44(3)
Poor behaviour towards school	67.1	59.8	58.6	40.0	5.02(3)

Note. <sup>a</sup>MR = Moderate rate offender group. <sup>b</sup>LR = Low rate offender group. <sup>c</sup>HRADL = High rate adult-peaked offender group. <sup>d</sup>HRADOL = High rate adolescence-peaked group.

\*  $p \leq .05$ , \*\*  $p \leq .01$ , \*\*\*  $p \leq .001$

### 3.2 Multinomial Logistic Regression Analyses

**3.2.1 Childhood criminal predictor model.** After eliminating variables based on the aforementioned criteria, four criminal predictors were entered into the childhood model to test their relationship to the four criminal trajectories, including antisocial behaviour, relationship

difficulties, broken home or family transitions (or “broken home”), and involvement with alternative care. The overall model was found to be significant ( $\chi^2(6) = 20.14, p = .003$ ), with broken home and involvement with alternative care contributing to the model. The proportion of variance in trajectory group membership as measured by the Nagelkerke pseudo  $R^2$  statistic was 6.3% and the classification accuracy of the model 64.6%. The LR trajectory group served as the base reference group for this analysis.

Compared to the LR group, the odds of offenders belonging to the MR group increased 1.82 times when they experienced a broken home or family transitions in childhood (CI = 1.03 – 3.22). With the experience of involvement with alternative care, offenders were at increased odds of belonging to one of the high rate offending groups, specifically either the HRADL group (OR = 3.14, CI = 1.33 – 7.39) or the HRADOL group (OR = 3.82, CI = 1.40 – 10.49).

**3.2.2 Adolescent criminal predictor model.** After eliminating predictors that did not meet criteria for the analysis, seven criminal predictors were entered into the adolescent model, including hyperactivity-impulsivity-inattention, criminal family members, familial abuse, broken home, involvement with alternative care, poor peer relations, and poor behaviour towards school. The backward stepwise procedure generated a significant model ( $\chi^2(15) = 43.12, p = .001$ ) comprised of the following predictors: criminal family members, familial abuse, broken home, involvement with alternative care, and poor peer relations. The Nagelkerke pseudo  $R^2$  statistic showed that the proportion of variance in trajectory group membership was 13.1% and the classification accuracy of the model was 65.2%. The LR trajectory group served as the base reference group for this analysis.

From having a criminal family member or members, youths were at an increased odds of belonging to the MR group (OR = 2.83, CI = 1.37 – 5.87), the HRADL group (OR = 3.09, CI =

1.08 – .8.82), or the HRADOL group (OR = 4.51, CI = 1.39 – 14.62). The presence of poor peer relations increased the odds of membership in the LR group compared to the MR group (OR = .50, CI = .30 – .86) and the HRADOL group (OR = .38, CI = .15 – 1.00). When offenders experienced involvement with alternative care, they were at increased odds of belonging to one of the high rate offending groups, specifically either the HRADL group (OR = 2.38, CI = 1.03 – 5.53) or the HRADOL group (OR = 2.76, CI = 1.03 – 7.37) relative to the LR group. Offenders experienced a .88 increase in the odds of membership in the LR group, compared to the HRADL group, when they experienced familial abuse (OR = .12, CI = .02 – .94). Last, when experiencing a broken home or family transitions, the odds of youths belonging in the LR group over the HRADOL group were increased by .74 (OR = .26, CI = .07 – .95).

## **4.0 Discussion**

The purpose of this study was to examine the relationship between risk and protective predictors of criminal behaviour in childhood and adolescence and the four offending trajectories identified by Day et al. (2008). Overall, the results of the study provided support for the distinction of the four trajectory groups.

Among the childhood variables, two factors from the family domain distinguished moderate and high rate offending from low rate offending. Experiencing a broken home or family transitions was predictive of moderate rate offending. Life-course theories explain the association between broken homes and delinquency by considering separation as a series of stressful events that may include marital conflict, loss of a parent, compromised economic circumstances, changes in parental figures, and poor family management practices (Krohn, Penly Hall, & Lizotte, 2009). Support for this theory was provided by Juby and Farrington (2001). In their study, boys from broken homes engaged in a greater amount of delinquency than boys from intact homes, and boys who lived with their mothers after parental separation had the same delinquency rate as boys from intact low-conflict families. Additionally, boys who remained with relatives or other caregivers (e.g., foster parents) had high rates of delinquency.

Also, from the childhood variables, the experience of alternative care predicted membership in one of Day et al.'s (2008) high rate offending trajectories. The same effect was found for those who experienced child welfare contact in adolescence. These findings converge with the results of a study by Ryan and Testa (2005), who found that children placed in substitute care, relative to those who stayed in the family home, had an increased likelihood of engaging in delinquency. Similar results have been reported by Leschied et al. (2008) and Nicol et al. (2000). Pecora, Whittaker, Maluccio, and Barth (2000) proposed an ecological theory for understanding

maltreatment whereby the abuse or neglect of youths may be best conceptualized as an expression of an unraveling series of problems originating in the context of the family and in the broader environment of the child (e.g., in school, peer relations, community or culture).

It is important to note that contact with the child welfare system itself does not predispose an individual to offending; rather, child maltreatment and disruptions in attachment within the family context have been identified as precursors to antisocial and delinquent behaviour (Haapasalo, 2000; Nicol et al., 2000). Children are often removed from the family home as a result of experiencing frequent and severe abuse, previous (lack of) response to services, and a higher likelihood of recurrence of abuse (Britner & Mossler, 2002). It is thought that the severe conditions within the home environments, as well as multiple disruptions and placements, of these children impede normative, healthy development and increase the likelihood of adverse outcomes. Finlay (2003) has described the overrepresentation of “crossover kids,” or youth involved with both the child welfare and juvenile justice systems, and reported that the youths themselves cite multiple traumas and losses in their life: within their homes, families and peer relationships.

The presence of criminal family members in an offender’s life during adolescence was predictive of moderate to high rate offending. Family criminality, as well as a positive familial attitude toward crime, has been shown to increase the risk of delinquency (Baker & Mednick, 1984; Farrington, 1989) and high rate offending (van der Geest et al., 2009) among adolescents. However, the processes underlying the transmission of familial criminality are unclear. Henggeler (1989) noted that, while modeling antisocial and aggressive behaviour is likely a part of the offspring’s socialization process, criminal parents rarely involve their children in their offending. Henggeler (1989) suggested that criminal parents may have interpersonal and



cognitive deficits that challenge their parenting practices. The delinquent behaviour of the adolescent may be related to ineffective parenting and poor relations between the parent and youth.

Involvement with alternative care during adolescence also distinguished high rate from low rate offending. However, by examining the data further, it appears that this factor represents a continuation of care involvement from childhood into adolescence. For example, 74.5% of the present sample who were involved in alternative care during childhood continued to be involved in alternative care during the adolescent period. The percentages for the HRADL and HRADOL groups, respectively, were 88.9% and 100% and about 70% each for the MR and LR groups. In light of this significant risk factor, the influence of criminal family members might also be accounted for by the criminal activity of siblings. According to Hawkins (1996), siblings may serve as a transmission of criminal knowledge for one another. Similar to peers, siblings may be closer in age and interact more intimately. They may observe and learn delinquent acts from each other, or participate in criminal acts together. Similarly, Rowe and Gulley (1992) have suggested that sibling co-offending may relate to a mutual imitation process that may be positively reinforced by one another. Support for these theories was found by Rowe and Rodgers (1989), who reported that twins and siblings who were in frequent contact were more likely to offend with one another.

Although none of the childhood variables predicted low rate offending, the experience of poor peer relations, familial abuse, and broken home in adolescence was associated with membership in the LR group. Research has found that child maltreatment occurring before age 18 is a risk factor for general maladaptive outcomes (Smith & Thornberry, 1995; Stouthamer-Loeber, Loeber, Homish, & Wei, 2001; Widom, 1989; Zingraff, Leiter, Myers, & Johnsen,

1993). As previously mentioned, given the high rate of psychiatric disorders and criminal predictors in this group, as well as the relatively short span of the LR group's criminal career ( $M = 6.7$ ; Day et al., 2008), the LR offenders may be experiencing significant problems with mental health rather than offending. Leschied et al. (2008) concluded that, in general, risk factors measured in adolescence are strong and reliable predictors of adult offending, while predictors occurring in childhood were weaker predictors. The authors found that family structure variables, including parental separation, marital status, and child welfare involvement, were particularly strong predictors when they occurred in adolescence.

#### **4.1 Limitations of the Study**

It is important to acknowledge the study's limitations. First, the criminal predictors and protective factors were coded as either "Yes/Suspected" or "Unknown." Whether a factor was absent because the youth had not experienced it, or because the factor was not mentioned in the documents on file, could not be confirmed. Second, the study design was cross-sectional, and the limited information available in the client files made it impossible to measure any form of change in the criminal predictors and protective factors across time. Third, information on the sample's demographic characteristics, such as socioeconomic status and ethnicity, was not readily available or clearly stated in the files. As well, females were not included in the analyses since the open custody facilities were male-specific. Statistically controlling for these demographic variables may have resulted in a loss of observable effects of risk factors. Finally, significant life events (e.g., death of a family member) and suicidal behaviour were not coded, although it appeared that these factors were somewhat common, and may be related to either the criminal trajectories or psychiatric diagnoses. A prospective longitudinal design measuring demographic variables, criminal predictors, and protective factors at equal intervals across time

would capture within-subject changes and determine the effects of different levels of risk and/or protective exposure.

#### **4.2 Policy and Practice Implications**

It appears that, within the population of young people at high risk for delinquency and criminality, there may be subgroups of children and youths who have distinct targets and needs for prevention and intervention. Based on the risk, need, responsivity (RNR) principles of Andrews and Bonta (2007), high intensity services would be applied to individuals in the moderate and high rate trajectory groups and low intensity services would be applied to individuals in the low rate trajectory group, in keeping with their criminogenic and responsivity factors. Additionally, it may be important to separately consider the factors that give rise to the onset of antisocial and delinquent behavior and factors that maintain such behaviour (Ward, Day, Bevc, Sun, Rosenthal, & Duchesne, under review; Piquero, 2008). Therefore, for maximum impact, intervention and prevention programs should be targeted toward the specific factors that either give rise to or maintain the behavior and be provided during the developmentally appropriate periods of the life course.

In applying the findings of the current study, children at high risk for persistent delinquency and adult criminality may require interventions targeting the effects of family disruptions, difficult familial or school transitions, or issues that lead to contact with the child welfare system (such as dysfunctional parenting practices). Adolescents who experience maltreatment, a broken home, or difficulties with peers appear to be at risk for lower rate offending. Interventions for this population may focus on building prosocial skills in the youths as well as on healthy interactions and parenting practices in the family unit. Of course, not all children from a broken home or who experience family transitions become a juvenile delinquent.

Therefore, the role of protective factors in reducing the risks associated with family transitions also should be emphasized in all efforts aimed at prevention and intervention.

Finlay (2003) and Day et al. (2008) have noted that the intervention needs of adolescents with court contact may be best served outside of the juvenile justice system. Strong support for the efficacy of parenting interventions utilizing behavioural and social learning models has been reported, particularly for parents of youth with conduct problems (Kazdin, 2005). In contrast to traditional individual interventions for children at risk, Sanders (2010) speculated that applying a public health perspective to the delivery of parenting programs may be key to increasing the impact of evidenced-based interventions aimed at parents and families in need and reducing the large prevalence of inadequate parenting practices.

#### **4.3 Future Research Directions**

A strong theoretical basis for the study of the development and persistence of criminal behaviour is lacking. In 1988, Farrington commented that investigators in the field had not sufficiently attempted to understand the effect of life events on the course of development, or with advancing and testing theories of the development of delinquency. The problem of an atheoretical approach has continued to persist in the field. Additionally, many experimental interventions for antisocial behaviour and delinquency do not have a solid theoretical grounding, as experimental predictions originating in theory are the exception rather than the rule (Farrington, 1988). Developing and integrating biopsychosocial or social-ecological theories into research on delinquency may provide a multidimensional perspective for understanding antisocial and offending behaviour.

An understanding of the processes behind the overrepresentation of relocated youths in the juvenile justice system is not well understood at this point in time. Little is known about their

criminogenic needs, their trajectories of offending, and the factors related to the onset and maintenance of their trajectories (Ryan, Hernandez, & Herz, 2007). The effects criminal parents and siblings on delinquency should be further investigated as well, given their relationship to persistent offending. Additionally, research is needed to understand the factors of high risk children and adolescents who commit offenses at a low rate.

Further investigations are required to determine what the risk factors are for specific dimensions of the criminal trajectory, such as persistence, frequency, and escalation of offending (Farrington & Welsh, 2007), as well as how these factors change in type and degree across the different developmental stages of youth who persistently engage in criminal behaviour. Additionally, the mechanisms underlying resiliency require further investigation. Few studies of criminal trajectories have incorporated measures of resiliency, protective or promotive influences, or competence. Similarly, the factors related to desistance from criminal behaviour are not well understood. Future research should measure the influence of these factors on antisocial behaviour and delinquency across time.

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