

**Transitions and Turning Points: Examining the Links between Child Maltreatment and Juvenile
Offending**

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Abstract (250 words)

Objective: The links between child maltreatment and juvenile offending are well established. However, the majority of maltreated children do not offend. The research presented in this paper examines the impact that timing and chronicity of child maltreatment have on juvenile offending.

Methods: Administrative data were obtained on all children who were born in Queensland, Australia in 1983 or 1984 and had contact with child protective services for at least one child protection matter ($N = 5,849$). For these children information was obtained on all child protection and juvenile justice contacts until the age of 17. These data were analyzed using the Semi-Parametric Group-Based trajectory analyses (Nagin & Land, 1993)

Results: Six distinctive maltreatment trajectory groups were identified, distinguished by the frequency of victimization, the age of onset and the duration of the maltreatment. Child maltreatment peaked around the transition from preschool to primary school and the transition from primary school to secondary school. Furthermore, children whose maltreatment trajectory started or extended into adolescence were more likely to offend as juveniles than children whose maltreatment occurred prior to, but not during, adolescence.

Conclusions: Trajectory analysis provides a useful analytical tool for understanding heterogeneous nature of child maltreatment and the impact of maltreatment on subsequent juvenile offending.

Introduction

While the link between child maltreatment and juvenile delinquency/offending is well established, the majority of maltreated children do not offend. Understanding the differential impact of child maltreatment is essential for developing targeted crime prevention strategies. Recent research has identified the timing of maltreatment as critical, though it is not the age of the onset of the maltreatment that was critical but whether the maltreatment occurred in adolescence (Jonson-Reid & Barth, 2000; Smith, Ireland, & Thornberry, 2005; Stewart, Dennison, & Waterson, 2001; Thornberry, Ireland, & Smith, 2001).

Within the criminological literature, one of the fastest growing bodies of research is the analysis of trajectories of change (Eggleston, Laub, & Sampson, 2004). These analytical methods facilitate the identification of homogenous groups of offenders based on the onset, frequency and duration of behavior, providing valuable insights into some of the key components of the criminal career: initiation, rate of offending and desistance (Nagin, 2005). The Semi-Parametric Group-Based Method (SPGM) of trajectory analysis (introduced by Nagin and Land [1993]) is one such methodology for examining the heterogeneity and homogeneity of offenders. This methodology has been widely used on longitudinal data and informed debates regarding general theories of crime (e.g., McDermott & Nagin, 2001), chronic life-course offenders (e.g., Fergusson, Horwood, & Nagin, 2000) and the relationship between gender and crime (e.g., D'Unger, Land, & McCall, 2002). However, the method has not been applied to understanding child maltreatment experiences.

The aim of this research was to examine the differential impact of child maltreatment on offending using the SPGM. First, based on the frequency of the maltreatment contacts, distinctive trajectories were

identified in a birth cohort of children who had contact with the Queensland child protection system. Following this, for each maltreatment trajectory, the children's gender and Indigenous status and the nature of maltreatment were examined. Finally, the relationship between the maltreatment trajectories and contact with the juvenile justice system was examined. This study provides a more sophisticated classification system to examine the link between the timing and chronicity of maltreatment and offending than the *a priori* methods used in previous studies.

Maltreatment and offending

Developmental and life course criminology stress the importance of the link between the timing of risk factors and the developmental effects of life events on the onset of offending and antisocial behavior (Farrington, 2003). These approaches have focused researchers' and policy makers' attention on the differential impact of criminogenic life experiences at differing points along the developmental time line (Loeber & Stouthamer-Loeber, 1996), highlighting that it is not merely the presence of risk factors early in life that produce pathways to offending. Rather, developmental criminology emphasizes the interrelationships of both risk and protective factors and the young peoples' life phases and transitions (Developmental Crime Prevention Consortium, 1999). Normative transitions for children include the transition to pre-school, to primary school and to secondary school. At each transition, children confront new social institutions, involving new developmental tasks and challenges (Homel, 2005). Not all children successfully negotiate each transition. Laub and Sampson (2003) have proposed the concept of turning points, which are personalized non-normative life events (such as child maltreatment) that can either redirect a person's pathways in a more positive or negative manner and may coincide with life transitions.

This life-course model parallels the developmental psychopathology approach, which aims to understand the nature, origins and sequelae of individual patterns of adaptation and maladaptation over time (Cicchetti, 1993; Davis & Cicchetti, 2004; Sroufe & Rutter, 1984). The approach recognizes that child maltreatment is best understood with an awareness of the interplay among characteristics of the child, the family and the environment, where risk and protective factors interact over time (Barnett, Manly, & Cicchetti, 1993; Cicchetti & Rizley, 1981; Manly, Kim, Rogosch, & Cicchetti, 2001). This perspective emphasizes diversity both in the pathways that lead to a particular outcome and in the multiple outcomes from any particular experience (Thornberry et al., 2001), and that the sequelae of maltreatment may vary as a function of the developmental period during which the maltreatment occurred (Cicchetti & Toth, 1995). This approach draws heavily on a range of developmental theories such as Erikson's theory on psychosocial development (Erikson, 1963)

There is substantial evidence that maltreated children are more likely to engage in delinquency and juvenile offending than children for whom there is no evidence of maltreatment (Alfaro, 1981; Bolton, Reich, & Gutierrez, 1977; Brown, 1984; Dennison, Stewart, & Hurren, 2006; Grogan-Kaylor & Otis, 2003; Kingree, Phan, & Thompson, 2003; Smith & Thornberry, 1995; Stewart, et al., 2001; Widom, 1989; Weatherburn & Lind, 1997). This relationship is evident regardless of the methods used to measure maltreatment and delinquency. A range of family factors such as poor parental supervision, harsh discipline and child physical abuse, inconsistent discipline, a cold parental attitude and child neglect, low involvement of parents with the children, parental conflict and broken families have been associated with offending (Farrington, 2003). Consequently, recent research has focused on the impact of timing, severity and type of child maltreatment on delinquency and offending outcomes.

Thornberry et al. (2001) used data from the Rochester Youth Development Study (RYDS) to examine whether the timing of maltreatment had a differential impact on adolescent outcomes, where maltreatment consisted of all substantiated incidents recorded by child protective services before the age of 18 and delinquency was assessed by self-report. The authors categorized maltreated children into four categories: *early childhood-only maltreatment* (birth through to 5 years), *late childhood-only maltreatment* (6 – 11 years), *adolescent-only maltreatment* (12 – 17 years), and *persistent maltreatment* (maltreatment occurred in both childhood and adolescence). A fifth group of children were identified who were not maltreated. Children whose maltreatment began and ended in childhood were no more likely to have committed a delinquent act than children for whom there was no evidence of maltreatment. However, children whose maltreatment persisted into adolescence or whose maltreatment occurred only in adolescence were likely to offend as juveniles. Similar findings were found across a range of negative life outcomes including internalizing problems, school failure and precocious sexual activity. Smith et al. (2005) extended this work by examining the consequences of maltreatment into early adulthood. Controlling for socio-demographic characteristics and prior levels of problem behavior, they found that any substantiated maltreatment during adolescence increased the odds of arrest, general and violent offending and illicit drug use in young adulthood (ages 20-22).

Stewart et al. (2001) examined the official contacts of a birth cohort (1983) ($N = 2,885$) with the Queensland child protection system and the juvenile court system. They compared two groups of children. One group included children who were reported to the child protective services, investigated, but no evidence of child maltreatment was found. The other group included children who, after investigation, had substantiated concerns of maltreatment. The maltreated children were more likely to offend (17%) as juveniles (under the age of 17) than children for whom there was no substantiated maltreatment (10%).

Additionally, for maltreated children, the age of the child at their final maltreatment incident was a significant predictor of juvenile offending. There was no significant relationship between the age of the child at the first maltreatment incident and subsequent offending. Jonson-Reid and Barth (2000) used a similar methodology and found that children who had their first report of maltreatment as adolescents were significantly more likely to be incarcerated as juveniles than those who had a first maltreatment report as a child. These findings suggest that it is not the age of onset of maltreatment, but whether the maltreatment extends into or occurs in adolescence that predicts the likelihood of offending.

Classification of maltreatment timing and frequency

Manly (2005) suggests that the developmental period during which maltreatment first occurs provides an indication of how early in the child's development parent-child dysfunction occurred. She proposed that the concept of timing included age of onset, frequency of episodes, duration of maltreatment, the developmental period during which the maltreatment has occurred, the recurrence of maltreatment, continuity over time and the time elapsed between the maltreatment episode and the measurement of outcomes. Research has attempted to develop *a priori* classifications for examining the timing and chronicity of maltreatment experiences (see for example, English, Graham, Litrownick, Everson, & Bangdiwala, 2005, Thornberry et al., 2001). Nagin (2005) identified two inherent statistical dangers in the use of such subjective classification rules, being that statistical analyses cannot test for the presence of assumed groups, and groups created may only reflect random variation and may fail to identify important rare developmental patterns. However, there is a group of new statistical techniques that overcome these difficulties, the analysis of trajectories of change.

Analysis of trajectories of change in the social sciences was primarily developed through two main methodologies: hierarchical linear modelling (HLM) (e.g., Bryk & Raudenbush, 1987) and latent curve analysis (e.g. Muthen, 1989). Raudenbush (2001) provides an excellent summary of these methods and their strengths and weaknesses. The primary focus of both methods is to compare *individual* trajectories of change in some outcome (e.g., offending or vocabulary) and to assess the impact that various external factors have on these trajectories. For example, Horney, Osgood, and Marshall (1995) developed individual trajectories of offending for a group of high-rate offenders and ascertained how these trajectories varied depending on a range of parameters (including employment and marital status). However, these models do not readily allow the identification of distinct clusters of trajectories. Nagin and Land (1993) tied the methodological sophistication of HLM and, particularly, latent curve analysis with the theoretical quest for classification of individuals into groups with similar traits by developing a Semi Parametric Group-Based Methodology (SPGM) of trajectory modelling. The SPGM that Nagin and Land (1993) developed provides “a flexible and easily applied approach for identifying distinctive clusters of individual trajectories within the population” (Nagin, 1999, p. 139).

The research presented in this paper uses Nagin and Land’s (1993) SPGM methodology to help identify distinctive child maltreatment trajectories, based on the timing and frequency of the maltreatment. A classification scheme for examining homogenous groups of maltreated children will be devised and described based on the patterns of maltreatment experiences, socio-demographic characteristics of the children and the type of maltreatment experienced. The relationship between these victimization trajectories and offending behavior will be examined to determine whether the SPGM will contribute to the understanding of the impact of timing and chronicity of maltreatment on offending behavior. Specifically this research will address two research questions.

1. How many distinctive child maltreatment trajectories can be identified?
2. Is there a relationship between these trajectories and offending as a juvenile?

Methods

Design

This study involved the analysis of administrative data from Queensland's (Australia) child protection agency and the juvenile justice system. Data were collected from the Department of Families, who, in 2001, had the responsibility for the protection of children as well as the administration of the juvenile justice system. In 2001 data were extracted from the child protection system concerning every child who had a birth date in 1983 or 1984. At this time these children were over the age of 17 and were no longer under the jurisdiction of the child protection system.

Children with at least one maltreatment episode were included in the study. Child protection officers from the Department of Families assessed notifications of concerns from members of the public, family members and professionals (for example teachers, police, and social workers). At the conclusion of an assessment, cases were categorized according to one of three outcomes: "substantiated harm," "substantiated risk of harm," or "unsubstantiated." Cases with an initial assessment outcome of "substantiated harm" or "substantiated risk of harm" were those cases where there was "reasonable cause to believe that the child has been harmed or is suspected of harm" (Department of Families, 2002, p. 21), and were included in this study as episodes of maltreatment, while unsubstantiated cases were excluded. For each episode the investigating officer classified the most serious type of maltreatment identified as "physical abuse," "sexual abuse," "emotional abuse," or "neglect".

The dependent variable in this research was whether the young person was formally processed (between the age of 10 and 16 years) for offending, which included formal police cautions and court appearances that resulted in a guilty outcome. All types of offending were included in this category. Investigation of sequencing indicated that only 176 or 3% of children received their first maltreatment notification after their first finalization for an offense. These children were excluded from analyses examining the links between maltreatment and juvenile offending. The resulting sample included 5,849 children who experienced 10,190 substantiated episodes of maltreatment.

Trajectory analysis

A frequency count of the number of maltreatment episodes, by age of the child (in years) was calculated for each child. As the maximum age of a child was 16 years, this resulted in 16 data points to be modelled, with group-based trajectory models fitted to these data using the Semi-Parametric Group-Based Method (SPGM) outlined by Nagin and Land (1993). Given the count-based nature of the child maltreatment data being modelled and the prevalence of zeroes in the data set, it was assumed that the data were distributed according to the Zero-Inflated Poisson (ZIP) distribution, which has been widely used in analyses that have used SPGM to develop models of offending (e.g., Fergusson et al., 2000; Nagin, 1999). For maximum flexibility, all trajectories were defined as cubic functions of age and other forms were fitted (quadratic and quartic) with similar results. However, the cubic function allowed for the possibility that the trajectory of victimization of a particular group might change direction more than once over their childhood.

Due to the non-parametric nature of the procedure being used, it was necessary to specify the number of trajectory groups being modelled prior to analysis, since the SPGM method does not determine the

number of distinct classes of trajectories; rather this is assumed a priori. However, SPGM provides a number of measures that can be used for final model selection, including the Bayesian Information Criterion (BIC) (see D'Unger, Land, McCall, & Nagin, 1998), which increases as the model fit improves. However, there is a possibility that the BIC will overfit the data, resulting in extra trajectory groups that are not theoretically distinct enough to be useful (see Bushway, Thornberry, & Krohn, 2003). To overcome this possibility, the average probability of group membership was used in conjunction with the BIC.

Results

Of the 5,849 maltreated children identified in the birth cohorts 53% were female. Thirteen percent of children were Indigenous Australians (including both Aboriginal and Torres Strait Islander children). For 336 children (5.7%), data were missing on Indigenous status. In Australia Indigenous status is a critical factor as Indigenous young people are significantly over represented in both the child protection and juvenile justice systems. In the 2001 census 5.8% of young people in Queensland (under the age of 17) were identified as Indigenous (Australian Bureau of Statistics, 2001). However, during 2001/2002 Indigenous children accounted for 12% of substantiated notifications (Department of Child Safety, 2006) and over 50% of young people in juvenile detention centers (Veld & Taylor, 2005).

There were no significant differences between males and females with respect to the number of maltreatment episodes. However, Indigenous children had significantly more maltreatment episodes ($M = 2.96$ episodes, $SD = 1.46$, maximum = 16 episodes) than non-Indigenous children ($M = 2.10$ reports, $SD = 1.46$, maximum = 18 episodes) ($p < .001$). The average age on a maltreatment episode was 7.5 years ($SD = 4.41$ years).

The first research question was *how many distinctive maltreatment trajectories can be identified?* To address this question 16 data points were modelled using the frequency count of the number of maltreatment episodes by age of the child (in years). Trajectory models were fitted with between two and seven distinct trajectory groups. Using both the BIC and the probability of group membership the optimal model included either six or seven distinct trajectory groups. The seven-group model provided the highest value for the Bayesian Information Criterion (BIC), while the six-group model had a relatively high value for BIC and a substantially higher average probability of group membership. Following Fergusson et al. (2000), the model with the smaller number of groups was selected for ease of interpretation.

The six trajectory groups identified are presented in Figure 1. On examination, it was apparent that for four of the six groups the maltreatment peaked at or just before school transitions (Group 2, Group 3, Group 4 and Group 5). In Queensland, children move from pre-school to primary school in the school year after their fifth birthday, complete Grades 1 to 7 at primary school and move to secondary school in Grade 8 (at age 12) for a further 5 years until Grade 12. Education is compulsory until a child turns 15 years. Two vertical lines were added to the graph to reflect the approximate ages at which children move from preschool to primary school (age 5), and the approximate age at which young people move from primary to secondary school (age 12).

At each of these two transition points, the groups were distinguished by the frequency of the maltreatment episodes. Two of the groups experienced chronic victimization (Group 2 and Group 4) and two experienced low victimization (Group 3 and Group 5). The remaining two groups were limited to a distinct developmental period. For Group 1, the victimization peaked at age 2 years, and by the time the

child had reached school, the rate of victimization had diminished. Group 6 showed a very similar pattern but peaked in adolescence. When these young people made the transition to secondary school, there was very little evidence of maltreatment, although maltreatment episodes increased substantially and peaked when the child was 15 years. Both these groups experienced similar levels of maltreatment to the low victimization groups but over a shorter duration of time.

 Insert Figure 1 about here

To aid the interpretation of Figure 1, Table 1 shows for each trajectory, the number of children in each trajectory, the mean age of first maltreatment and the last maltreatment, frequency of maltreatment and total maltreatment episodes. The majority of children (almost 70%) were assigned to the two groups (Group 3 and 5) who experienced low levels of maltreatment. Group 3 *Primary School Transition – Low Victimization* (PST-LV) contained almost 50% of children. For this group the mean age of the first maltreatment episode was 5.65 years, and the mean age of the final maltreatment episode was 6.71 years. Children in this group had a mean of 1.42 maltreatment episodes and, in total, accounted for 38.7% of all maltreatment episodes. Group 5 *Secondary School Transition – Low Victimization* (SST – LV) contained just over 20% of maltreated children. The mean age of the first maltreatment was 11.22 years and for the final maltreatment the mean age was 12.11 years. Children in this group had a mean of 1.50 maltreatment episodes accounting for 18.5% of all maltreatment episodes.

 Insert Table 1 about here

Two groups experienced high levels of victimization; Group 2 *Primary School Transition – Chronic Victimization* (PST-CV) and Group 4 *Secondary School Transition - Chronic Victimization* (SST – CV). Only 3.8% of children were assigned to the PST-CV group. When compared to the PST-LV group these children were younger at their first maltreatment episode ($M = 3.19$) and older at their final maltreatment episode ($M = 9.95$). These children had a mean of 5.28 maltreatment episodes accounting for 11.6% of all maltreatment episodes. The SST-CV group contained 4.4% of children who experienced a mean of 4.89 maltreatment episodes accounting for 12.4% of all maltreatment episodes. The maltreatment started when the child was 5.87 years, though there was a wide variation in the age of first maltreatment for this group ($SD = 3.66$). The mean age of final maltreatment was 12.84 years.

The remaining two groups experienced victimization during a distinct developmental period with similar levels of maltreatment to the low victimization groups but over a shorter period. Consequently, these groups were named *Early Childhood Limited - Acute Victimization* (ECL – AV) (Group 1) and *Adolescent Limited - Acute Victimization* (AL – AV) (Group 6). Each group accounted for just over 11% of the children. For the ECL-AV group the mean age of first maltreatment was 1.92 years and for the final maltreatment was 2.50 years. For the AL-AV group the mean age of the first maltreatment episode was 15.01 years and for the final maltreatment episode the mean age was 15.23 years.

When each of these groups was examined by gender and Indigenous status, significant differences emerged among the six victimization trajectories (Table 2). Overall, more females (53.3%) than males (46.7%) were maltreated. This ratio of males to females was reflected in four of the victimization groups. However, the ECL-AV group included 53.8% males and the AL-AV contained only 33.8% males ($p < .001$).

Insert Table 2 about here

Indigenous children were over-represented in all groups when compared to general population figures. Among the six victimization groups there was a significant difference in the proportion of Indigenous children ($p < .001$) (Table 3). In the AL-AV group, there were fewer Indigenous children (6.9%) than expected. In the PST-LV and the EC-AV groups, the proportions of Indigenous to non-Indigenous children were similar to the overall sample proportions. Indigenous children were over-represented in the two chronic victimization trajectories, the SST-LV group (16.6%) and SST-CV group (25.7%).

At the time of the investigation of each maltreatment episode the child protection worker identified the most serious type of maltreatment. For each trajectory, the types of maltreatment identified are presented in Table 3. Neglect was the most commonly identified maltreatment with 36.4% of episodes being classified as neglect. Children in the ECL-AV group were more likely to be identified as neglected than children in the other groups. Over 30% of all maltreatment episodes were identified as physical abuse. Children in the SST-LV and the AL-AV groups were more likely to be identified as physically abused and emotionally abused compared to the other four groups. Children in the PST-LV group were more likely to be identified as sexually abused than children in the other five groups.

Insert Table 3 about here

The second research question concerning the relationship between the victimization trajectories and offending as a juvenile was addressed using a chi square analysis. A significant relationship between the six trajectories and later offending was found ($p < .001$). While over a quarter of the maltreated children

offended (27%), very different rates of offending were demonstrated by each of the six groups (Table 4): 51.4% of the maltreated children included in the SST-CV offended. Over a third of children offended in the other three victimization trajectory groups that included adolescents, specifically, the PST-CV (36.3%), SST-LV (34.8%) and the AL-AV (35%) groups. The groups least likely to offend were the groups where the maltreatment was confined to the early years - ECL-AV and PST-LV with 16.7% and 20.8% offending, respectively.

Insert Table 4 about here

Discussion

Two findings emerged from this study. First, school transitions, when children either commence school or move from primary to secondary school, are times when children are likely to experience maltreatment. Four of the six identified maltreatment trajectories peaked around the children's school transitions. Second, maltreatment trajectories were significant predictors of juvenile offending. Children whose maltreatment trajectories either started in or continued into adolescence were more likely to offend as a juvenile than children whose maltreatment trajectories were confined to early childhood. These findings demonstrate that Semi-Parametric Group Based Method of trajectory analysis is a valuable tool for understanding not only trajectories of offending but also trajectories of victimization. Trajectory analysis provided a methodology for minimizing the confounds among the range of important variables included in the concept of timing: age of onset, the frequency of maltreatment episodes, the duration of maltreatment,

the developmental period during which maltreatment occurred, the recurrence of maltreatment and the continuity over time.

The finding that maltreatment peaks on or around the children's school transitions has important implications for understanding and preventing the long-term consequences of child maltreatment. There are a number of possible explanations for why maltreatment peaks at this time. The first is that as children move from one system to another, the level of surveillance increases and/or changes, resulting in concerned individuals being more likely to notify suspected maltreatment to the child protection services. However, the maltreatment trajectories peak just before the transitions indicating that the increase in maltreatment occurred leading up to the transition as well as during the transition. Additionally, when the limited available data on who reported the maltreatment to child protective services were examined no support for this explanation was provided. A second possible explanation is that at, or just before these transitions, the stress on the child and the family increases. Points of change in a child's life course have been identified as times of increased stress (Developmental Crime Prevention Consortium, 1999). It may be that uncertainty by the child and family concerning change increases the stress on the family, thus increasing the chances of maltreatment occurring (National Research Council, 1993). These maltreatment experiences will influence the child's ability to negotiate successfully the school transition (Developmental Crime Prevention Consortium, 1999). Children who do not successfully negotiate school transitions have been shown to have difficulty in performing academically and forming peer relationships, increasing the likelihood that they will experience bullying (peer victimization/rejection) and school failure (Bolger & Patterson, 2001; Bolger, Patterson, & Kupersmidt, 1998). These experiences will, in turn, exacerbate the long-term negative consequences associated with child maltreatment.

The findings of this study support previous research that identifies maltreatment in adolescence as predictive of later offending (Smith et al., 2005; Thornberry et al., 2001). However the results from this study provide new insights to assist in unraveling the relationship between the timing and frequency of the maltreatment and subsequent offending as a juvenile. Overall, children in the chronically victimized groups were more likely to offend than children in the other trajectory groups. Over 50% children whose chronic maltreatment peaked at the age of 12 (Secondary School Transition – Chronic Victimization group) offended and 36% of children whose chronic maltreatment peaked at the transition to primary school (Primary School Transition – Chronic Victimization group) offended. Interestingly children who experienced only one or two episodes of maltreatment either at the time of transition to secondary school or at the age of 15 years (Secondary School Transition – Low Victimization and the Adolescent Limited - Acute Victimization groups) were as likely to offend as children in the Primary School Transition – Chronic Victimization group. Children in the Early Childhood Limited – Acute Victimization group offended at rates similar to the general population.

There is unlikely to be a single answer to the question of why maltreated adolescent children are more likely to offend than other maltreated children. It is apparent that among maltreated adolescents, there are different maltreatment experiences. Some adolescents are living in unstable, transient and possibly violent environments and spending time on the streets, which increases their chances of being involved in illegal activities and coming into contact with police. For other adolescents who have experienced chronic maltreatment, particularly Indigenous adolescents, it may be the accumulation of a lifetime of victimization that increases the risks of them coming into contact with the law. Alternatively, it may be that the maltreatment occurs at the transition to secondary school, increasing the likelihood of the young person having difficulty in negotiating the transition, increasing the probability of school failure, a risk factor for

offending (Zingraff, Leiter, Johnsen, & Myers, 1994). The maltreatment experiences of young people in the Adolescent Limited – Acute Victimization group coincide with the minimum legal age for leaving school (15 years). For this group physical and emotional abuse were the most commonly identified maltreatment types. Emotional abuse is often a label applied to young people living in domestically violent households (Manly, 2005). It may be that for these young people the level of conflict in the family coupled with their increasing sense of independence increases their likelihood of coming to the attention of the juvenile justice system. Interestingly, although overall females are less likely to offend than young males, almost two thirds of the children in the Adolescent Limited – Acute Victimization trajectory were female.

These results also provide some insights into the high level of offending in young Indigenous Australians. Indigenous children, who represent 5% of Queensland children, were over-represented in the research sample as over 13% of maltreated children were Indigenous. When the demographic composition of the trajectory groups was examined, the three groups with the highest rates of offending also had had higher than expected proportions of Indigenous children, specifically, the Secondary School Transition – Chronic Victimization group contained over a quarter of Indigenous children and the Primary School Transition – Chronic Victimization and the Secondary School Transition – Low Victimization trajectories consisted of over 16% of Indigenous children.

It must be noted that research has consistently indicated that offending is only one of a myriad of negative life outcomes for maltreated children, including mental health concerns such as suicide and substance abuse, school failure and employment difficulties, teenage pregnancy, adult attachment difficulties, family violence and intergenerational violence (see for example reviews by, Child Welfare Information Gateway, 2006; National Clearing House on Family Violence, 2005). However, the consequences of the

maltreatment appear to depend on the nature and timing of the maltreatment (English, 1998). The research presented in our study indicates that maltreatment that first comes to the attention of the child protection system in childhood and continues into adolescence or maltreatment that is first identified in adolescence is related to coming to the attention of the juvenile justice system.

Limitations

There are three methodological limitations inherent in the longitudinal use of official data. First, these data significantly underestimate the true rate of both child maltreatment and juvenile offending in the birth cohorts. Self report studies indicate far higher rates of both maltreatment and offending than official statistics. In addition, official data are subject to changes over time to departmental policies and procedures and community attitudes. Over the period of this study there was a substantial increase in the maltreatment reporting rate (Department of Families, 2003). Consequently, children were far more likely to be reported for maltreatment at the end of the study than at the beginning of the study. Offending statistics remained stable. It is not possible to determine what impact this change in reporting rates may have on the victimization trajectory analyses.

Second, it was not possible to examine attrition from or migration into the sample. Migration into the sample is of particular concern as examination of the population statistics in Queensland indicates that while in 1983 and 1984, there were 82,100 births in Queensland (Australian Bureau of Statistics, 1999, 2000) by the 2001 census, there were 100,600 17-year and 18-year olds, which represents a substantial increase in the population base for the birth cohort. Consequently, it is possible that data on early childhood maltreatment experiences may be missing for those children who moved into Queensland.

Again, it was not possible to estimate the impact of this migration into the cohort on the trajectory analyses.

Finally, information necessary to provide a better understanding of the children's maltreatment was not available. This includes information on the child's socioeconomic circumstances, the nature of their family environment or the characteristics of the child. Additionally, while data were available on offending, no data were available on other negative life events experienced by these children such as teenage pregnancy, mental health issues and substance abuse.

There are substantial advantages to the longitudinal use of official data. First, as these data include all children they allow for comparisons with the census data to draw conclusions about the population. Second, they allow access to data concerning large numbers of children without the costs in time and money associated with collecting prospective longitudinal data. Third, these data do reflect the behaviors (both child maltreatment and offending) that come to the attention of the state, providing opportunities for intervention and prevention of further maltreatment and offending.

Implications

Understanding the relationship between maltreatment and school transitions provides an opportunity to target intervention programs to assist these vulnerable children (Weatherburn, Fitzgerald, & Hua, 2003). This research has a number of implications for the prevention and intervention of child maltreatment. Targeted prevention strategies could include family support and education around school transitions to help parents support and manage their children through these critical times. Furthermore, a range of

intervention strategies to help maltreated children successfully negotiate the transitions may negate some of the negative consequences associated with maltreatment and assist children to remain in step with their peer group (Developmental Crime Prevention Consortium, 1999). While a number of programs have been developed that focus on assisting the smooth transition to primary school (e.g., the Perry Pre-School Program [Schweinhart, 2004] and the Pathways Program [Freiberg, Homel, Batchelor, Carr, Hay, Elias, Teague, & Lamb, 2005]), there is a shortage of programs available to assist with the transition to secondary school.

In addition, this study identifies a number of possible areas for reducing the likelihood of maltreated children offending. Understanding the differential nature of adolescents' maltreatment experiences highlights the need for a range of intervention strategies to reduce the likelihood of these young people coming into contact with the legal system. For some maltreated adolescents, the most effective response may be providing them with appropriate alternative accommodation and assisting them in the transition to independent living. For other children, appropriate intervention may be to prevent re-victimization. Children who experience multiple maltreatment episodes require careful and intensive case planning to ensure their safety. Interventions that address domestic violence and help families to effectively parent adolescents may benefit some of these maltreated children. Programs that assist maltreated children in the transition to secondary school and encourage them to remain in school may reduce the risk of them offending. This study also provides evidence for targeting intervention programs to address the needs of both Indigenous young people and adolescent girls.

Unfortunately, there is a perception that child protection agencies are less likely to invest resources in maltreated adolescent children, as these children are not considered to be as physically vulnerable as

younger children (Smith et al., 2005). In recent years, much of the developmental crime prevention research and intervention strategies have focused on children's early years, with these efforts raising awareness of the importance of intervening early in the life span. Regrettably these strategies have diverted attention away from the importance of providing appropriate services across the developmental life span, especially during adolescence.

This study used an analytical technique from the life-course criminology literature to understand the impact of child maltreatment on one negative life outcome, offending behavior. Specifically, this research identified that both school transitions (the transition to school and the transition from primary school to secondary school) were important in understanding children's maltreatment experiences. These results have important implications for our theoretical understanding of child maltreatment. The finding that maltreatment commencing or continuing into adolescence was predictive of offending behavior highlights the importance providing resources to prevent maltreatment in this critical developmental period.

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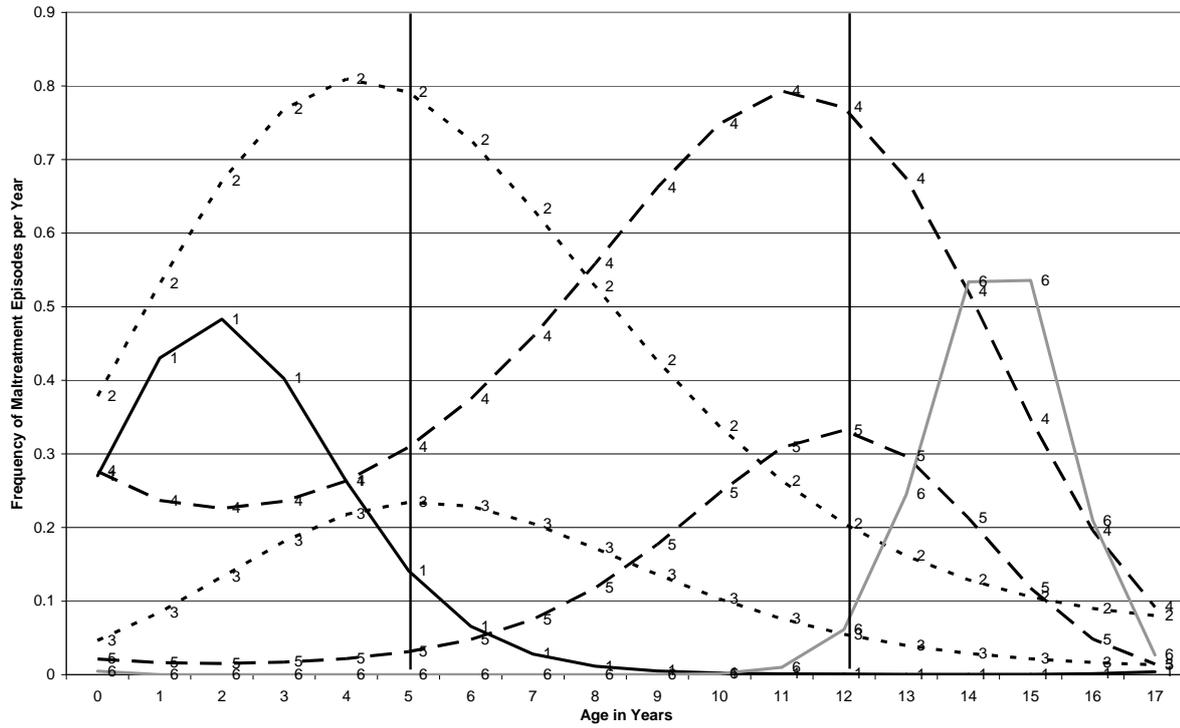
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Group 1	Early Childhood Limited - Acute Victimization (ECL-AV)
Group 2	Primary School Transition – Chronic Victimization (PST-CV)
Group 3	Primary School Transition – Low Victimization (PST-LV)
Group 4	Secondary School Transition - Chronic Victimization (SST-CV)
Group 5	Secondary School Transition – Low Victimization (SST-LV)
Group 6	Adolescent Limited - Acute Victimization (AL-AV)

Figure 1. Maltreatment trajectories for the six group model.

Table 1

Descriptive Statistics for each of the Six Maltreatment Trajectories.

Group	Trajectory Name	Total									
				Age of First Maltreatment		Age of Final Maltreatment		Frequency of maltreatment		maltreatment episodes	
		<i>N</i>	%	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>N</i>	%
1	<i>Early Childhood Limited - Acute Victimization (ECL-AV)</i>	658	11.3	1.95	1.15	2.50	1.58	1.62	1.00	1,071	10.5
2	<i>Primary School Transition – Chronic Victimization (PST-CV)</i>	223	3.8	3.19	1.93	9.95	3.74	5.28	2.87	1,180	11.6
3	<i>Primary School Transition – Low Victimization (PST-LV)</i>	2,774	47.4	5.65	2.54	6.71	3.02	1.42	.80	3,941	38.7
4	<i>Secondary School Transition - Chronic Victimization (SST-CV)</i>	259	4.4	5.87	3.66	12.84	2.63	4.89	2.56	1,266	12.4
5	<i>Secondary School Transition – Low Victimization (SST-LV)</i>	1,255	21.5	11.22	2.30	12.11	1.94	1.50	.90	1,882	18.5
6	<i>Adolescent Limited - Acute Victimization (AL-AV)</i>	680	11.6	15.06	1.16	15.23	.78	1.25	.61	850	8.3
Total		5,849	100	7.44	4.55	8.78	4.56	1.74	1.50	10,190	100

Table 2

Maltreatment Trajectory Groups by Gender and Indigenous Status

	n	Gender		Indigenous Status	
		% Male	% Female	% Indigenous	% Non-Indigenous
1 - <i>ECL-AV</i>	658	53.8	46.2	11.6	88.4
2 - <i>PST-CV</i>	223	49.8	50.2	16.6	83.4
3 - <i>PST-LV</i>	2,774	47.4	52.6	12.8	87.2
4 - <i>SST-CV</i>	259	48.0	52.0	16.8	83.2
5 - <i>SST-LV</i>	1,255	45.9	54.1	25.7	74.3
6 - <i>AL-AV</i>	680	33.8	66.2	6.9	93.1
Total	5,849	46.7	53.3	13.5	86.5

Table 3

Most Serious Maltreatment Type Identified (across Maltreatment Episodes) by Maltreatment Trajectory

			Emotional Abuse	Physical Abuse	Sexual Abuse	Neglect
	n children	n episodes	%	%	%	%
1 - <i>ECL-AV</i>	658	1071	15.3	26.9	5.8	52.0
2 - <i>PST-CV</i>	223	1180	16.7	27.5	8.8	47.0
3 - <i>PST-LV</i>	2,774	3941	16.2	27.2	20.9	35.7
4 - <i>SST-CV</i>	259	1266	19.2	32.9	9.4	38.5
5 - <i>SST-LV</i>	1,255	1882	22.8	37.1	13.9	26.1
6 - <i>AL-AV</i>	680	850	26.4	36.2	12.5	24.9
	5,849	10190	18.6	30.5	14.5	36.4

Table 4

Percentage of Maltreated Children who Offend as a Juvenile by Maltreatment Trajectory

Group	Trajectory	%	
		n	offended
1	<i>Early Childhood Limited - Acute Victimization (ECL-AV)</i>	658	16.9
2	<i>Primary School Transition – Chronic Victimization (PST-CV)</i>	223	36.3
3	<i>Primary School Transition – Low Victimization (PST-LV)</i>	2,774	20.9
4	<i>Secondary School Transition - Chronic Victimization (SST-CV)</i>	259	51.4
5	<i>Secondary School Transition – Low Victimization (SST-LV)</i>	1,255	34.8
6	<i>Adolescent Limited - Acute Victimization (AL-AV)</i>	680	35.0
Total		5,849	27.0