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Childhood Predictors of Young Adult Male Crime

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Abstract

The study sample was drawn from the Chicago Longitudinal Study (CLS), an ongoing investigation of a panel of low-income minority children (93% Black) growing up in high-poverty neighborhoods in Chicago. The study sample included 733 males who were active by age 26. Adult criminal records were collected through administrative records and supplemented with self-reports. Outcome measures included incarceration, conviction, and felony conviction by age 26. Probit regression was used to analyze the data. Findings indicated that common childhood predictors were AFDC participation by child's age 3, negative home environment, maltreatment experience, trouble making behavior, and number of school moves. Unique predictors were mother unemployed by child's age 3 for incarceration or jail, four or more children in household by child's age 3 for felony conviction, and mother did not complete high school by child's age 3 and social competence for both incarceration or jail and felony conviction. Implications on crime prevention were discussed.

Keywords

male; crime; delinquency; predictors

Childhood Predictors of Young Adult Male Crime

It is well known that the consequences of crime are substantial and long lasting to individuals and to the society. For instance, the cost to the society includes criminal justice and social service expenditures, and the incarcerated offenders also result in lost tax revenues. Given the costs and consequences of crime and incarceration, effective crime prevention and intervention are imperative for the benefits of the society. Notwithstanding an awareness of urgency regarding reducing crime, the variability inherent within people who engage in criminal activities hinders the development of effective prevention programs. Identifying predictors of crime will help to develop effective preventive interventions.

In 2007, there were over 1.5 million prisoners in state and federal correctional facilities. Although women population in prison has been growing rapidly in the past decade, overall men are much more likely to be incarcerated than women. In 2007, over 92% of the prisoners were male. At year end 2001, almost 9 times as many men as women had ever incarcerated in a State or Federal prison (Bonczar, 2003). Given the large gender gap in crime rates and the different processes of socialization by gender, the mechanisms and

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predictors of adult offending are expected to vary by gender. Males have also been the focus of the majority studies on crime and criminological theories. Thus, the focus of the present study is on males as well.

Evidence reveals that recidivistic criminal behavior in adults is usually preceded by a history of antisocial behavior during childhood and adolescence (Farrington et al., 1990; Loeber & Dishion, 1983). Research on crime careers indicates that it is very unusual for males to first initiate crime after adolescence, which suggests that if an adult is going to be antisocial, the pattern would start by late adolescence. Consequently, there should be early factors that can be used to foresee if one is more likely to become antisocial than the others in the future. Determinants of juvenile delinquency are well studied. However, there is limited empirical evidence on the childhood predictors of adult offending.

Predictors of Juvenile Delinquency and Crime

Since early 1990s, criminological theories have turned into a developmental and life-course perspective. Such theories address the developmental process of crime over the life-span, and focus on risk factors, life events and life transitions (Farrington, 2005). See Farrington (2005) for more information on developmental and life-course criminological theories. Developmental and life-course criminological theories suggest that crime can be predicted early on in life. Antisocial behavior originates as early as in childhood. High-risk social environment can exacerbate the development of crime over time. Social environment includes family, school, neighborhood, and so on. Factors derived from the theories, such as risk factors from the social environment or individual's characteristics, can be used to predict crime.

Most studies of crime focus on adolescents and young adults because criminal offending peaks during this period and declines thereafter. Previous studies found that antisocial youth can be distinguished on risk factors during childhoods (Moffitt & Caspi, 2001; Moffitt, Caspi, Harrington, & Milne, 2002; Moffitt, Caspi, Dickson, Silva & Stanton, 1996). Empirical research on the predictors of juvenile delinquency and adult offending are briefly reviewed here.

In general, the strongest predictors of adolescent offending are demographic variables, such as sex, and race and ethnicity. Indicators of early behavioral functioning, such as childhood aggression, conduct problem, and antisocial behavior, are also among the most stable predictors of adolescent offending (Farrington et al., 1990; Moffitt et al., 1996; Loeber & Dishion, 1983; Loeber & Hay, 1997; Robbins, 1978). Other individual risk factors associated with offending behaviors include neuropsychological deficits, low cognitive ability, low academic achievement, hyperactivity and impulsivity (Buke & Earls, 1993; Farrington 1998; Loeber & Dishion, 1983; Loeber & Hay, 1997; Moffitt, 1993; Moffitt et al., 1996; Lipsey & Derzon 1998; Babinski, Hartsough, & Lambert 1999).

At the family level, family structure and socioeconomic status are important predictors, such as single parent family, family size, and income (Farrington, 1998). Parental behaviors and attributes (e.g. parent criminality, parent attitudes, parenting style, parent expectations for a child's educational attainment), and family interaction styles (e.g. family conflict), are typically associated with adolescent or adult offending (Farrington, 1998; Loeber & Dishion, 1983; Loeber & Hay 1997; Nagin, Farrington, & Pogarsky 1997; Lipsey & Derzon 1998;).

In addition, among other variables associated with youth offending, peer relationships receive the most attention. Research indicates that rejection by peers and having a delinquent peer group are linked to juvenile offending (Van Lier, Vuijk & Crijnen, 2005), although these relations attenuate over time because individuals increasingly commit crimes

independently as they progress into adulthood (McCord & Conway 2002). Moreover, increasing evidence indicates that neighborhoods have impact on violence and aggression (Tremblay, Mâsse, Pagani, & Vitaro, 1996). Stressful life events are associated with higher aggression in children (Attar, Guerra, Tolan, 1994). For more review on predictors of delinquency, see Buka & Earls (1983), Loeber & Dishion (1983), and Loeber & Hay (1997).

The Present Study

As mentioned earlier, empirical evidence on the predictors of adult offending is limited. Given the high correlation between delinquency and adult offending, it is valuable to examine the predictive power of the determinants of delinquency on adult offending. The purpose of the present study is to examine the childhood predictors of young adult male crime. Two research questions are addressed: 1) What are the childhood factors associated with male crime measures? 2) What are the common and unique factors associated with male crime measures?

Using data from the on-going, 20-year Chicago Longitudinal Study (CLS, 2005) (CLS), the present study is unique in four important respects. First, longitudinal data are used spanning birth to young adulthood, which allows us to examine an array of childhood factors that have not been examined before. In addition, longitudinal data is highly valued because it allows us to assure the sequential ordering of predictors and outcomes. Second, most studies have focused on predictors of juvenile delinquency, but few studies have examined predictors of adult crime. Although delinquency is the strongest predictor of adult offending, there is less evidence on whether predictors of juvenile delinquency are similar to those of adult offending. More longitudinal studies would provide insight on how factors are associated with adult offending.

Third, we examined early factors related to crime using a comprehensive framework, which includes family, child, and school-related factors. This increases the explanatory power of the model for adult offending. Moreover, the present study focuses on alterable predictors, factors that might be altered through intervention programs. We can tailor intervention and prevention services according to the findings. Finally, the study sample is at risk of adverse development because they grew up in high poverty neighborhoods and thus have faced all of the cumulative risks that co-occur with low socioeconomic status. Crime is one of such adverse outcomes. Identification of a wider range of childhood predictors of crime will contribute to the improvement of crime prevention for children most in need.

Exploratory Model

The use of a longitudinal data set helps to identify factors stemming from various time periods of youth development. The use of hierarchical regression ensures that variables are entered based on contexts (such as family and school) and temporal order, although temporal ordering in the models is not always precise. Four sets of factors are included hierarchically in the model. Each successive hierarchical step enters factors of a given type and timing in youth development. In other words, each group of indicators is conceptually distinct and is also organized loosely by developmental periods. The first group of factors includes sociodemographic characteristics, mostly measured at or near birth. The second group adds variables that indicate early home environment and whether a child participated in either the preschool or school-age component of the Chicago Child-Parent Center (CPC) program (additional description to follow). The CPC is an early childhood intervention that research suggests positively affects long-term developmental outcomes (Reynolds et al. 2007). The third group of factors is comprised of indicators of school adjustment and family functioning, such as child maltreatment, social competence, troublemaking behavior, and parent involvement in the child's school. The final group in the model adds factors

representing two life events at late adolescence: juvenile arrest by age 18 and high school completion by age 21.

Methods

Data and Sample

The study sample was drawn from the Chicago Longitudinal Study (CLS, 2005), an ongoing investigation of the school adjustment of a panel of low-income minority children growing up in high-poverty neighborhoods in Chicago. A substantial proportion (76%) of the CLS sample participated in the Child-Parent Center (CPC) Program, a school-based comprehensive early enrichment program that extends from preschool to third grade. The original sample included 1,539 children equally divided by gender, and about 93% were Black. The average age of study participants was 26 years in December, 2006. Data have been collected longitudinally starting from child's birth from various sources (e.g., school records, surveys, administrative records, CLS, 2005; Reynolds, 2000). The study sample included 733 males (96% of original male sample) who were active in the CLS between 1998 and 2006. Criminal records by December 29, 2006 were collected through administrative records available online or through the courts, such as county-level records from Cook County (IL), state-level records from states (e.g., WI, IA, MN), and federal-level records, and supplemented with self-reports.

Table 1 presents the characteristics of the study sample, such as race/ethnicity, low birth weight, maternal educational attainment, family structure, and participation in the CPC programs. About 92% of the study sample was Black, and 81% was eligible for free lunch by child's age 3. The characteristics of the study sample are similar to the original male sample in the CLS. There are significant differences ($p < .05$) between participants who were ever incarcerated or jailed and those who were never incarcerated or jailed in 4 characteristics: eligible for free school lunch by child's age 3, mother did not complete high school by child's age 3, public assistance receipt by child's age 3, and negative home environment by age 5. Male participants who were ever incarcerated or jailed by age 26 were more likely to be eligible for free school lunch by age 3, have mother not complete high school by age 3, receive public assistance by age 3, and have higher rating of negative home environment between birth and age 5, than those who were never incarcerated or jailed by age 26.

Measures

Crime—Three dichotomous indicators were used to measure adult crime: 1) incarceration or jail, 2) conviction, and 3) felony conviction. For incarceration or jail, participants who were incarcerated or jailed as adults by December 29, 2006 were coded 1; otherwise, they were coded 0. Participants who were in jail less than 30 days were not coded as incarcerated. For conviction, participants were coded 1 if they had any conviction by December 29, 2006. Otherwise, they were coded 0. For felony conviction, participants were coded 1 if they had any felony conviction by December 29, 2006. Otherwise, they were coded 0. The sample size was 733 for both conviction measures, and was 729 for incarceration or jail, because the latter excluded 4 individuals who had adult arrest records but died between the ages of 18 and 21. Data were primarily from county courts, state departments of corrections, and federal prisons.

Sociodemographic factors and CPC program participation—A number of sociodemographic measures were included as covariates in all analyses. These included race and ethnicity, maternal education, single-parent status of the child's mother, family size, family public aid receipt (AFDC), and status of child welfare case history by child's age 3.

Those sociodemographic factors were measured by participants' age 3 except for race and ethnicity, low birth weight, and percent all persons in poverty in the neighborhood, which were measured at child's birth. All sociodemographic factors were measured through dichotomous variables. Mother's information on education and employment was used because majority (over 75 percent) of the study sample were from single parent family, and father was absent.

For race and ethnicity, participants were coded 1 if they were Black. Otherwise, they were coded 0. Low birth weight was indicated by a dichotomous variable if their birth weights were less than 5.5 pounds. Neighborhood poverty was measured through percent of all persons in poverty by census tract at birth. It ranged from 5 to 90. For maternal education, participants were coded 1 if their mother did not complete high school (diploma or GED) by child's age 3. Otherwise, they were coded 0. Single-parent status (unmarried) of the child's mother was measured between child's birth and child's age 3. Participants were coded 1 if their mother was single-parent by child's age 3. Otherwise, they were coded 0. For family size, participants were coded 1 if there were four or more children in the household between child's birth and child's age 3. Otherwise, they were coded 0. For family public aid receipt (AFDC), participants were coded 1 if they received public aid at any point from child's birth to age 3. Otherwise, they were coded 0. Finally, status of child welfare case history was measured. Participants were coded 1 if there was any substantiated abuse or neglect report on the child by child's age 3. Otherwise, they were coded 0. Data source of child welfare history included petitions to the juvenile court and referrals to the Child Protection Division of the Illinois Department of Child and Family Services (DCFS).

Early home environment—Early home environment from birth to age 5 was measured through negative home environment index. Three items were included: frequent family conflict, family financial problems, and substance abuse of parent. For each item, presence of family condition was coded 1 and absence of the family condition was coded 0. The sum of the three items was used, ranging from 0 to 3. The purpose was to see whether accumulated negative family conditions were associated with adult offending.

CPC program participation—Two CPC program components were measured: preschool and follow-on programs. For preschool, participation in the Child-Parent Center (CPC) Preschool Program for one or two years was coded 1; participants who did not attend the CPC preschool were coded 0. The CPC preschool program was part-day for three hours during the school year and included a summer session. For follow-on program, participation in the CPC follow-on program for one to three years was coded 1; children who did not attend the follow-on program were coded 0. This program element was offered in first to third grades in the elementary schools of the CPCs. See Reynolds (2000) for more information on the CPC program.

School adjustment and family functioning—Nine variables were included in this category. They were maltreatment experiences, social competence, academic achievement, cognitive competence, troublemaking behavior, parent involvement, grade retention or special education placement, school mobility, and magnet school attendance.

Maltreatment experiences between ages 4 to 13 were measured by a dichotomous variable. Participants were coded 1 if they had a substantiated abuse or neglect code between ages 4 and 13 based on both court and Department of Child and Family Services records maintained by the Chapin Hall Center for Children in Chicago. Otherwise, they were coded 0. Social competence was measured through teachers' rating from grades 1 through 3 (ages 7–9) on five items at grades 1 and 2 and six items at grade 3. The items included “follows directions”, “is self-confident”, “participates in group discussions”, “works and plays well

with others”, “takes responsibility for actions”, and “is well-behaved”. Each item was measured on a five-point scale (1 = poor/not at all; 2 = fair/some; 3 = satisfactory/average; 4 = above average/good; 5 = excellent/much). The sum of available items at each year was calculated to obtain a total score for each year. The reliabilities are 0.73, 0.66, and 0.85 for grades 1, 2, and 3, respectively. The totals were then transformed into Z-scores and averaged from grades 1 through 3.

Early academic achievement was measured through the reading comprehension total subtest of the Iowa Tests of Basic Skills (ITBS; Hieronymus & Hoover, 1990) at third grade (age 9). The reading comprehension subtest included 47 items (internal reliability $\alpha = .93$, Hieronymus & Hoover, 1990). Perceived cognitive competence was measured through participants’ rating on their competence in school from grades 3 through 6 (ages 9–12) on nine items (e.g., “I answer questions in class”, “I get good grades in school”, “I try hard in school”). In grades 3 and 4, each item was measured on a three-point scale (1 = not much; 2 = some; 3 = a lot). In grades 5 and 6, a four-point scale was used; responses ranged from strongly agree (1) to strongly disagree (4). The sum of the nine items was calculated to obtain a total score for each year. The reliability for each year ranges from 0.65 to 0.72. The totals were then transformed into Z-scores and averaged from grades 3 through 6.

Troublemaking behavior was measured by participants’ rating on their behavior at school and home from grades 3 through 6 (ages 9–12) on four items (“I get in trouble at school”; “I get in trouble at home”; “I follow class rules”; and “I fight at school”). In grades 3 and 4, each item was based on a three-point scale (1 = not much; 2 = some; 3 = a lot). A four-point scale was used in grades 5 and 6; responses ranged from strongly agree (1) to strongly disagree (4). A total score for each year was calculated by summing the ratings for all four items. The reliability for each year ranges from 0.43 to 0.61. The total scores were then transformed into Z-scores and averaged across grades 3 through 6. Parent involvement was measured by the average rating of parents’ involvement at their child’s school from grades 1 through 6 (ages 7–12). Parental involvement was assessed by teachers at each wave for children from grades 1 through 6. Teachers rated “parent’s participation in school activities” from poor or no involvement (1) to excellent or much involvement (5). The average rating between grades 1 and 6 was used, ranging from 1–5.

Grade retention or special education placement by age 15 was measured through a dichotomous variable. If school record indicated that participants were ever retained or received special education placement (such as learning disability, educable mentally handicapped, hard of hearing, physically handicapped, emotional or behavior disorder, or speech and language impairment) from grades 1 through 8 (ages 7–15), they were coded 1. Otherwise, they were coded 0. Data were obtained from a grade-by-grade analysis of school system records. School mobility was measured by a count variable: the number of times the participant changed schools between grades 4 and 8 (ages 10–14). Magnet school attendance represents variance in school quality. It was measured by a dichotomous variable. If participants ever attended magnet school between grades 4 and 8 (ages 10–14), they were coded 1. Otherwise, they were coded 0.

Life events at late adolescence—Two life events were measured: juvenile arrest and high school completion. Juvenile arrest indicated if individuals were ever arrested by age 18. The incidence of petitions to the Cook County Juvenile Court and two other locations (Milwaukee and Madison, WI) were collected. To be included as part of this variables, youth had to reside in Chicago at age 10 or older. These arrests occurred between ages 10 and 18 (from 1990 to 1998). They were formal petitions for youth who were arrested on criminal charges and went before a judge. Some petitions resulted in warnings or referrals to social service agencies.

High school completion by age 21 was measured through a dichotomous variable. If participants completed their secondary education with an official diploma or were awarded a General Education Development (GED) credential by September 2001 (mean age = 21), they were coded 1. All others were coded 0 as non-completers. The data were obtained from administrative records in all schools youth attended and were supplemented with self-report.

Except for the 2 measures of life events (juvenile arrest and high school completion), missing values of all variables were imputed through multiple imputation procedures using the EM algorithm. Because missing values were imputed for various variables, a missing index was created and included in all analyses. For the missing index, if participants had missing values on five or more variables, they were coded 1. Otherwise, they were coded 0. Table 2 provides the valid sample sizes and descriptive information of key variables.

Data Analysis

As mentioned earlier, explanatory factors were classified into four categories: sociodemographic factors by age 3 (e.g., parent SES), early home environment and CPC program participation, school adjustment and family functioning, and life events at late adolescence. The sequence was determined based on the timing of the measures. The variables were entered in five steps. First block of variables included sociodemographic factors. Second block of variables included CPC program variables. Third block of variables included early home environment, and school adjustment and family functioning by age 12. Early home environment was entered in the third step instead of the second step because we would like to see CPC program participation in a separate step. Fourth block of variables included the school adjustment and family functioning variables occurred by age 14. Finally, the last block of variables included 2 life events at late adolescence. The final model included all explanatory variables. All outcome measures were dichotomous variables. Probit regression was used to analyze the data.

Probit regression was used because it provides better estimates for variables that are not continuous and not normally distributed. As with the logit regression, the probit regression is another type of statistical model for dealing with binary dependent variables. Probit and logit parameters are estimated by Maximum Likelihood (ML). In most applications, logit models and probit models will give identical results. However, when the distribution of dependent variables is concentrated in one tail rather than more equally distributed, estimates from logit and probit models may differ substantially (Aldrich & Nelson, 1984; Liao, 1994). Probit coefficients were used to compute marginal effects, which denote changes in the probability of experiences the outcome per a 1-unit change in the explanatory variable, holding all other variables constant. For example, the marginal effect of CPC preschool participation on incarceration or jail was -.08, which meant that the participants who participated in CPC preschool were 8% less likely to be incarcerated or jail than those who did not participate in CPC preschool. STATA 11 (StataCorp, 2009) was used to conduct the analyses.

Results

In 2001, 20.4% of 25–34 Black male was ever incarcerated in a State or Federal prison, compared to 2.8% of 25–34 white male and 9% of 25–34 Hispanic male (Bonczar, 2003). By age 26, 32.4% of the study sample had been incarcerated or jailed. The high crime rate of the study sample reflected the high crime rates in inner cities. Forty-five percent of the study sample had guilty conviction, and 36.4% had felony conviction by age 26. Overall, the final model explained 25 to 28 percent of variance of the outcome measures.

Incarceration or Jail

Table 3 presents the findings on incarceration or jail. The pseudo r square increased as each block of variables was added into the model. Results were described by steps. Overall, findings on sociodemographic factors were consistent among models. Mother unemployed by child's age 3 was significantly associated with lower rates of incarceration or jail ($p < .05$). AFDC participation by child's age 3 was significantly associated with higher rates of incarceration or jail ($p < .05$). Mother did not complete high school by child's age 3 was significantly associated with higher rates of incarceration or jail ($p < .05$) in Model 1, but was not significant in other models. In Model 2, CPC preschool participation was significantly associated with a lower rate of incarceration or jail ($p < .05$). Negative home environment between birth and age 5 was associated with higher rates of incarceration or jail ($p < .01$). Marginal effect of home environment was .10 in Model 3, indicating that one more negative home environment condition was associated with 10% increase of likelihood of incarceration or jail.

Variables on school adjustment and family functioning were first added in Model 3. Maltreatment experiences (ages 4–12) and troublemaking behavior (ages 9–12) were associated with higher rates of incarceration or jail ($p < .05$). Marginal effect of maltreatment experiences was .20, which indicates that maltreatment experience was associated with 20% increase of likelihood of incarceration or jail. One point increase of troublemaking behavior was associated with 7% increase of likelihood of incarceration or jail. Both social competence (ages 7–9) and parent involvement in school (ages 7–12) were associated with lower rates of incarceration or jail ($p < .05$). Three factors in late elementary grades were added in Model 4. Number of school move was significantly associated with higher rates of incarceration or jail ($p < .01$). Marginal effect of number of school move was .08, indicating one more school move was associated with 8% increase of likelihood of incarceration or jail.

Two life events at late adolescence were added in the final model. The final model included all variables. All factors that were significant in previous models remained significant in the final model except social competence and parent involvement in school. Both life events, juvenile arrest and high school completion, were significantly associated with incarceration or jail ($p < .01$), with marginal effects of .36 and -.18, respectively. Juvenile arrest by age 18 was associated with 36% increase of likelihood of incarceration or jail by age 26. High school completion by age 21 was associated with 18% decrease of likelihood of incarceration or jail.

Conviction

Table 4 presents the findings on conviction. AFDC participation by child's age 3 and child welfare history by age 3 were significantly associated with higher rates of conviction ($p < .01$) in both Models 1 and 2, with marginal effects of .16 and .25 for AFDC participation by child's age 3 and child welfare history by age 3, respectively. That is, AFDC participation by child's age 3 and child welfare history were associated with 16% and 25%, respectively, increase of likelihood of conviction by age 26. When more variables were added in Model 3, child welfare history by age 3 became not significant. In Model 3, negative home environment, maltreatment experiences (ages 4–12), and troublemaking behavior (ages 9–12) were significantly associated with higher rates of conviction ($p < .05$). Parent involvement in school was significantly associated with a lower rate of conviction ($p < .01$). In Model 4, number of school move was significantly associated with a higher rate of conviction ($p < .01$). Maltreatment experiences (ages 4–12) became not significant

Negative home environment, troublemaking behavior, and number of school moves remained significantly associated with conviction in the final model. Both life events were significantly associated with conviction ($p < .01$). The marginal effects of juvenile arrest and high school completion on conviction were .35 and -.21, respectively.

Felony Conviction

Table 5 presents the findings on felony conviction. Findings from Models 1 and 2 were similar. Mother did not complete high school by child's age 3, AFDC participation by child's age 3, and child welfare history by age 3 were significantly associated with higher rates of felony conviction ($p < .05$). In Model 3, AFDC participation by age 3 remained significant. Negative home environment, maltreatment experiences (ages 4–12), and troublemaking behavior (ages 9–12) were significantly associated with higher rates of felony conviction ($p < .05$). Social competence was significantly associated with lower rates of felony conviction ($p < .05$). Findings from Model 4 showed a similar pattern. Number of school move was significantly associated with a higher rate of felony conviction ($p < .01$). Marginal effect of number of school move was .08, indicating one more school move was associated with 8% increase of likelihood of felony conviction.

In the final model, none of the sociodemographic factors remained significant. After adding the two life events at late adolescence, negative home environment, social competence, and number of school move remained significantly associated with felony conviction. Both life events were significantly associated with felony conviction ($p < .01$). The marginal effects of juvenile arrest and high school completion on conviction were .38 and -.22, respectively.

To sum up, when only the sociodemographic factors were examined, the common predictor across the three crime outcomes was AFDC participation by child's age 3. The common predictors in Model 3 were negative home environment, maltreatment experiences, and troublemaking behavior. In Model 4, the common predictors were negative home environment, troublemaking behavior, and number of school move. In Model 5, the common predictors were negative home environment, number of school move, juvenile arrest, and high school completion. The unique predictors were mother unemployed by child's age 3 for incarceration or jail, four or more children in household by child's age 3 for felony conviction, and mother did not complete high school by child's age 3 and social competence for incarceration or jail and felony conviction. Finally, parental involvement was significant predictor for both incarceration or jail and conviction.

Discussion

Common Predictors

Findings from the present study identify several early predictors of adult male crime. Common predictors include AFDC participation by child's age 3, negative early home environment, maltreatment experiences (ages 4–13), troublemaking behavior (ages 9–12), and number of school move (ages 10–14).

Home environment and family functioning—AFDC participation by child's age 3 and negative early home environment can be viewed as risk factors in early childhood for adult offending. The former indicates the individual's low-income status, and the latter indicates the individual's family functioning. It is well known that poverty places children at risk for adverse development, which is the reason that many interventions have been developed for economically disadvantaged children. The associations between poverty and crime are well established, although the causal mechanism between them remains controversial. Negative early home environment at age 0–5 in the present study includes

frequent family conflict, family financial problems, and substance abuse of parent. The positive significant associations between negative home environment and crime outcomes are consistent with previous studies (Farrington, 1998; Loeber & Dishion, 1983). It is worth noting that the effect of early home environment is above and beyond other factors, including factors measured in late adolescence.

Although maltreatment is not consistently significant at the final models, it is significantly associated with all three crime measures in Model 3. The associations between maltreatment experiences and adult offending collaborate with the positive relations found between child maltreatment and delinquency or antisocial behavior in many studies (Lansford, Dodge, Pettit, Bates, Crozier, & Kaplow, 2002; Smith & Thornberry, 1995; Stouthamer-Loeber, Loeber, Homish, & Wei, 2001). Recently researchers have also focused on the mechanisms between maltreatment (especially physical maltreatment) and antisocial behavior in hope to provide better strategies to intervene before victims of maltreatment develop antisocial behaviors (Jaffee, Caspi, Moffitt, Dodge, Rutter, Taylor et al., 2005).

The relations between parental behaviors and attributes, and adolescent or adult offending are discussed in literature (Farrington, 1998; Lipsey & Derzon, 1998; Loeber & Hay, 1997). For example, parental monitoring is found to be associated with fewer delinquent behavior problems (Pettit, Laird, Dodge, Bates, Criss, 2001), and parent academic involvement is negatively related to behavioral problems (Hill, Castellino, Lansford, Nowlin et al., 2004). Findings from the present study indicate that parental involvement in school is significantly associated with lower rates of incarceration and conviction, but not associated with felony conviction.

Early behavioral functioning—The positive significant associations between troublemaking behavior and crime outcomes are consistent with findings from previous studies. Previous studies have reported that early behavioral functioning, such as conduct problems, is one of the most stable predictors of adolescent offending (Farrington et al., 1990; Hills, 2003; Lewin, Davis & Hop, 1999; Moffitt et al., 1996; Loeber & Hay, 1997).

School related factors—The present study found that frequent school mobility is significantly associated with adult offending, which has rarely been investigated. Two explanations may account for this finding. The first is school commitment. Frequent school mobility implies that students or parents might have low commitment to school and low social network at school. Therefore, students who change school frequently might be more likely to maintain social network with friends outside of school. Those friends might also have low commitment to school. Hanging out with such friends might increase one's chance to get involved in delinquent behavior and then adult offending. The relations between school mobility and low levels of school attachment have also been used to explain the relations between school mobility and school dropout (South, Haynie, & Bose, 2007). Therefore, the second explanation for the mobility finding is related to academic performance. School mobility is a predictor of low academic achievement, school dropout, and low rates of high school completion (Temple & Reynolds, 1999; Ou & Reynolds, 2008). The strong correlations between school dropout and adult offending are well known based on statistics. For example, about 41% of inmates in prisons and jails in 1997 had not completed high school (Harlow, 2003). In addition, studies have found that high school graduates are much less likely to engage in crimes than high school dropouts (Lochner, 2004; Lochner & Moretti, 2004). Thus, the relations between school mobility and adult offending might be explained indirectly through the connection between school mobility and dropout. It is worth noting that the effect of school mobility on crime outcomes in the present study is above and beyond juvenile arrest and high school graduation.

Life events at late adolescence—Juvenile arrest and high school completion are both important life events associated with adult well being. They were entered in the model at the last step as a robustness test to see if early factors remain significant after taking into account the 2 life events. Among those common predictors in model 4, negative home environment and number of school move remain significant after the 2 life events were added into the model.

Unique Predictors

The unique predictor of incarceration or jail is mother unemployment by child's age 3, which is negatively associated with incarceration or jail. The relation might be explained through the assumption that a mother was able to spend more time with the child early on because they were not employed, thus the child was able to establish a stronger attachment to his mother, which was beneficial for the child's optimal development. Insecure attachment is found to be associated with problem behaviors (Erickson, Sroufe, & Egeland, 1985; Shaw, Bell & Gilliom, 2000; Shaw & Vondra, 1995), especially in low SES populations. However, it is worth exploring why mother unemployment by child's age 3 is significantly associated with incarceration or jail but not other measures of adult offending. We might need to distinguish various crime measures more carefully, and explore whether they represent different trajectories.

Social competence is significantly associated with lower rates of incarceration or jail and felony conviction, but is not associated with conviction. The significant associations found in the present study are consistent with the literature on peer rejection and peer relations as strong predictors of antisocial behavior (Lewin et al., 1999; Parker & Asher, 1987). Conviction is a broader category relative to felony conviction and incarceration or jail. Conviction does not necessary result in sentences in prison. Incarceration or jail and felony conviction are indicators of more severe offending relative to conviction. Social competence measures one's relationships with friends and classmates. Findings from the present study suggest that social competence might be associated with specific types of crime rather than just any crime.

Finally, preschool participation is significantly associated with a lower rate of incarceration or jail before school and family functioning factors were taking into account, but it is not significantly associated with crime measures in other models. This contradicts findings from previous studies on the negative associations between preschool participation and adult crime (Reynolds et al 2007; Schweinhart, Montie, Xiang, Barnett, Belfield & Nores, 2005). Why is preschool participation associated with only incarceration or jail but not the other two crime measures? It might be related to the underlying meanings of different crime measures. The relation warrants further examination.

Conclusion

Limitations

There are several limitations of the present study. First, the study investigates associations among variables rather than causal mechanisms. Although the prospective, longitudinal design increases confidence in the direction of the relations between the predictors and outcomes, caution should be exercised when making causal interpretations. Second, the CLS follows a selective sample of predominantly African American children who grew up in high-poverty neighborhoods in Chicago. Therefore, findings may not be generalized to dissimilar samples. Third, some variables (e.g., neuropsychological problems, attachment) that were identified as early predictors of juvenile delinquency or crime in previous studies are not included in the present study because the data are not available. In addition, due to

the sample size of the present study, only selected variables are included in the model. Some variables are highly correlated with each other, and the interactions among those variables would interfere with the associations between them and crime outcomes. Variables are selected according to the concepts and their correlations with outcomes. Finally, the hierarchical regression analyses can not account for how these explanatory variables interact with each other over time or at different contextual levels. Factors measured in childhood might not have direct associations with outcomes in the final model because of the interactions with other intermediate variables, in particular, juvenile arrest and high school completion. Further research is needed to clarify the processes leading from earlier functioning to adult offending.

Implications

Findings have implications for policy makers. First, early influences from childhood are found to have lasting effects into emerging adulthood. Among the identified predictors, home environment, troublemaking behavior, and school mobility have demonstrable estimated effects on adult male crime. The predictive power of the childhood precursors of adult offending provides justification for early intervention. As noted by Sampson and Laub (2005), the development of crime is a constant interaction between individuals and their environment. Altering factors in the process would have impact on the developmental trajectory. Therefore, predictors can be used to alter the development of crime. For instance, the relations between maltreatment and conduct problem or antisocial behavior are found in many studies. Intervention targeting maltreated children to improve their social functioning might reduce their likelihood of developing conduct problems or antisocial behavior. This potential intervention effect on maltreated children was tested in a study, and they found that prenatal and infancy home visiting by nurses can moderate the risk of child maltreatment as a predictor of conduct problems and antisocial behavior among children and youth born into at risk-families (Eckenrode, Zielinski, Smith, Marcynyszyn, Henderson, Kitzman et al., 2001). This example demonstrates how the findings from the present study can be applied to the design of prevention programs to reduce individuals' possibility of onset juvenile delinquency or adult offending. The predictors can also be used to identify at-risk groups that are most in need of prevention programs.

Second, the predictors of measured outcomes are distributed across different social context. These findings suggest some potential entry points for interventions designed to reduce crime. For example, improving early home environment and providing intervention targeting children who displayed problem behavior or who changed schools frequently may reduce the likelihood of adult offending. In addition, the findings suggest that comprehensive programs aimed at enhancing an array of competencies may be more effective to alter long-term developmental trajectories than more selective interventions designed to affect a single attribute. The findings suggest that encouraging parent involvement, preventing problem behavior, school mobility, and juvenile delinquency, will reduce the likelihood of incarceration and conviction. Initiatives that address these influences together may be particularly promising strategies for intervening children's detrimental development and preventing adult offending.

Early intervention and prevention for various issues, such as violence, has gained attention over the past decades. Many studies have shown that intervening in early childhood can be more effective than intervening later in life, such as the early childhood education programs can be associated with lower rates of crime and more years of education (Campbell, Ramey, Pungello, Sparling & Miller-Johnson, 2002; Reynolds et al., 2007). The early predictors found in the present study showed that criminal trajectory might be altered by intervening early in childhood.

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Table 1

Child Characteristics of the Original and Study Samples in the CLS

Characteristics	Original Male Sample	Study Sample	Ever incarcerated or jailed by age 26	Never incarcerated or jailed by age 26
Black	92.3	92.2	92.0	92.3
Percent mother had complication of pregnancy or with labor	10.2	10.4	7.2 ⁺	11.9
Percent low birth weight (< 2,500 gms)	10.7	10.8	10.0	11.1
Percent eligible for free school lunch by child's age 3	81.1	81.3	85.5 [*]	79.2
Percent mother did not complete high school by child's age 3	55.0	54.9	61.2 [*]	52.0
Percent single-parent family status by child's age 3	75.3	75.5	76.2	75.2
Percent four or more children in household by child's age 3	16.0	16.3	18.5	15.2
Percent mother was less than 18 years at child's birth	18.0	18.2	19.9	17.4
Percent mother unemployed by child's age 3	61.0	61.1	62.0	60.7
Percent public assistance (AFDC) receipt by child's age 3	61.0	61.1	68.4 ^{**}	57.5
Percent families with child welfare history by child's age 3	3.9	3.8	5.7	2.9
Percent all persons in poverty by census tract at birth	42.3	42.3	44.0 ⁺	41.5
Negative home environment 3-item index (age 0–5)	.60	.60	.75 ^{**}	.53
Percent CPC preschool program participation	62.4	61.8	56.8 ⁺	64.2
Percent CPC school-age program participation	55.1	55.9	56.4	55.7
N	763	733	236	493

Note. AFDC = Aid to Families with Dependent Children program.

⁺ $p < .10$

^{*} $p < .05$

^{**} $p < .01$

Table 2

Description of Key Variables

Variables	N	Mean	S.D.	Min.	Max.
Sociodemographic factors:					
Race and ethnicity (Black)	733	.92	.27	0	1
Mother did not complete high school by child's age 3	712	.55	.50	0	1
Single parent status by child's age 3	711	.76	.43	0	1
Four or more children in household by child's age 3	711	.16	.37	0	1
Mother unemployed by child's age 3	641	.61	.49	0	1
AFDC participation by child's age 3	696	.61	.49	0	1
Any child welfare history by age 4	689	.04	.19	0	1
Low birth weight	727	.11	.31	0	1
Percent persons in poverty by census tract at birth	727	42.24	16.98	4.51	90.08
Missing data for 5 or more variables	733	.08	.27	0	1
CPC program participation and early home enviro.					
Preschool participation	733	.62	.49	0	1
School-age participation	733	.56	.50	0	1
Negative home environment ages 0–5	612	.60	.64	0	3
School adjustment and family functioning:					
Maltreatment experience ages 4 through 13	733	.08	.27	0	1
Average Z score of social competence (ages 7–9)	692	-.22	.79	-2.32	1.91
Ever retained or placed in spec. edu (ages 7–14)	733	.44	.50	0	1
ITBS reading score (age 9)	623	94.23	17.15	48	145
Cognitive competence (ages 9–12)	644	-.12	.81	-3.03	1.86
Troublemaking behavior (ages 9–12)	644	.20	.76	-1.73	2.65
Parent involvement in school (ages 7–12)	699	2.40	.85	1	5
Number of school move (ages 10–14)	663	1.05	1.04	0	4
Ever enrolled in magnet schools (ages 10–14)	733	.07	.26	0	1
Life events at late adolescence					
Juvenile arrest by age 18	733	.32	.47	0	1
High school completion by age 21	639	.51	.50	0	1
Crime measures by age 26:					

Variables	N	Mean	S.D.	Min.	Max.
Any incarceration or jail	729	.32	.47	0	1
Any conviction	733	.45	.50	0	1
Any felony conviction	733	.36	.48	0	1

Note. AFDC = Aid to Families with Dependent Children; CPC = Chicago Child-Parent Center; ITBS = Iowa Test of Basic Skills.

Table 3
Marginal effects from Probit Regression of Model Predicting Ever Incarcerated or Jail (n=729)

Explanatory variables	Model 1	Model 2	Model 3	Model 4	Model 5
Sociodemographic factors:					
Race and ethnicity (Black)	-.05	-.05	-.05	-.04	-.12
Low birth weight	-.03	-.03	-.03	-.02	-.03
Percent all persons in poverty by census tract at birth	.0015	.0019+	.0012	.0016	.0024+
Mother did not complete high school by child's age 3	.07*	.07+	.04	.04	.02
Single parent status by child's age 3	-.01	-.01	-.03	-.05	-.08
Four or more children in household by child's age 3	.06	.06	.06	.06	.00
Mother unemployed by child's age 3	-.14*	-.14*	-.17**	-.18**	-.19**
AFDC participation by child's age 3	.18**	.18**	.15**	.16**	.13*
Any child welfare history by age 4	.18+	.17+	.08	.08	.07
Missing data for 5 or more variables	-.02	-.02	.02	.04	.11
CPC program participation and early home environment:					
Preschool participation		-.08*	-.04	-.03	.01
School-age participation		.03	.04	.05	.01
Negative home environment ages 0-5			.10**	.10**	.09**
School adjustment and family functioning:					
Maltreatment experience ages 4 through 13		.20**	.19*	.18*	.18*
Average Z score of social competence (ages 7-9)		-.06*	-.06*	-.06*	-.06+
ITBS reading score (age 9)		-.00	-.00	-.00	.00
Cognitive competence (ages 9-12)		-.04	-.04	-.03	-.01
Troublemaking behavior (ages 9-12)		.07*	.07*	.07*	.06+
Parent involvement in school (ages 7-12)		-.07*	-.07*	-.05+	-.04
Ever retained or placed in spec. edu (ages 7-14)			-.00	-.00	-.05
Number of school move (ages 10-14)			.08**	.08**	.07**
Ever enrolled in magnet schools (ages 10-14)				-.01	.04
Life events at late adolescence					

Explanatory variables	Model 1	Model 2	Model 3	Model 4	Model 5
Juvenile arrest by age 18					.36**
High school completion by age 21					-.18**
LR chi-square	25.07	29.33	97.67	117.09	221.63
Pseudo R Square	.0273	.0320	.1064	.1275	.2754

Note. The estimated coefficients come from probit regression analysis transformed to marginal effects in STATA

+ $p < .10$

* $p < .05$

** $p < .01$.

The sample size was 635 for model 5 due to missing values of the life events.

Table 4
Marginal effects from Probit Regression of Model Predicting Conviction (n=733)

Explanatory variables	Model 1	Model 2	Model 3	Model 4	Model 5
Sociodemographic factors:					
Race and ethnicity (Black)	.02	.02	.01	.04	.02
Low birth weight	-.04	-.04	-.04	-.04	-.02
Percent all persons in poverty by census tract at birth	.0012	.0014	.0003	.0006	.0013
Mother did not complete high school by child's age 3	.06	.06	.01	.01	-.03
Single parent status by child's age 3	.04	.04	.03	.00	-.05
Four or more children in household by child's age 3	.10 ⁺	.10 ⁺	.10 ⁺	.10 ⁺	.06
Mother unemployed by child's age 3	-.06	-.06	-.09	-.10 ⁺	-.08
AFDC participation by child's age 3	.16 ^{**}	.16 ^{**}	.12 [*]	.13 [*]	.07
Any child welfare history by age 4	.25 ^{**}	.25 ^{**}	.19 ⁺	.19 ⁺	.23 ⁺
Missing data for 5 or more variables	.03	.03	.09	.10	.24 [*]
Early home environment and CPC program participation:					
Preschool participation		-.05	-.00	.01	.09 ⁺
School-age participation		.01	.04	.05	-.02
Negative home environment ages 0–5			.11 ^{**}	.11 ^{**}	.09 [*]
School adjustment and family functioning:					
Maltreatment experience ages 4 through 13			.15 [*]	.14 ⁺	.11
Average Z score of social competence (ages 7–9)			-.06 ⁺	-.06 ⁺	-.06
ITBS reading score (age 9)			-.00	-.00	-.00
Cognitive competence (ages 9–12)			-.01	.00	.02
Troublemaking behavior (ages 9–12)			.09 ^{**}	.09 ^{**}	.11 ^{**}
Parent involvement in school (ages 7–12)			-.10 ^{**}	-.09 ^{**}	-.06 ⁺
Ever retained or placed in spec. edu (ages 7–14)			.02	.02	-.02
Number of school move (ages 10–14)			.08 ^{**}	.08 ^{**}	.08 ^{**}
Ever enrolled in magnet schools (ages 10–14)				-.05	-.01
Life events at late adolescence					

Explanatory variables	Model 1	Model 2	Model 3	Model 4	Model 5
Juvenile arrest by age 18					.35**
High school completion by age 21					-.21**
LR chi-square	28.58	30.11	108.63	125.31	220.02
Pseudo R Square	.0283	.0298	.1077	.1242	.2499

Note. The estimated coefficients come from probit regression analysis transformed to marginal effects in STATA.

+ $p < .10$

* $p < .05$

** $p < .01$

The sample size was 639 for model 5 due to missing values of the life events.

Table 5
Marginal effects from Probit Regression of Model Predicting Felony Conviction (n=733)

Explanatory variables	Model 1	Model 2	Model 3	Model 4	Model 5
Sociodemographic factors:					
Race and ethnicity (Black)	-.03	-.03	-.04	-.02	-.05
Low birth weight	-.00	-.00	.01	.01	.03
Percent all persons in poverty by census tract at birth	.0013	.0015	.0006	.0009	.0022+
Mother did not complete high school by child's age 3	.09*	.09*	.05	.06	.04
Single parent status by child's age 3	.02	.02	.01	-.01	-.06
Four or more children in household by child's age 3	.10*	.10+	.11+	.10+	.04
Mother unemployed by child's age 3	-.06	-.06	-.07	-.09	-.07
AFDC participation by child's age 3	.15**	.14**	.11*	.12*	.06
Any child welfare history by age 4	.21*	.20*	.15	.14	.16
Missing data for 5 or more variables	-.04	-.03	-.01	.02	.17
CPC program participation and early home environment:					
Preschool participation		-.04	-.00	.01	.07
School-age participation		.02	.03	.04	-.03
Negative home environment ages 0-5			.09**	.09**	.08*
School adjustment and family functioning:					
Maltreatment experience ages 4 through 13			.17*	.16*	.13
Average Z score of social competence (ages 7-9)			-.08*	-.07*	-.08*
ITBS reading score (age 9)			-.00	-.00	-.00
Cognitive competence (ages 9-12)			-.05+	-.04	-.02
Troublemaking behavior (ages 9-12)			.06*	.06*	.05
Parent involvement in school (ages 7-12)			-.05+	-.03	-.00
Ever retained or placed in spec. edu (ages 7-14)				.02	-.03
Number of school move (ages 10-14)				.08**	.06**
Ever enrolled in magnet schools (ages 10-14)				-.07	-.02
Life events at late adolescence					

Explanatory variables	Model 1	Model 2	Model 3	Model 4	Model 5
Juvenile arrest by age 18					.38**
High school completion by age 21					-.22**
LR chi-square	29.91	31.11	95.14	115.29	227.50
Pseudo R Square	.0310	.0322	.0986	.1195	.2683

Note. The estimated coefficients come from probit regression analysis transformed to marginal effects in STATA.

+ $p < .10$

* $p < .05$

** $p < .01$.

The sample size was 639 for model 5 due to missing values of the life events.

Appendix Table A1

	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
	1.00																				
	-.037	1.00																			
	.038	-.018	1.00																		
	.126**	-.013	.036	1.00																	
	-.039	-.041	.022	.169**	1.00																
	.048	.016	.017	.022	.343**	1.00															
	.069	.054	.035	-.033	.029	.039	1.00														
	.086*	.132**	.017	.080*	-.031	.021	.071*	1.00													
	-.109**	-.059	.028	-.097**	.149**	.063	.073*	-.135**	1.00												
	-.142**	-.062	-.048	-.131**	.128**	.189**	.046	-.068	.506**	1.00											
	-.078*	-.019	.073*	-.034	.084*	.062	.014	-.118**	.377**	.369**	1.00										
	.146**	.062	-.047	.077*	-.082*	-.044	-.030	.125**	-.310**	-.215**	-.394**	1.00									
	-.189**	-.025	.003	-.116**	.181**	.162**	-.042	-.175**	.443**	.327**	.347**	-.207**	1.00								

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	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
	.109**	.093**	.051	.080*	-.131**	-.063	-.036	.123**	-.433**	-.455**	-.306**	.206**	-.308**	1.00								
	.024	.053	-.007	-.033	-.156**	-.096**	.019	.104**	-.178**	-.174**	-.206**	.139**	-.271**	.213**	1.00							
	-.132**	-.052	.010	-.026	.118**	.133**	-.032	-.039	.078*	.143**	.074*	-.035	-.118**	-.100**	-.141**	1.00						
	.140**	.038	-.024	-.002	-.082*	.016	.074*	.136**	-.165**	-.135**	-.143**	.146**	-.205**	.170**	.189**	-.096**	1.00					
	-.194**	-.046	.050	.002	.176**	.008	-.101*	-.152**	.278**	.275**	.248**	-.156**	.307**	-.258**	-.246**	.138**	-.360**	1.00				
	.098**	.072	-.022	.064	-.070	.005	.128**	.175**	-.202**	-.132**	-.187**	.189**	-.207**	.121**	.230**	-.055	.420**	-.353**	1.00			
	.128**	.093*	.016	.063	-.047	.000	.127**	.147**	-.223**	-.170**	-.174**	.211**	-.205**	.151**	.222**	-.079*	.391**	-.368**	.759**	1.00		
	.124**	.083*	.003	.064	-.042	.009	.113**	.158**	-.222**	-.159**	-.198**	.186**	-.208**	.151**	.232**	-.090*	.437**	-.383**	.859**	.844**	1.00	