FINAL REPORT:

Long-Term Consequences of Delinquency: Child Maltreatment and Crime in Early Adulthood

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Long-Term Consequences of Delinquency:

Child Maltreatment and Crime in Early Adulthood

I. PROJECT OVERVIEW

Prior research examining the long-term consequences of juvenile delinquency has relied primarily on male samples and criminal justice-based outcomes when assessing adult outcomes. Consequently, while it has been well-documented that many delinquent boys continue to engage in criminal activity as adults, far less is known about the adult criminality of delinquent girls and the factors associated with girls' persistence and desistance from crime. Research documenting the number and type of juvenile delinquents who become abusive/neglectful caregivers is also lacking, even though developmental theory and empirical research suggest that delinquent youth, particularly girls, may be at high risk for engaging in child maltreatment as they enter young adulthood.

To address these gaps, we prospectively track a large sample of delinquent boys and girls released from juvenile correctional facilities/programs in New York State in the early 1990s and use state administrative databases to document their involvement with criminal justice and child protective services in young adulthood. Two main objectives guide our research. First, we seek to expand understanding of the long-term consequences of juvenile delinquency by describing the prevalence and frequency of two adult outcomes—arrest and the perpetration of abuse and neglect—within a gender-diverse sample of known offenders. Next, we seek to better inform the development and provision of services targeted to delinquent youth in residential care by exploring whether characteristics assessed at intake into care predict adult offending risk.

II. BACKGROUND AND RESEARCH HYPOTHESES

While our goals are primarily descriptive in nature, we offer the following hypotheses based on research from the criminology and child welfare fields.

- Research indicates that a significant proportion of male and female delinquents served in correctional programs continue to engage in criminal activity as adults (e.g., Benda, Corwyn, & Toombs, 2001; Ezell & Cohen, 2005; Sampson & Laub, 2003; Warren & Rosenbaum, 1986). We therefore hypothesize that the vast majority of sample youth will enter the adult criminal justice system by age 28.

- Studies examining criminal behavior over time suggest that considerable variability exists in the timing, rate, and length of individuals' offending careers (Piquero, 2008). We therefore anticipate the presence of multiple, distinct adult offending groups within our high risk sample.

- Longitudinal studies of human development suggest that the expression of antisocial behavior varies across time and contexts (e.g., Broidy et al., 2003; Huesmann, Eron, Lefkowitz, & Walder, 1984; Pajer, 1998). Known as "heterotypic continuity," this concept refers to the notion that a single, underlying trait may give rise to different types of behaviors as individuals mature, encounter new social contexts, and take on new social roles. Thus, individuals who commit street-based crimes as teens may go on to engage in more family-centered forms of antisocial behavior (e.g., child maltreatment) as they enter young adulthood and begin to form families of their own. Many problems associated with juvenile delinquency, such as a history of childhood victimization (Weibush, Freitag, & Baird, 2001), teen parenthood (Huizinga, Loeber, & Thornberry, 1993), intimate partner violence (Moffit & Caspi, 1999), and employment difficulties (Bullis, Yovanoff, Mueller, & Havel, 2002) are

also known risk factors for the perpetration of child abuse and neglect. We therefore hypothesize that a significant proportion of delinquent boys and girls will be named as confirmed perpetrators of abuse and neglect before age 28.

- Research on the factors associated with recidivism among known offender populations suggests that males are more likely to recidivate than females (Cottle, Lee, & Heilbrun, 2001; Deschenes, Owen, Crow, 2007). We therefore anticipate that the rate of adult criminal involvement will be higher among delinquent boys than delinquent girls.
- Research from both criminology and child welfare indicates that women's antisocial behavior is more likely than men's to center around the home. Girls are more likely than boys to target their violent behavior toward a parent or family member, (Feld, 2009; Franke, Huynh-Hohenbaum, & Chung, 2002; Synder & Sickmund, 2006) and to be identified as perpetrators of abuse and neglect (Sedlak & Broadhurst, 1996). They are also more likely than men to spend time in caregiving roles (Zick & Bryant, 1996), creating greater opportunity to maltreat. Thus, we hypothesize that rates of confirmed perpetration will be higher among sample girls than boys.
- Youth who offend early in life are more likely than their later starting peers to be persistent offenders (Benda et al., 2001; Cottle et al., 2001). We therefore hypothesize that adult criminal offending and the perpetration of child maltreatment will be more common among youth arrested and placed into custody at younger ages.
- Substance abuse and mental health problems often co-occur with juvenile delinquency (Teplin, 2001) and the perpetration of child abuse/neglect (Kelleher, Chaffin, Hollenberg, & Fischer, 1994; Walsh, MacMillan, & Jamieson, 2003). Youth with significant substance use and mental health issues are therefore expected to be at greater risk for adult deviance.

- Poor family environment, childhood maltreatment, and foster care have been associated with the initiation of delinquency (Moffitt, Caspi, Rutter, & Silva, 2001; Ryan & Testa, 2005; Simourd & Andrews, 1994; Zahn, Hawkins, Chiancone, & Whitworth, 2008). However, the extent to which these factors influence later behavior among *known* offenders is less clear. We therefore test the assumption that these factors will increase reoffending risk among known delinquents.

III. METHODOLOGY

Sample Selection

Sample youth are drawn from a research database originally created to examine short-term criminal recidivism rates and associated risk factors among known juvenile delinquents (Frederick, 1999). As part of that study, a comprehensive list of adjudicated delinquents discharged from the custody of the NYS Division of Youth (now the NYS Office of Children and Family Services, or OCFS) between January 1, 1991 and December 31, 1994 was generated. Case records for a sample of juvenile delinquents placed in selected OCFS-run or supervised correctional facilities/programs were then coded for evidence of early legal, individual, and family-related risk (Frederick, 1999). We build on this earlier work, selecting a stratified, random sub-sample of 999 youth (499 females) with case reviews and tracking them forward through time from age 16 to age 28.

Sample Description

Sample youth tended to be young, repeat minority offenders with serious offense histories placed into OCFS-run or administered locked correctional facilities and/or community-based, residential programs by order of the family court system (see Table).

Youth Characteristics	Males % or Mean (n=500)	Females % or Mean (n=499)
Black	62%	62%
Hispanic	21%	16%
Age at 1st arrest	13.87	14.01
Age at 1st OCFS placement	15.10	14.83
Total arrests, 12 months pre-placement	5.23	3.34
Prior Felony Arrest	84%	58%
Yrs in Residential Care	1.14	1.44

Data Sources

Adult Outcomes. We document adult crime and perpetration of child abuse and neglect via searches of three, independent state administrative databases: 1) the NYS Offender-Based Transaction Statistics Computerized Criminal History (OBTS/CCH) database, which records all NYS-based arrests of individuals age 16 or older from point of arrest through disposition and sentencing; 2) the Department of Correctional Services database, which tracks all NYS prison admissions and discharges; and 3) CONNECTIONS, which tracks all calls made to the NYS child abuse and neglect hotline from intake through child protective services (CPS) investigation. To identify records for extraction and coding, lists of potential, computer-generated, person matches were created using key identifiers (e.g., participant name, date of birth, social security number) as search terms. Potential matches were then manually evaluated, based on the goodness-of-fit observed between the returned record and identifiers recorded in youth's case files. To ensure data quality, specific matching criteria were developed for each system and a sub-sample of matches was independently reviewed by multiple coders.

Adult Mortality. To determine whether participants died during follow-up, a National Death Index (NDI) search was submitted to the National Center for Health Statistics, a division of the Centers for Disease Control.

Early Risk Factors. Risk factors reflective of youth's offense history (e.g., age at first juvenile arrest, prior violent arrest), mental health need, substance use, history of physical abuse, history of sexual abuse, and family environment were taken from items coded during the initial recidivism study, which were based on reviews of youth's court records, probation reports, intake and home assessments, and service plans. Information on youth's prior receipt of child welfare services was obtained by extracting records from the NYS Child Care Review Service system, an administrative database used to document the provision of child preventive, protective and foster care services.

Analysis Plan

Descriptive information on the prevalence, frequency, and type of youth's early adult contact with both the criminal justice and child welfare systems is presented. Survival and trajectory analysis techniques are then used to describe the timing and pattern of youth's behavior within each system. To control for potential differences in youth's opportunity to offend/maltreat over time, participants' age at community release, adult incarceration and mortality are controlled for in each of our longitudinal models. All analyses are conducted separately by sex.

IV. KEY RESEARCH FINDINGS

Adult Crime

As hypothesized, the vast majority of delinquent youth included in the study sample became clients of the adult criminal justice system; however, both prevalence and frequency of criminal justice contact were higher among boys than girls. By age 28,

- 89% of boys and 81% of girls were rearrested;
- 83% of boys and 63% of girls were rearrested on felony level charges;
- 85% of boys and 68% of girls were convicted;
- 71% of boys and 32% of girls spent time in an adult jail or prison.

Adult Arrest Trajectories

Trajectory analyses revealed the presence of four early adult offending groups within both our male and female models. Three trends were particularly noteworthy:

- A sizeable proportion of delinquent boys and girls largely desisted from criminal activity by late adolescence. Twenty-two percent of boys and 32% of girls were assigned to a low, flat trajectory path in which group members either avoided rearrest entirely or were infrequent adult offenders.
- Both our male and female models revealed the presence of two high-rate offending groups that were responsible for a disproportionate amount of observed arrests. Forty-one percent of sample boys incurred 67% of all male arrests, while 15% of girls incurred 44% of all female arrests.
- While arrest rates for most groups peaked in late adolescence and then declined, 17% of sample boys and 9% of sample girls followed trajectory paths in which the overall

rate of offending increased in late adolescence/early adulthood. "Early adult peak" boys steadily increased their rate of offending from age 16 to age 22 and then declined, while girls on the "Low-Rising" trajectory path had an overall arrest rate that rose steadily throughout the follow-up period. By age 28, over half of the girls in the Low-Rising group had been arrested in the past six months.

Adult Perpetration of Child Maltreatment

As anticipated, sample youth, particularly girls, were at high risk for the perpetration of child maltreatment.

- 9% of boys and 42% of girls were identified as a confirmed perpetrator in at least one CPS report prior to age 28.
- High incarceration rates among sample boys may be partially responsible for observed differences in boys' and girls' perpetration rates. The more time youth spent incarcerated during the follow-up period, the less likely they were to be identified as a confirmed perpetrator.

Adult Perpetration Trajectories

For both boys and girls, trajectory models mirrored our descriptive findings, revealing only two groups—"perpetrators" and "non-perpetrators".

Cross Systems Involvement

While males tended to confine their antisocial behavior to the criminal domain, a significant proportion of delinquent girls touched both the criminal justice and child welfare systems. By age 28:

- 80% of boys and 44% of girls experienced arrest only;
- 1 boy and 6% of girls were CPS only clients;

- 9% of boys and 37% of girls were both arrested and identified as a confirmed perpetrator in at least one CPS report;
- 11% of boys and 13% of girls were never arrested or identified as a confirmed perpetrator. However, 21% of the boys with no system contact died during follow-up, suggesting this group may not be as "resilient" as their system histories suggest.

Although criminological research often suggests that girls are less persistent offenders than boys, the overall rate of adult deviance was similar when both criminal and child welfare outcomes were considered.

- 89% of delinquent boys and 87% of delinquent girls were arrested and/or identified as a confirmed perpetrator of abuse and neglect before age 28.

Early Predictors

Race, offense history, childhood maltreatment, prior receipt of child welfare services, and family environment were associated with heightened risk for adult antisocial behavior for both boys and girls, while mental health and substance use were relatively poor predictors of youth's early adult functioning. Consistent with developmental research suggesting that girls are more likely than boys to maintain close connections to parents during the transition into early adulthood and to be influenced by the quality of these connections (e.g., Lopez, Campbell, & Watkins, 1988; Sneed et al., 2006), girls' behavior was more consistently related to indicators of family-related risk (e.g., maltreatment, prior child welfare services receipt, family crime, etc).

- Race: Blacks were more likely than other racial groups to be assigned to high-rate adult arrest trajectory groups, regardless of sex. However, Black males were significantly less likely than other males to be identified as a confirmed perpetrator of abuse and neglect. For girls, race was not associated with perpetration risk.

- Offense History: For both sexes, youth who were younger at first juvenile arrest were more likely than other youth to be assigned to a high-offending adult arrest trajectory group. They also tended to be more likely than their later starting peers to be dual system clients, engaging in both crime and the perpetration of child maltreatment in early adulthood.

- Maltreatment: For boys, maltreatment predicted adult perpetration but not crime. Boys with sexual abuse histories were more likely than other boys to be identified as confirmed perpetrators of abuse and neglect, leading to higher rates of dual system involvement. For girls, rates of sexual and physical abuse tended to be highest among girls assigned to a high offending arrest trajectory group, and a history of either abuse type significantly increased the risk of child maltreatment perpetration.

- Child Welfare Services: Prior receipt of child preventive, protective or foster care services increased the likelihood that both boys and girls would follow a high-rate criminal offending path and increased the likelihood the girls would be identified as confirmed perpetrators of abuse and neglect.

- Family Environment: Family crime was associated with quicker transitions into the adult criminal justice system for both boys and girls. In addition, girls who came from homes characterized by family crime and substance abuse were more likely than other girls to follow a steadily escalating path of early adult criminal offending.

V. LIMITATIONS

Findings likely underestimate former delinquents' level of adult deviance. Arrest and perpetration measures were drawn from official state records and thus capture only those

criminal and child maltreatment activities detected by state institutions (Maxfield, Weiler, & Widom, 2000; Sedlak & Broadhurst, 1996). Moreover, record searches were limited to NYS databases, raising the possibility that incidents occurring elsewhere went undetected. Finally, although we accounted for opportunity to offend within our outcome analyses by controlling for mortality and incarceration time, we did not have access to information on participants' parenting status or living arrangements. Had we been able to adjust our child welfare models for "caregiving time", perpetration rates may have been even higher, particularly among boys, as males typically engage in fewer caregiving activities, making our male estimate more susceptible to opportunity bias.

VI. PRACTICE RECOMMENDATIONS

1. Child abuse prevention programs, such as family planning, parenting education, etc. should be routinely offered to delinquent youth in residential care. To maximize potential impacts, prevention efforts should target both sexes. While confirmed perpetration was substantially higher among sample girls, boys comprise approximately 85% of juvenile delinquents in custodial care (Synder & Sickmund, 2006), making them an important intervention group in terms of sheer numbers.

2. Juvenile justice programs should include trauma-sensitive therapies and approaches to service delivery.

Although their delinquent behavior often causes them to be viewed as offenders rather than victims, many youth served by the juvenile justice system, particularly girls, were once maltreated children and/or came from families receiving child protective or preventive services. Case record reviews indicate that 25% of sample boys and 46% of sample girls experienced

either physical or sexual abuse prior to beginning their juvenile justice placement. In addition, 46% of sample boys came from families that had previously received child protective, preventive, or foster care services, as did 65% of sample girls.

Viewed in conjunction with the recent upsurge in literature connecting delinquency to trauma (Cauffman, Feldman, Waterman, & Steiner, 1998; Greenwald, 2000, 2002), these findings suggest that juvenile justice programs may need to address youth's trauma histories if rehabilitation efforts are to be successful. In the early 1990s when sample participants were placed with OCFS, trauma was not routinely assessed or targeted by juvenile justice programs in New York State or elsewhere, an oversight that may have contributed to observed recidivism rates. Traditional juvenile justice practices often fail to adequately address common consequences of trauma (e.g., distrust, aggression, negative affect, impulsivity) and may even retraumatize vulnerable youth (Ford, Chapman, Hawke, & Albert, 2007; Greenwald, 2002; Hennessey, Ford, Mahoney, Ko, & Siegfried, 2004), impeding rehabilitation efforts. Consistent with this perspective, study findings indicate that prior abuse and child welfare services receipt increased the likelihood that youth, particularly girls, would become high rate criminal offenders and perpetrators of child maltreatment in early adulthood. Incorporating trauma-sensitive service models and treatments into programs for juvenile delinquents may therefore help to reduce the number of serious delinquent youth who manifest antisocial behavior in early adulthood. Research examining the benefits of trauma-based approaches with juvenile justice populations is still in its infancy, but several programs have been identified as promising by the National Child Traumatic Stress Network (www.NCTSNET.org) and the National Center for Mental Health and Juvenile Justice (Ford et al., 2007).

3. Efforts should be made to link delinquent youth to community-based services and supports during the late adolescent- early adult period.

Study findings indicate that the late adolescent to early adulthood years represent a vulnerable time period for many juvenile justice youth. For most study participants, migration into the adult criminal justice system occurred soon after community release. Within one year of living in a community setting, over half of sample boys had experienced an adult criminal arrest. Within three years, or before age 19, over 50% of sample girls had been arrested and approximately 10% had been identified as a confirmed perpetrator of child maltreatment. Enhanced service provision and intervention efforts targeting this period may be particularly beneficial for reducing adult antisocial behavior within this high risk group.

4. Working with the families to reduce family challenges may help to prevent poor outcomes in early adulthood, particularly for delinquent girls.

Family-based assessment and intervention have not historically played a prominent role in either in-care or aftercare practices within the juvenile justice system. Yet, current findings suggest that family context may play an influential role in the initiation and maintenance of youth's antisocial behavior. Consistent with research demonstrating links between impaired family relationships and the initiation of delinquent behavior (e.g., Farrington & Painter, 2004; Moffitt et al., 2001; Thornberry, Lizotte, Krohn, Smith, & Porter, 2003), prior child welfare involvement and family dysfunction (e.g., crime, substance abuse) were common among the families of our delinquent sample. In turn, as youth entered young adulthood, these factors increased risk for adult deviance, particularly for girls. Youth with criminally-involved family members migrated into the adult criminal justice system faster than other youth, and girls who

came from households characterized by family crime and substance abuse were more likely than other delinquent girls to become high-rate adult offenders. As most youth return home following their release from OCFS' custody, identifying and targeting family needs/behaviors may help to increase youth's chances for healthier transitions.

VII. RECOMMENDATIONS FOR FUTURE RESEARCH

1. Given that many juvenile delinquents continue to engage in antisocial behavior as they transition into young adulthood, additional research on this time period and the factors that contribute to youth's persistence and desistance from adult antisocial behavior is needed. Future research should more closely examine the links between promising indicators of early risk (e.g., maltreatment, child welfare services receipt), contemporary circumstances, and early adult outcomes.

In the current study, several dichotomous indicators (e.g., physical abuse, sexual abuse, prior child welfare services receipt) were shown to be significant predictors of adult antisocial behavior, suggesting that these experiences may be influential determinants of youth's long-term functioning. Research should explore these relations further and examine how type and timing of maltreatment (particularly neglect, the most common form of childhood maltreatment), age, length, and type of foster care placement, etc., influence youth's risk for adult deviance. Future research should also seek to more closely examine youth's lives during the late adolescence/early adult period, and attempt to identify concurrent factors (e.g., aftercare services, family/romantic relationships, employment) that may augment or diminish youth's manifestation of adult antisocial behavior.

2. Research should seek to replicate and expand our findings pertaining to serious delinquent girls. In particular, given that a large proportion of girls exiting residential care become clients

of both criminal justice and child welfare systems, efforts to explore the sequencing of these early adult behaviors, potential correlates of cross-system risk (e.g., substance abuse, poverty, etc), and the relative impact of crime/perpetration on the intergenerational transmission of antisocial behavior should be undertaken.

3. Given that most delinquent youth never enter residential care, research examining the long-term outcomes of youth receiving a broader array of juvenile justice services (e.g., diversionary and probationary services) is needed to determine if current findings can be generalized to other juvenile justice populations.

4. Future research should explore the interconnections between child welfare and criminal justice services.

Juvenile justice and child welfare services have traditionally functioned as independent entities. Yet, a growing body of research (e.g., Phillips & Gleeson, 2007), including the findings presented here, suggests that these systems are in fact highly intertwined, serving many of the same youth and families over time. As the state agency charged with overseeing all state-based delinquency prevention, juvenile rehabilitation, child welfare, and foster care services programs, OCFS should seek to document long-term patterns of system utilization and the factors associated with cross-system migration. Interesting questions include: Can youth who migrate from child welfare services into juvenile justice be distinguished from youth who enter child welfare but not juvenile justice? How does the provision of in-care and aftercare services affect delinquent youth's risk for adult child welfare contact?

5. Research should seek to explore how gender and race influence patterns of system involvement and adult outcomes.

While the purpose of the current study was to examine how delinquent youth fare once they exit residential care and begin the transition into early adulthood, findings suggest that the factors associated with out-of-home placement may vary for delinquent boys and girls, and that minority youth are disproportionately represented in in-care samples. Where youth go once they leave care also varies by sex and race. While adult arrest rates are relatively comparable across groups, girls are less likely than boys to experience conviction and incarceration and are more likely to be identified as a perpetrator by CPS. Blacks are more likely than other racial groups to accumulate a high number of adult arrests and to experience conviction and incarceration in young adulthood. Race also influences cross-systems involvement, increasing the likelihood of dual system and criminal justice involvement for girls, and decreasing the likelihood of dual system contact for boys. Future research should explore whether these differences reflect differential involvement in adult antisocial behavior and/or sex/racial biases in system detection/entry and response.

I. INTRODUCTION

Exploring how youth fare once they leave the auspices of the juvenile justice system is crucial to the development of effective residential and aftercare services. In order to promote healthy adult development within this high-risk population, policymakers and system professionals must have a comprehensive picture of the range of challenges facing juvenile delinquents as they transition into early adulthood, as well as the factors that diminish and augment youth's risk for adult deviance. Yet, prior research examining the long-term consequences of juvenile delinquency has relied almost entirely upon male samples and criminal justice-based outcomes when assessing adult antisocial behavior. Consequently, while it has been well-documented that many delinquent boys will continue to engage in criminal activity as adults, far less is known about the adult criminality of delinquent girls, the factors associated with girls' persistence and desistance from crime, and the extent to which former delinquents engage in other less publicly visible but equally problematic types of adult antisocial behavior, such as child maltreatment.

To help address these gaps, we prospectively track a large sample of delinquent boys and girls released from correctional facilities/programs in New York State in the early 1990s and document their involvement with both adult criminal justice and child protective services in young adulthood. To create a longitudinal dataset rich in both adolescent and adult data, we take advantage of an existing research dataset, selecting our study participants from a cohort of youth included in an earlier study of short-term criminal recidivism rates (Frederick, 1999). As part of that study, youth's paper case files were read and coded for a variety of factors suspected to relate to recidivism risk (e.g., age at first arrest, mental health needs, substance use, child maltreatment, family dysfunction, etc). We then build upon this work and use state

administrative databases to assess youth's engagement in adult antisocial behavior over a twelve-year period, beginning when youth are 16 and continuing through age 28.

Three core aims guide our research. First, we seek to add to the field's understanding of the long-term consequences of juvenile delinquency by examining two adult outcomes—crime and the perpetration of abuse and neglect—within a gender-diverse sample. We begin by providing gender-specific descriptive information on the prevalence, frequency, and type of youth's early adult contact with both the criminal justice and child welfare systems. We then apply a more developmental perspective and use both survival and trajectory analysis techniques to describe the timing and pattern of boys' and girls' adult behavior within each system.

Our second set of research questions builds on this descriptive picture and asks whether these adult outcomes can be meaningfully predicted by factors measured at the time of youth's placement into state custody. To do this, we create constructs reflective of youth's offense history, individual needs, prior maltreatment, child welfare services receipt, and family functioning from the initial research database and other administrative files, and examine their impact on both survival time and trajectory group membership. Finally, we capitalize on the diversity of our dataset and consider how our picture of early adult functioning and risk varies across both gender and outcome domain. Do boys and girls differ in where, when, and how often they engage in antisocial behavior? Are boys more likely than girls to engage in adult crime? Are girls more likely than boys to engage in child maltreatment? Do the factors that influence later deviance vary by gender or by the type of antisocial behavior studied?

II. LITERATURE REVIEW

Female Delinquency

As indicated above, few researchers have sought to examine the long-term functioning of delinquent girls. While this oversight likely stems from the historically modest role played by girls in the juvenile justice system, the number of girls receiving juvenile justice services and the reason for their placement into care has changed dramatically in the past thirty years. Between 1985 and 2002, the number of female delinquency cases handled by U.S. juvenile courts increased a startling 92%. Rates of custodial care for non-status offenses also skyrocketed, with the number of delinquent girls served in residential settings rising 96% between 1991 and 2003 (Snyder & Sickmund, 2006). Moreover, while male arrest rates for many crimes either decreased or increased less than female arrest rates during this period, the proportion of girls responsible for violent and property offenses grew considerably. While these shifts in female juvenile justice involvement have been argued to be more reflective of changes in law enforcement practices and policies than actual changes in girls' delinquent behavior per se (Feld, 2009), girls' expanding presence within the juvenile justice system has drawn attention to the issue of female delinquency and created a demand for female-specific research. Thus, even though girls currently constitute only about one-quarter of the nation's delinquency caseload and 14% of the juvenile custodial population (Snyder & Sickmund, 2006), understanding how girls fare once they leave correctional programming is increasingly of interest to juvenile justice practitioners.

Criminal Offending in Early Adulthood

Recidivism. Although studies vary considerably in sample selection, length of follow-up, and choice of recidivism measures, previous research suggests that a significant proportion of juvenile delinquents will continue to engage in criminal activity as adults. While no national-

level statistics on juvenile recidivism exist, state-based, short-term recidivism studies utilizing predominately male samples indicate that approximately one-quarter to one-third of juvenile delinquents migrate into the adult correctional system within a few years of reaching their legal majority (Fablo, 2001; Jones & Herrin, 1990; Wisconsin Department of Corrections, 2004). Recidivism rates are even higher when follow-up periods are extended and sample composition is limited to more serious categories of male offenders (e.g., Barnoski, Lieb, & Aos, 1997; Dawes, Ebron, Ferguson, & Katzenelson, 2004; Eggleston & Laub, 2002; Oregon Office of Economic Analysis, 2003; Rivers & Trotti, 1995). Within eight years of their release from the California Youth Authority (CYA), nearly 90% of the boys followed by Ezell and Cohen (2005) had been arrested on new criminal charges. Similarly, Rivers and Trotti (1995) tracked boys released from juvenile justice facilities in South Carolina and found that 82% had touched either the adult probation or prison system within 11 years of obtaining adult status.

Few studies have specifically examined girls' criminality over time, but population-based studies of long-term offending patterns indicate that the association found between adolescent delinquency and adult crime in males also holds true for females (e.g., Piquero, Brame, & Moffitt, 2005; Piquero & Buka, 2002). Moreover, limited research tracking women released from correctional programs indicates that most girls who penetrate far into the juvenile justice system will continue to offend in adulthood. Warren and Rosenbaum (1986) followed 159 girls sentenced to the CYA in the 1960s and documented their adult arrest histories 12 to 20 years later when sample participants were 26 to 37 years old. Consistent with the high rearrest rates seen in male CYA samples (Ezell & Cohen, 2005), 96% of the women followed were eventually rearrested. Follow-up time was considerably shorter in Benda, Corwyn and Toombs' (2001) study of youth released from Arkansas' Serious Offender Program, but recidivism rates were still

disturbingly high. Seventy-five percent of the delinquent girls followed returned to the State's adult correctional system within two years of their release (Benda et al., 2001).

Adult Offending Trajectories. Despite these grim statistics, studies applying a more developmental perspective suggest that not all recidivists are the same, and that it would be unwise to view those youth who transition into the adult criminal justice system as a single homogenous group. Rather than relying on a single event to classify individuals into a set outcome group (i.e., recidivist, non-recidivist), trajectory analysis techniques use longitudinal data to identify groups of individuals with similar patterns of behavior over time (Nagin, 2005). Research using this analytical strategy indicates that considerable variability exists in the timing, rate, and length of adults' offending behavior, even when sample composition is limited to groups of serious juvenile offenders. Indeed, studies utilizing trajectory analysis techniques on primarily male offending samples have consistently found four to six unique offending paths (Piquero, 2008).

Moreover, certain patterns of offending have emerged in multiple studies. In their samples of previously incarcerated delinquent boys, both Sampson and Laub (2003) and Ezell and Cohen (2005) found a small group of delinquents that followed what appeared to be an adolescent-limited offending pattern. Trajectories for these adolescent-limited groups showed high rates of offending in mid-adolescence, followed by a sharp decline and eventual desistance from criminal involvement. Conversely, while all groups in both studies eventually showed signs of desistance over the life course, both studies also had paths where the rates of criminal activity grew or remained high throughout the early adulthood years, suggesting that certain subgroups of persistent offenders may be significantly more problematic than others.

Opportunity. While the picture of adult offending provided by trajectory analysis techniques may be more informative than the picture provided by a straight recidivism framework, it is not immune to bias. When discussing patterns of offending over time, criminologists have noted the importance of accounting for opportunity for deviance (Eggleston, Laub, & Sampson, 2004; Piquero, Blumstein, Brame, Haapanen, Mulvey, & Nagin, 2001). Individuals who are dead or incarcerated during a particular span of time do not have the opportunity to be deviant; by the very nature of their position they are no longer "at risk" for experiencing traditionally measured indicators of criminal activity (e.g., arrest). However, because these individuals do not appear as having an arrest or other type of "hit" within the criminal justice system during the timeframe studied, they are often erroneously categorized as desisters. This can produce a misleading set of results, particularly when describing serious, high offending groups. Piquero and colleagues (2001) examined the arrest trajectories of previously incarcerated youth with and without controls for incarceration time. Without controls, 92% of the sample appeared to show signs of desistance over time, but when incarceration time was accounted for, this percentage dropped to 72%. Similarly, Eggleston and colleagues (2004) found that offense rates and predicted membership in high offending groups were underestimated when mortality and incarceration time were omitted from their arrest trajectories. Thus, incorporating information on individuals' eligibility into trajectory analyses aimed at describing youth's adult offending is crucial to the development of an accurate offending picture.

Perpetration of Child Maltreatment

Although researchers have historically gravitated toward criminal justice-based indicators of adult functioning when seeking to document the long-term consequences of juvenile delinquency, longitudinal studies of human development suggest that the expression of antisocial

behavior varies over time and across contexts (e.g., Broidy et al., 2003; Huesmann, Eron, Lefkowitz, & Walder, 1984; Moffit & Caspi, 1999; Pajer, 1998; Sampson & Laub, 1990). Known as "heterotypic continuity," this concept refers to the notion that a single, underlying trait may give rise to different types of behaviors as individuals mature, encounter new social contexts, and take on new social roles (Rutter, 1989; Wright, Tibbets, & Diagle, 2008). Thus, individuals who commit street-based crimes as teens may go on to engage in more family-centered forms of antisocial behavior (e.g., intimate partner violence, child maltreatment) as they enter young adulthood, establish romantic partnerships, and begin to form families of their own.

Consistent with this hypothesis, findings from two longitudinal studies indicate that individuals with histories of juvenile delinquency are more likely than their less antisocial peers to engage in family violence in adulthood. In the Dunedin Multidisciplinary Health and Development Study, both aggressive delinquency and juvenile police contact significantly predicted physically abusive behavior toward romantic partners in adulthood (Moffitt & Caspi, 1999). Likewise, Giordano and colleagues found girls' and boys' self-reported level of delinquent activity in adolescence to be significantly related to engagement in relationship violence ten years later (Giordano, Millhollin, Cernkovich, Pugh, & Rudolph, 1999). Although the extent to which these findings extend to violence toward children has not been explored, recent work examining the overlap between different types of family-based violence suggests that intimate partner violence and child maltreatment often go hand in hand. Hazen, Connelly, Kelleher, Landsverk, and Barth (2004) analyzed data from the National Survey of Child and Adolescent Well-Being, a probability study of U.S. children involved in child protective services investigations, and found that nearly half of all female caregivers reported for childhood maltreatment also experienced relationship violence at some point in their lifetime.

Moreover, many correlates of juvenile delinquency are also known risk factors for the perpetration of child maltreatment, suggesting that the level of maltreatment risk found within delinquent samples may be particularly high. Retrospective studies examining the prevalence of child maltreatment histories among groups of known juvenile offenders indicate that between one to two-thirds of delinquents have experienced some form of childhood maltreatment (Wiebush, Freitag, & Baird, 2001). Given that individuals who experience maltreatment in childhood are more likely than individuals without a history of maltreatment to become abusive and neglectful parents (Dixon, Hamilton-Giachritsis, & Browne, 2005; Egeland, Jacobvitz, & Sroufe, 1988; Kaufman & Zigler, 1987; Pears & Capaldi, 2001), many juvenile delinquents may enter the juvenile justice system predisposed toward later parenting difficulties.

Youth served by the juvenile justice system also have unusually high rates of both mental health and substance abuse problems (Huizinga, Loeber, & Thornberry, 1993; McClelland, Teplin, & Abram, 2004; Teplin, Abram, McClelland, Duncan, & Mericle, 2002; Ulzen & Hamilton, 1998; Veysey, 2003), two conditions repeatedly associated with perpetration risk within the child maltreatment literature (Debellis, Broussard, Herring, Wexler, Moritz, & Benitez, 2001; Kelleher, Chaffin, Hollenberg, Fischer, 1994; Walsh, MacMillan, & Jamieson, 2003). Similarly, two adult outcomes previously found in delinquency samples – early parenthood (Huizinga et al., 1993; Thornberry, Smith, & Howard, 1997; Thornberry, Wei, Stouthamer-Loeber, & VanDyke, 2000) and employment difficulties (Bullis, Yovanoff, Mueller, & Havel, 2002; Lewis, Yeager, Lovely, Stein, & Cobham-Portorreal, 1994; Sampson & Laub, 1990) – may also interfere with youth's ability to successfully transition into healthy caregiving roles. Both teen and financially-stressed parents are thought to cope less effectively with the stresses associated with parenting and have been shown to engage in harsh/punitive parenting

practices (e.g., George & Lee, 1997; McLoyd, Jayaratne, Ceballo, & Borquez, 1994; Stier, Leventhal, Berg, Johnson, & Mezger, 1993; Zuravin, 1988), potentially increasing maltreatment risk.

Opportunity. In order to maltreat, individuals must have access to children. Thus, as described in our earlier discussion of criminal outcomes, high rates of premature death and incarceration typically found in serious delinquent samples may also substantially reduce youth's opportunity to maltreat. Conversely, opportunity to engage in child maltreatment will presumably be greater among parenting youth and those residing with minor children. Attempts to document delinquent youth's perpetration of child maltreatment must therefore be cognizant of these types of opportunity bias when seeking to draw conclusions regarding the association between delinquency and later perpetration risk.

Gender Differences in Adult Antisocial Behavior

While the studies reviewed above suggest that both male and female delinquents are at high risk for engaging in both adult crime and child maltreatment, how often and where individuals engage in antisocial behavior may also vary by sex. In their meta-analysis of factors associated with juvenile recidivism, Cottle, Lee and Heilbrun (2001) found that being male significantly increased the likelihood that a juvenile would reoffend. Likewise, statistics on adult offenders indicate that recidivism rates for female offenders are often lower than those observed for men within the same time period (e.g., Deschenes, Owen, & Crowe, 2007).

It has been hypothesized that female delinquents may be less likely than males to continue to engage in crime as adults because of their closer ties to family and the stronger pull of parenting roles (Giordano, Cernkovich, & Rudolph, 2002; Rumgay, 2004; Siennick & Osgood, 2008). Research examining this argument is mixed (Giordano et al., 2002; Warr, 1998),

but lends some support to this assumption. Graham and Bowling (1995) found female subjects desisted from crime more abruptly than males, and that they often did so in conjunction with the assumption of caregiving roles. Girls who reported staying home most nights with their children were significantly more likely than those less involved in caregiving roles to desist from criminal activity. Similarly, in a reanalysis of data from the Gluecks' Women's Reformatory Study, Broidy and Cauffman (2006) found motherhood to be positively associated with women's desistance from crime following their release from institutional placement.

However, it is also possible that closer familial ties and the assumption of parenting roles may simply alter the landscape in which females have the opportunity to engage in antisocial acts. Indeed, research from both criminology and child welfare indicates that women's antisocial behavior is more likely than men's to center around the home. Girls are more likely than boys to target their violent behavior toward a parent or family member, (Feld, 2009; Franke, Huynh-Hohenbaum, & Chung, 2002; Synder & Sickmund, 2006) and are more likely to be identified as perpetrators of abuse and neglect (Sedlak & Broadhurst, 1996). Focusing solely on public-based criminal offenses may therefore underestimate the extent to which delinquent girls engage in adult antisocial behavior.

Conversely, data on serious delinquent males suggests that time spent with offspring in the family sphere may be limited. Lewis and colleagues tracked 70 formerly incarcerated delinquent boys into early adulthood and found that by age 24 half had become fathers. However, less than half of these young men had ever lived with their offspring, and by the end of the follow-up period only 14% were residing with their children (Lewis et al., 1994). Thus, boys' involvement in family-based violence may be highly dependent on their level of family contact.

Cross-domain research aimed at simultaneously documenting boys' and girls' involvement in multiple forms of adult anti-social behavior, such as crime and family violence, is therefore needed to help determine how gender and context interact to shape our understanding of adult outcomes. Are delinquent girls truly less likely than delinquent boys to be persistent offenders or does the context in which girls manifest antisocial behavior simply shift in early adulthood?

Early Risk Factors

Despite high levels of risk, not all delinquents will go on to become adult offenders or perpetrators of child maltreatment, and those who continue to display antisocial behavior will likely do so in different and potentially meaningful ways. Thus, exploring how youth's juvenile characteristics relate to later adult functioning may help to better inform and improve in-care and aftercare rehabilitation services. With this goal in mind, we sought to identify early characteristics with known empirical and/or conceptual ties to either criminal behavior or the perpetration of child maltreatment that were available to us within our chosen sample. As noted earlier, study participants were drawn from a prior research study examining short-term recidivism rates and their relation to early risk, providing us with several pre-collected constructs from which to choose. A brief overview of the constructs we selected from that earlier work and others that we were able to create using state administrative databases appear below.

Offense History. Operating under the assumption that the propensity for persistent offending is established early in life and remains highly stable over time, several prominent criminological theorists (e.g., Gottfredson & Hirschi, 1990; Moffitt, 1993) have argued that persistent offenders should be distinguishable from their peers on indicators of criminal history, having initiated their criminal careers earlier in life. Consistent with this perspective, offense

history variables (e.g., age at first arrest, age at first placement, total arrest charges) have been found to be strong predictors of subsequent offending within samples of known delinquents (Benda et al., 2001; Cottle et al., 2001; Lattimore, MacDonald, Piquero, Linster, & Visher, 2004). Whether these variables also increase risk for the perpetration of child maltreatment has not been examined.

Individual Functioning. As stated earlier, substance abuse and mental health problems often co-occur with juvenile delinquency (Teplin, 2001; Teplin et al., 2002) and the perpetration of child abuse/neglect (Kelleher et al., 1994; Walsh et al., 2003; Wolock & Magura, 1996), suggesting that notable difficulties in these areas may predispose juveniles toward both forms of adult antisocial behavior. Recidivism research supports this hypothesis (Benda et al., 2001; Cottle et al., 2001; Lattimore et al., 2004; Stoolmiller & Blechman, 2005). Girls may be particularly vulnerable with at least one study finding that mental health issues may play a more influential role in determining women's likelihood of rearrest than boys' (Benda, 2005).

Child Maltreatment. Poor parent-child relationships and harsh parenting practices are also thought to play an influential role in the initiation and maintenance of criminal behavior in several prominent criminological theories (e.g., Broidy & Agnew, 1997; Moffitt, 1993; Sampson & Laub, 2003; Thornberry, Lizotte, Krohn, Smith, & Porter, 2003). In particular, child maltreatment has been shown to increase the risk of engaging in multiple forms of later antisocial behavior. Individuals experiencing maltreatment in childhood are more likely than individuals without a history of childhood victimization to enter the juvenile justice system (Currie & Tekin, 2006; Smith & Thornberry, 1995; Widom & Maxfield, 2001; Wiebush et al., 2001) and to engage in abusive/neglectful parenting as adults (Dixon et al., 2005; Egeland et al., 1988; Kaufman & Zigler, 1987; Pears & Capaldi, 2001).

Whether maltreatment predicts later criminality within a population of known delinquents, however, is less clear. In her longitudinal study of abuse/neglect, Widom found that a history of childhood victimization increased risk for becoming both a juvenile and an adult offender. However, when analyses were limited to those with a history of juvenile offending, the impact of abuse and neglect disappeared. Rates of persistent offending were comparable among juvenile offenders with and without a history of childhood maltreatment (Widom & Maxfield, 2001). Similarly, in their study of the relations between physical abuse and adult offending, Teague and colleagues (2008) found that controlling for subjects' level of delinquent involvement eliminated the previously significant association observed between physical abuse and adult involvement in property and violent crime (Teague, Mazerolle, Legosz, & Sanderson, 2008). Taken together, these studies suggest that experiencing child maltreatment may increase the risk of criminal initiation, but not its persistence.

Alternatively, the impact of child maltreatment on adult offending transitions may be gender-dependent. Neither of the studies reviewed above specifically reported the associations between early maltreatment and later offending specifically for female offenders. Yet, both childhood physical and sexual abuse have been theorized to play a major role in female criminality (Bloom, Owen, Rosenbaum, & Deschenes, 2003; Chesney-Lind, 1989). In keeping with this hypothesis, a handful of recent studies suggest that female offenders with maltreatment histories are more likely than their non-maltreated peers to recidivate (Archwanmety & Katsiyannis, 1998; Benda, 2005; Cernkovich, Lanctot & Giordano, 2008).

Foster Care. Researchers have also noted that maltreated youth who enter the foster care system are more likely than maltreated youth who remain in the home to become delinquent (e.g., Ryan & Testa, 2005), while others have noted an association between foster care instability

and delinquency (Runyan & Gould, 1985; Jonson-Reid & Barth, 2000). Ryan and Testa (2005) found that for females, entry into foster care increased the risk of delinquency, regardless of placement stability. Rates of delinquency were also higher among males placed in foster care than males left at home (23% vs. 11%); however, maltreated males with only one or two placements were no more likely than non-placed maltreated males to engage in delinquency. Whether foster care placement and instability also increase risk for adult crime is unknown, as are the effects of foster care on later risk of child maltreatment perpetration.

Family Functioning. Certain aspects of the family environment may also increase the risk of adult antisocial behavior. Youth living in homes where family members are actively involved in criminal activity and/or the use of illicit substances will likely spend more time than other youth in the presence of deviant others, and may be more regularly presented with opportunities for misbehavior. They may also be more likely than others to perceive antisocial behavior as both normative and rewarding. Research is mixed, with studies tending to find a positive association between parental behavior in these areas and the initiation of criminal activity among both males and females (e.g., Farrington, 2005; Farrington & Painter, 2004; Fergusson & Horwood, 2002; Leve & Chamberlain, 2004; Tollet & Benda, 1999), but not necessarily with level of recidivism risk (e.g., Lattimore et al., 2004**).**

Research Questions and Hypotheses

In hopes of providing a more complete picture of the long-term functioning of juvenile delinquents and the risk factors associated with later deviance, we expand beyond all-male samples and adult criminal outcomes to examine boys' and girls' contacts with both the adult criminal justice and child welfare systems. While most of our goals are descriptive in nature, we offer the following set of hypotheses/research questions based on the literature reviewed above.

In regard to adult criminal offending, we hypothesize that:

- The vast majority of the youth included in our study sample will migrate into the adult criminal justice system prior to reaching their 28th birthday;
- Rates of criminal recidivism will be higher among delinquent boys than delinquent girls;
- Youth who go on to offend in early adulthood will vary in the timing, frequency, and length of their criminal careers.

In terms of adult child welfare involvement, we anticipate that:

- A significant proportion of both delinquent boys and girls will be named as confirmed perpetrators of abuse and neglect before age 28;
- Girls will be more likely than boys to engage in child maltreatment.

Finally, in regards to our early risk factors we test the following assumptions:

- Adult criminal offending and the perpetration of child maltreatment will be more common among youth arrested and placed into custody at younger ages;
- Youth with significant substance use and mental health issues will be more likely than other youth to experience adult arrest/perpetration of child maltreatment;
- Youth with a history of childhood maltreatment, prior receipt of child welfare services, and family problems (e.g., family crime, substance abuse) will be more likely than their peers to become persistent offenders/perpetrators of child maltreatment.

III. METHODS

Overview of Research Design

To answer these questions, we capitalize upon existing state research, child welfare, and criminal justice databases to identify and prospectively track a large sample of male and female delinquents served by the NYS juvenile justice system in the early 1990s. Youth's involvement in two forms of antisocial behavior – criminal offending and the perpetration of child maltreatment – is then assessed by documenting instances of criminal justice and child welfare system contact over a 12-year period, beginning at age 16 (when youth are considered to be adults within the NYS criminal justice system) and continuing through participants' 28th birthday. Participants residing in locked, limited access facilities/settings past age 16 are tracked from the point of community release forward.

Sample

Participant Selection. Participants' names are drawn from a research database originally created to examine short-term criminal recidivism rates and associated risk factors among known juvenile offenders (Frederick, 1999). As part of that study, a comprehensive list of juvenile delinquents (n=7,465; 849 females) discharged from the NYS Division of Youth (now the NYS Office of Children and Family Services, or OCFS) between January 1, 1991 and December 31, 1994 was generated. Case records for a sub-sample of juvenile delinquents (n=2,418; 521 females) served in selected OCFS-run or supervised correctional facilities/programs were then coded for evidence of early legal, individual, and family-related risk. The programs from which youth were drawn were specifically chosen by research staff to include settings representative of the entire range of juvenile delinquents and residential options seen in the full discharge cohort

(e.g., seriousness of offender, gender, facility size, etc.) and for the presumed quality of their record-keeping (Frederick, 1998; 1999).

To maximize the number of female participants included within the present study, we over-sampled and selected all 501 delinquent girls from the original case review sample who had reached their 28th birthday by the start of our data collection activities in December 1, 2006. We then randomly selected a comparable sized sample of age-eligible males. Two female cases were subsequently dropped due to excessive missing data in the original data file, leaving a final study sample of 999 delinquents (499 females).

Sample Description. Sample youth tended to be young, repeat minority offenders with serious offense histories who were placed into OCFS-run or administered locked facilities and/or community-based, residential correctional programs by order of the family court system. Sixty-two percent of sample participants were Black and 18% identified as Hispanic. On average, participants were arrested 4.32 (SD = 4.23) times in the 12-months prior to the start of their targeted OCFS placement. Average age at selected OCFS placement was 14.97 years and average age at community release was 15.67 years (SD = 1.05). Ninety-two percent of sample youth were served in open-access, community-based residential and/or day programs by age 17, and 100% were in open-access, community-based settings by age 18. (For a more in-depth description of participants' early characteristics, see Table 1).

Data Sources and Search Protocols

As indicated above, data for the current study are derived almost entirely from state administrative databases. To create our analysis file, we identify and extract records from six independent administrative databases maintained by four separate state agencies (OCFS, the NYS Division of Criminal Justice Services, the NYS Department of Correctional Services, and

NYS Office of Temporary and Disability Assistance). In addition, information on youth's mortality is obtained through a search of a federally-maintained death record database. The following section describes each of the data sources utilized and the protocols developed to identify and extract electronic records pertaining to youth's juvenile justice stay, maltreatment history, foster care use, and adult involvement with child welfare and criminal justice systems.

Creation of a Master Search File. In order to maximize our ability to accurately and confidently identify sample youth across multiple state administrative databases, we needed to know as much as possible about the youth included in our study sample. We therefore began our data collection process by compiling all of the personal and system identifiers available to us within the original research dataset. These included youth's first and last names, dates of birth, sex, race/ethnicity, and OCFS identification numbers. In addition, we were able to extract the name and address of the youth's parent/head of household for 906 (91%) participants and social security number for 571 (57%) participants.

Using this information as a starting point, we then spent approximately three months conducting individual, manual searches of the State's Welfare Management System (WMS) to see if any additional information on youth's family composition, system identifiers, or address history could be gathered. Used by multiple NYS agencies to track payments related to a wide range of state-administered services including Medicaid, Public Assistance, HEAP, food stamps, child care, and child welfare services, WMS can be used to generate a historical list of all such cases to which a given individual is linked. Included in each individual history are prior and current street addresses, case/system identifiers, and the names, dates of birth, and relationships of all known household members involved in any given case. For the 571 participants for whom we had a social security number, WMS records were individually looked up and printed, using

social security number as the primary matching criterion. For those without a valid social security number, searches were based on participants' name, date of birth, parent/head of household name, and/or address. Identified records were then extracted and added to our master search file to supplement and update the information drawn from the original research dataset.

Our searches produced WMS records for 975 sample participants. Records were useful for acquiring the names and dates of birth of various family members, including, in many cases, the children of our participants, legal name changes resulting from marriage, and adult addresses. Records were also particularly helpful in generating missing social security numbers, enabling us to reduce the number of participants with missing data on this key identifier to 30.

Adult Outcome Data Sources

Criminal Justice Data. Contact with the adult criminal justice system was determined by searching the NYS Offender-Based Transaction Statistics Computerized Criminal History (OBTS/CCH) database system. Initiated in 1979 and updated on a 24-hour basis, the OBTS/CCH system is a live, event-based database that tracks all criminal arrests of individuals over the age of 16 that take place within NYS from point of arrest through disposition and sentencing. Self-reported personal identifiers (e.g., name, date of birth, social security number) are collected at the time of arrest, and fingerprints are taken for individuals arrested for either a misdemeanor or felony charge. This information is then entered into the OBTS/CCH system and a fingerprint-based search is conducted. If no fingerprint match is identified, the individual is considered new to the CCH system and a unique system identifier (aka NYSID) is assigned. If a fingerprint match is found, the NYSID number previously assigned to that individual is also applied to the current and all subsequent arrest events. Indexing arrest records by fingerprint, rather than other personal identifiers, increases the likelihood that events pertaining to the same individual will be

grouped under a single identifier. As noted earlier, name, date of birth, and social security number are self-reported at the time of arrest and are therefore not readily verifiable. Thus, attached to each NYSID number/fingerprint-ID is a listing of the names, aliases, dates of birth, and social security numbers collected across all arrest events contained in the CCH system.

To search the CCH system for potential person matches, the research team provided the NYS Division of Criminal Justice Services (DCJS) with a data file containing each participant's first and last name, date of birth, sex, race, social security number, and last known address. When available, the first and last name of participants' parents and primary caregivers at time of OCF release were also provided. DCJS staff then used a computerized search process to identify individuals whose names and/or social security numbers resembled those of study participants. A candidate list, including all potential system matches, was then printed for manual review. Included on the potential candidate list were all the names/aliases and dates of birth associated with each potential NYSID match, as well as the individual's address at point of arrest, social security number, race, height, and fingerprint pattern.

Information in our master search file was then manually compared to the information on each potential DCJS candidate, and a decision to accept or reject the match was made using an established set of guidelines. If the potential candidate's name, date of birth, and social security number were all present and matched to a research participant's information, a definitive match was declared. Matches were also made when two of three main criteria (name, date of birth, social security number) were closely matched and additional supporting evidence was present (e.g., common address, race, ethnicity, listed name matched that of primary caregiver or known parent). Conversely, matches were rejected if two of the three main criteria were missing, conflicted, or if the name searched was considered too common to discriminate. To ensure

quality matches, the entire candidate list was independently reviewed and coded by three raters, including one experienced and two newly trained coders. For 718 of the 936 (77%) individuals for whom potential matches were generated in the computerized search, all three raters agreed on which matches to accept and/or reject from the list of potential candidates. For 871 of the 936 (93%) individuals eligible for matching, the decisions of the experienced coder and one of the newly trained coders were an exact match. Disputed matching decisions were resolved through discussion and clarification of the coding guidelines.

Records subsequently abstracted from the OBTS/CCH system for each identified match included arrest date, primary charge, charge type, disposition date, disposition outcome, sentence type, and sentence length.

Prison Data. To supplement the sentencing information available in the OBTS/CCH system, we submitted a request to the NYS Department of Correctional Services (DOCS) for prison admission and discharge records. Using the NYSID numbers identified in our OBTS/CCH search, DOCS staff ran a computerized search of their administrative base and identified all admission and release records matching a study participant. Specific admission and release dates from local jails could not be obtained, as this information is not tracked within any state database. Sentencing information obtained from the OBTS/CCH system is therefore used to estimate local jail time and dates.

CPS Data. In order to determine whether youth were ever involved in a Child Protective Services (CPS) investigation, person-based searches of CONNECTIONS, the NYS Statewide Automated Child Welfare Information System, were conducted. Designed to track calls made to the NYS child abuse and neglect hotline from intake through investigation, CONNECTIONS maintains information on all indicated CPS investigations in a searchable

database indexed by participants' name and person identification number (PID), until the youngest individual named in a CPS report reaches his or her 28th birthday.

To identify records involving study participants, a time and labor-intensive multi-stage search process was used. First, participants' name, sex, and date of birth were manually entered into CONNECTIONS via a phonetic-based search engine, and a computer-generated list of potential system matches, rank-ordered according to the goodness-of-fit observed between entered values and system records, was generated. Potential system matches were then manually reviewed and evaluated by experienced CONNECTIONS users based on a detailed review of the information contained in our master search file. In order to be considered a viable system match, generated records had to match on participant name, sex, and some combination of other key identifiers (date of birth, race, address, family members, street address, social security number, etc). To ensure match quality and ongoing reliability, system searches were independently conducted and evaluated by two members of the research team for a sub-sample of 75 participants. Inter-rater reliability was high, with raters agreeing to accept or reject potential matches 91% of the time. Disputed matches were resolved through discussion.

Record searches and extraction took over six months to complete, with each individual search requiring approximately an hour of search time. Information taken from the CONNECTIONS system included: date of CPS report, alleged maltreatment, investigation outcome, and participant role.

Death. To determine whether any study participants died during the follow-up period, participants' identifying information (name, sex, date of birth, social security number, race) was submitted to the National Center for Health Statistics, a division of the Centers for Disease Control, and a National Death Index (NDI) search was conducted.

Early Predictors Data Sources

Juvenile Justice Services. Using the OCFS identification number contained in the original recidivism study dataset, we extracted the electronic case records maintained by OCFS on each youth. Included in the electronic record were admission, movement, and discharge dates for each residential and community-based program, and intake assessment scores.

Prior Child Welfare Services. When we originally selected our study design, we anticipated using official CPS records to document youth's childhood history of maltreatment. However, when we began our search process, we learned that CPS reports are automatically deleted from the CONNECTIONS system once the youngest individual named in the case turns age 28. As all of our study participants were over the age of 28 at the onset of data collection activities, these records were unavailable to us unless a younger child had also resided in the home. We therefore sought to identify alternative methods for identifying youth living in homes where maltreatment was present. To do this, we turned to the NYS Child Care Review Service system (CCRS).

CCRS is a child-based legacy system that uses unique client identification numbers (aka CINs) to catalogue all service provision and legal activities pertaining to children in NYS who receive mandated child protective, child preventive, or foster care services. CCRS contains a cumulative record of all child preventive and protective services cases opened for services and all foster care entries, movements, and exits dating back to the mid-1980s when the system was first introduced. Child welfare cases active at the point-of-system initiation were also transferred into CCRS at its inception. Thus, it is possible to find CCRS records dating back to the early 1970s, though records are only considered to be complete from 1985 on.

To identify records associated with study participants, an automatic search of CCRS was conducted using the CINs obtained during our WMS search.

Measures

Adult Outcomes

Adult Crime. Identified OBTS/CCH and DOCS records were used to create a series of variables reflective of youth's adult arrest, conviction, and incarceration experiences between the ages of 16 and 28. Created variables capture outcome prevalence (e.g., recidivist, 0=no, 1=yes) and the frequency of observed events among known offenders by crime type (i.e., violent, property, drug, total) and severity (i.e., felony, misdemeanor), as well as key adult criminal career characteristics (e.g., age at first adult arrest). The criteria used to classify crime type can be found in Appendix A.

In addition, to create a series of time-dependent variables conducive to trajectory analysis, 24 dichotomous indicators of any criminal arrest (0=no, 1=yes) were constructed for each six-month chronological window within the 12-year follow-up period.

Adult Perpetration of Child Abuse and Neglect. All 1399 CPS reports matched to a study participant and referencing an event between the ages of 16 and 28 were extracted from the CONNECTIONS system and coded for participant role, type of alleged maltreatment, and investigation outcome. Participants were classified as a *confirmed perpetrator* (1= "yes") when credible evidence substantiating the participant's role in the alleged maltreatment was found and the report was deemed indicated. Outcome variables reflecting participants' involvement in various types of maltreatment allegations (neglect, physical abuse, sexual abuse) and the frequency of CPS investigation among reported offenders were also created. Definitions of key child welfare constructs can be found in Appendix A. Finally, for the purposes of trajectory

analysis, 24 dichotomous indicators of confirmed perpetration (1= "yes") were constructed for each six-month chronological window within the 12-year follow-up period.

Cross Systems Involvement. Participants' engagement in multiple forms of adult antisocial behavior is coded using a single, four-category indicator of cross-systems involvement. Individuals assigned to the "No Contact" category had no adult record of either confirmed perpetration of maltreatment or criminal arrest. Individuals in the "CPS Only" group were identified as confirmed perpetrators within the CONNECTIONS system but did not experience a criminal arrest, while individuals in the "Arrest Only" group were arrested but never named as a confirmed perpetrator. Individuals assigned to the "Dual Contact" group appeared in both the criminal arrest database and in CONNECTIONS as a confirmed perpetrator during the follow-up period.

Control Variables

Race/Ethnicity. Two dichotomous, non-mutually exclusive variables reflecting youth's race (Black) and ethnicity (Hispanic) were created (1= "yes").

Opportunity. To account for potential differences in youth's opportunity to offend/perpetrate within our trajectory models, information on youth's age at community release, adult incarceration, and mortality were merged to create 24 control variables representing the proportion of time each youth was alive and living in the community within each six-month outcome window. For example, if a youth experienced neither death nor incarceration during a given six-month window, opportunity was set to 1. However, if a youth was incarcerated for three out of the six months, opportunity was set to .5. These variables are entered as time-varying covariates in both our adult arrest and child maltreatment perpetration models, allowing us to account for the impact of opportunity when calculating youth's predicted offense status.

Early Predictors

Information on youth's offense history, individual functioning, child maltreatment and foster care experiences, and family functioning were created using data extracted from the initial recidivism study, youth's electronic juvenile justice files, and the CCRS system. Items coded during the initial recidivism study were based upon extensive reviews of youth's paper case files, including: court documents, probation and intake reports, individual health assessments, service plans, and home assessments.

Offense History. Several indicators of youth's involvement in delinquent activity prior to their targeted period of OCFS placement were taken from case review records. These included: youth's age at first arrest, age at first placement with OCFS, and # of arrest charges brought against the youth in the 12 months prior to his/her OCFS placement. A series of dichotomous variables (1= "yes") were also created to capture: prior arrest for violent crime, prior arrest for weapons-related charges, evidence of involvement in gang activity, and prior out-of-home placement for juvenile justice reasons (i.e., prior placement with OCFS or voluntary agency indicated in case file). Another variable, prior revocation of probation, was promised in the original grant proposal but was dropped from analysis due to excessive missing data. Just under two-thirds of the youth in our study sample had no prior probation experience, making this variable inapplicable.

Individual Functioning. At intake into OCFS custody, youth were administered a 14-item mental health intake screening instrument designed to assess past and current symptomatology (e.g., hallucinations, orientation to time/place, suicidal/homicidal thoughts). A single screen score summarizing youth's responses (0=no mental health need, 1=significant or substantial mental health need) was extracted from youth's electronic file. Youth's self-reported

use of alcohol, marijuana, and hard drugs in the 12 months prior to OCFS admission was coded during case file review. To create an overall measure of substance use, items were added together to create a four-point scale (Cronbach's alpha= .67). Higher scores indicate use of more substances. As data on each of these variables were missing for 10% to 15% of sample participants, we imputed missing participant scores, with substituted means based on sex, race, area of origin (New York City versus upstate), and age at facility placement.

Child Maltreatment. A series of items indicating whether youth were ever physically or sexually abused by a parent, family or household member, or other adult prior to OCFS placement were coded during case file review. We aggregated items across identified perpetrators to create two dichotomous indicators of prior abuse: physical abuse and sexual abuse (1= "yes"). Information from the CONNECTIONS system was not used, as this data was not reliably available for all youth due to the expunging of CPS records when the youngest child in the report reaches age 28.

Receipt of Child Welfare Services. Youth's receipt of child welfare services between the age of 12 (the youngest age at which CCRS records were reliably available for all participants) and the date of their placement into OCFS was captured through the creation of three dichotomous variables: ever received child welfare services, ever received foster care services and experienced two or more changes in foster care placement (1= "yes"). A count variable reflecting youth's overall level of child welfare involvement was also created, with possible scores ranging from 0 to 3. Higher scores indicate greater child welfare services involvement. We use this variable as our measure of child welfare services involvement in our multivariate models in order to reduce the number of variables entered.

Family Environment. During the case file review process, youth's records were scanned for evidence of two types of family dysfunction. *Family criminal history* was coded as "1" when a parent or household member was known or suspected to be involved in criminal activity. *Family substance abuse* was coded as one when records indicated the presence of an alcoholic or substance-abusing parent or household member.

IV. ANALYSIS PLAN

Our analytic strategy encompasses several steps. We begin by providing a descriptive overview of youth's behavior within each outcome domain. Gender differences in outcomes are examined, using chi-square and f-test statistics as appropriate. We then use survival and trajectory analyses to enhance this picture and to provide a more developmental view of youth's behavior over time. Whether early risk factors relate to the timing and pattern of youth's behavior in each domain is then explored. As a first step in this process, we examine the bivariate relation between each of our early predictors and our outcome of interest, using Cox Proportional Hazard and multinomial regression analyses, as appropriate. We then examine the independent contribution of our various predictors in a multivariate context.

Given the relative lack of research on delinquent girls and our hypotheses surrounding potential gender differences in both adult outcomes and associated risk, all analyses are conducted separately by sex. To facilitate the presentation and interpretation of our findings, we provide a brief overview of each of our main analytic strategies and their interpretation below.

Survival Analysis

Designed to examine the length of time between a given event and the occurrence of a particular behavior, survival analysis provides a useful framework for describing how many youth transgress in adulthood and when they first do so. In turn, adding early predictors into the

model allows us to examine whether factors assessed at intake into juvenile facility are useful for predicting how long an individual remains event-free and in the community. How quickly do youth transition into the adult criminal justice and child welfare systems? Do certain factors expedite or delay their migration?

To explore these questions, we use a Cox Proportional Hazards Model to generate age-at-onset curves for deviant behaviors after age 16 or immediately following community release, whichever comes last, for each outcome of interest (i.e., first adult arrest, first confirmed perpetrator report). For both our adult arrest and perpetration models, mortality information is used to censor those who died within the follow-up window before experiencing adult arrest/perpetration. Adult incarceration information is not entered as a control in our survival models predicting entry into the adult criminal justice system, as adult arrest must by definition precede incarceration. Incarceration time is, however, included as a predictor in our survival models examining the perpetration of child maltreatment/initial contact with the CPS system, as individuals are presumably ineligible to maltreat when serving prison/jail time.

Results are presented in two formats. First, life tables displaying the proportion of youth who "survive" (i.e., who do not experience adult arrest or confirmed perpetration) within each six-month follow-up window are created to describe how quickly youth initiate each behavior. Next, we add our early risk factors into the model to see if they are useful for predicting how long an individual survives. For each factor, an odds ratio (Exp (B)) is generated that indicates the predicted change in hazard (i.e., the risk of non-survival) associated with each unit increase within our risk variable. Odds ratios that are less than one indicate that higher levels or the presence of a given dichotomous factor decreases the hazard rate, or the likelihood that the outcome of interest (e.g., arrest or perpetration) will occur, and increases survival time.

Conversely, odds ratios that are greater than one indicate that higher levels or the presence of a given factor increases the hazard rate, leading to shorter survival times.

Trajectory Analysis

When seeking to describe an individual's behavior over time, researchers often use the term "developmental trajectory" to refer to the way in which a given behavior changes (or fails to change) over a prolonged period of time. An application of finite mixture modeling techniques, trajectory analysis seeks to identify clusters or groups of individuals within a larger population with similar developmental trajectories. Differences in individuals' personal trajectories are then summarized within these identified groups to create a more parsimonious model that displays only the group trajectories. The number of trajectory groups identified is not predetermined, but depends upon the mixture of individuals studied (Nagin, 2005; Nagin & Tremblay, 2005).

Three key outputs produced by trajectory analysis provide useful tools for thinking about and discussing individuals' behavior over time. First, output from trajectory analysis can be used to create a graphical depiction of each group's behavioral pattern, revealing differences in the timing, growth, decline, and level of each groups' behavior within the same developmental period. Second, the estimated proportion of the sample belonging to each identified trajectory group is identified as part of the analysis, enabling researchers to determine which patterns of behavior are most common. Third, a series of average posterior probabilities estimating the likelihood that each individual in the sample belongs to each identified trajectory group is produced. These can then be used to assign individuals to their best fitting trajectory group, and to generate descriptive profiles of group members on factors in addition to the behavior modeled.

Following procedures outlined by Nagin (2005), we used semi-parametric group-based analysis techniques to identify groups of delinquents with similar early adult arrest and child maltreatment perpetration patterns between the ages of 16 and 28. Trajectories are modeled in SAS using the two-group logit model, with ever arrested and ever confirmed perpetrator (yes/no) serving as our dichotomous outcome measure. Outcomes are determined at six-month windows, creating 24 time periods for analysis. To control for differences in opportunity, the proportion of time each individual was alive and living in the community during each six-month window is entered into each arrest and maltreatment perpetration model as a time-varying covariate. Although potentially influential, controls for caregiving time are not entered into our maltreatment perpetration model, as we did not have access to information on youth's parenting status or living arrangements. Our opportunity estimates are then used in the modeling process to estimate what the probability of being arrested would be within any given period had the opportunity to offend been equal (i.e., unlimited) across individuals. The best fitting trajectory model for each outcome is then selected using the diagnostic criteria recommended by Nagin (2005).

Once our trajectory model is set, we use the average posterior probabilities produced by the model output to create outcome groups. Profile tables reflecting group members' involvement in our two antisocial behaviors of interest are then generated, along with descriptive tables displaying group member's overall level of risk on each of our early predictor variables.

IV. FINDINGS

Sample Description

Having defined our early predictor variables, we begin by providing a more thorough, descriptive overview of the youth selected for inclusion in our study. As illustrated in Table 1,

youth represent a serious group of juvenile offenders, with substantial rates of personal and family problems. Participating youth began their delinquent careers early in life, with an average age of first arrest of approximately 14 years. About half were previously arrested for a violent crime, and 52% came from homes with criminally-active family members. Rates of maltreatment were similar to those reported in other studies (Wiebush et al., 2001), with 25% of sample boys and 46% of sample girls believed to have experienced either physical or sexual abuse prior to their OCFS placement (see table for specific rates by maltreatment type). However, rate of prior preventive, protective, or foster care service was notably higher for both sexes, suggesting the case file reviews may have underestimated the extent of youth's maltreatment histories. That reads of youth's juvenile justice case records might fail to uncover or document histories of child maltreatment is not overly surprising, as this information was not specifically collected as part of the juvenile justice intake process during the time period in which youth were placed with OCFS. Moreover, the maltreatment items coded as part of the initial recidivism study focused exclusively on evidence of past physical or sexual abuse, ignoring the possibility of child neglect, the most common form of childhood maltreatment.

In addition, significant gender differences in youth's early risk profiles emerged. While boys tended to have more extensive juvenile careers prior to placement, girls tended to be placed into OCFS custody at a younger age. Consistent with past research, rates of mental health problems and level of substance use were higher in girls than boys (Cauffman, Piquero, Broidy, Espelage, & Mazerolle, 2004; Espelage, Cauffman, Broidy, Piquero, Mazerolle, & Steiner, 2003; McReynolds, Wasserman, DeComo, John, Keating, & Nolan, 2008; Veysey, 2003). Finally, delinquent girls were more likely than delinquent boys to come from problematic home environments. Specifically, girls were more likely than boys to come from homes characterized

by childhood maltreatment and substance abuse. They were also more likely than their male counterparts to have had prior contact with child welfare services and prior out-of-home care for juvenile justice-related reasons.

These family-related differences are somewhat surprising as prior research examining the links between family functioning and the initiation of delinquency suggests that both boys and girls are adversely affected by family problems (e.g., Moffitt et al., 2001; Zahn, Hawkins, Chiancone, & Whitworth, 2008). While it is possible that observed differences reflect the strong association hypothesized to exist between childhood maltreatment and the initiation of delinquency for girls, as some feminist researchers suggest (e.g., Bloom et al., 2003; Chesney-Lind, 1989), system-based biases in how delinquent boys and girls are identified and treated by the juvenile justice system may also play role. Given that girls' violence is more likely than boys to take place in the home, child welfare services and out-of-home placement may be more likely to be invoked in girls' delinquency cases. Similarly, juvenile justice practitioners may be more primed to look for family issues in delinquency cases involving girls. Unfortunately, these possibilities cannot be tested within the current dataset.

Adult Criminal Justice Outcomes

Descriptive Statistics

As found in other studies of serious delinquents (e.g., Benda et al., 2001; Ezell & Cohen, 2005; Rivers & Trotti, 1995; Sampson & Laub, 2003; Warren & Rosenbaum, 1986), the vast majority of delinquent boys and girls were rearrested at least once prior to reaching their 28th birthday. Eighty-nine percent of sample boys and 81% of sample girls experienced adult arrest. As shown in Table 2, participants were most likely to be arrested for violent crimes, followed by property and drug offenses. Both felony and misdemeanor crimes were common, with over half

of the young men and women charged with each type of offense. Study participants were also highly likely to be convicted of at least one crime in young adulthood, with 85% of boys and 68% of girls convicted of at least one criminal charge before age 28.

Despite an exceedingly high recidivism rate, the young women in our sample were less likely than their male counterparts to migrate into the adult criminal justice system, a fact consistent with women's lower level of criminal involvement within the general population and adult recidivism research (Deschenes et. al, 2007; Synder & Sickmund, 2006). In addition, both prevalence and frequency of adult arrest and conviction were significantly lower for girls than boys across crime types. Eighty-three percent of sample boys were arrested on felony charges and 65% were convicted. In contrast, only 63% of sample girls were arrested on felony charges and relatively few were convicted (25%). Likewise, 77% of boys were charged with a violent crime and 55% were convicted, while only 57% of girls were similarly charged and only 29% were convicted.

There were, however, a few exceptions to this overall pattern. Girls and boys did not differ significantly in the prevalence or frequency of their misdemeanor arrests, though girls did have a lower prevalence of misdemeanor conviction. Similarly, although girls were less likely than boys to experience property arrest, the frequency of property arrest across boys and girls who engaged in these types of crimes was comparable.

Finally, in keeping with the gender differences in felony-related charges and convictions reported above, boys and girls also differed substantially in their incarceration experiences. Nearly three-quarters of sample males (71%) spent time in either local jail or a NYS prison between the ages of 16 and 28, compared to only 32% of sample girls. In turn, once in prison,

boys stayed longer than girls. The average length of prison stay for incarcerated boys was 1586 days, or 4.3 years, compared to 935 days, or 2.56 years, for girls.

Survival Analysis

Survival Time. Consistent with prior research (Tollet & Benda, 1999), boys also migrated into the adult criminal justice system faster than their female counterparts. Table 3 shows the percentage of youth who remain arrest-free from age 16 (or age at first community release, whichever comes last) forward by six-month intervals. As shown in column one, boys demonstrate a quick and steady decline in survival that begins immediately and continues until approximately six-years post-release when youth are approximately 22. In the first six months following community release, 65% of delinquent boys remain arrest-free, while over one-third has experienced an adult arrest. Within the next six months or by approximately age 17, the percentage surviving has dropped to 41%, indicating that over half of our sample boys have been arrested. By age 19, or three years post-release, 82% of boys have been rearrested as an adult.

In contrast, survival rates decline at a less dramatic and more gradual pace for sample girls. At the end of the first six-month period, 88% of girls remain arrest-free. By the end of the first year, approximately 25% of sample girls have migrated into the adult criminal justice system, resulting in a 75% survival rate. It is not until nearly three years after their community release, or at approximately 19 years old, that girls exceed the halfway mark, with over half the sample re-arrested. Overall, the median survival time is 287 days for boys and 997 days for girls.

Impact of Early Risk Factors: Boys. As shown in Table 4, boys' risk for early migration into the adult criminal justice system was predicted by three offense history variables at the bivariate level. Consistent with past recidivism research (e.g., Cottle et al., 2001), being older at

first juvenile arrest was associated with a decreased risk for adult arrest. Conversely, prior violent arrest increased boys' risk of adult arrest, as did prior out-of-home placement. Both age at first arrest and prior-out-of-home placement also contributed to the multivariate model, where they were joined by substance use, family criminal history, and family substance abuse. Boys who used more illicit substances and came from households with a criminally active family member were at greater risk for adult arrest, while a history of family substance abuse decreased adult arrest risk.

Impact of Early Risk Factors: Girls. As shown in Table 5, race, ethnicity, offense history and family-related factors all predicted girls' risk of adult arrest at the bivariate level. Black girls were more likely than non-Blacks to migrate into the adult criminal justice system, while Hispanics were less likely than non-Hispanics to experience adult arrest. As seen among sample boys, girls who were older at first juvenile arrest were less likely than their earlier offending peers to experience adult arrest, as were girls with significant mental health problems. In contrast, three family-related risk factors (prior receipt of foster care services, multiple foster care movements, and family criminal history) increased girls' risk for adult arrest.

At the multivariate level, race, child welfare services involvement, and family criminal history remained significant contributors, indicating that each risk factor made a unique contribution to girls' overall risk for adult arrest.

Adult Arrest Trajectories

Consistent with prior offending research, use of trajectory analyses techniques enriched our understanding of former delinquents' adult criminality in ways not captured by our static, recidivist framework. For both our male and female samples, model estimation procedures supported a four-group solution, revealing multiple adult offending groups that differed

substantially in their overall rate and timing of adult arrest. A brief description of each of these models and the profile tables associated with our identified trajectory groups appears below.

Boys

Model Estimation. Consistent with prior research using trajectory analysis techniques with samples of serious male offenders (Ezell & Cohen, 2005; Piquero, 2008; Sampson & Laub, 2003), model estimation and diagnostic tests supported a multi-group trajectory model for our delinquent male sample (see Table 6). Procedures for comparing models with varying numbers of approximated groups (Nagin, 2005) suggested either a four- or five-group model. We reviewed each model and selected the four-group solution, based on its higher average posterior probabilities and greater interpretability. Coefficient estimates for each of the model groups and parameters can be found in Table 7.

*Model Description***.** Figure 1 presents the actual and predicted trajectories for each of our four estimated trajectory groups. Table 8 provides descriptive information on boys' adult criminal justice contact by trajectory group.

Approximately 22% of our delinquent boys were "Rare/Non-Offenders" who largely desisted from criminal activity in early adulthood and had a low and relatively flat trajectory path throughout the follow-up period. Less than half of the boys assigned to this group experienced adult arrest, and group offending rates did not exceed 10% at any chronological age. Of the 3,973 adult arrests attributed to our male sample, only 2% were linked to boys in this trajectory group. Conviction and incarceration rates were also comparatively low, with only 35% of group members convicted and 16% incarcerated.

The remaining 78% of sample boys were all arrested at least once in early adulthood and fell into one of three more criminally active groups. The largest of these three groups was

comprised of approximately 37% of the total sample and followed an "Early Adult Desisting" path. Arrest rates in this group were highest in the late teens, peaking at age 17 with 40% of group members arrested, and then steadily declined into early adulthood, eventually falling to less than 10% by age 24. Boys assigned to this trajectory path were modest adult offenders, averaging between six to seven total arrests during the 12-year follow-up period and incurring 31% of all adult male arrests. Rates of conviction and incarceration, however, were high, with 97% of group members convicted and 78% incarcerated.

Boys assigned to the "Chronic" group also had their peak offending years during the late adolescent period, but experienced a less dramatic decline in their offending during early adulthood. For this group, overall arrest rates dropped from a high of nearly 49% at age 17 to approximately 23% by age 24, but then remained relatively stable for the duration of the follow-up period. Boys in this group had the highest number of adult arrests on average (13.34) and were responsible for 41% of all observed, adult male arrests, even though they made up only 24% of our delinquent male sample. In addition, 100% of the boys in this group experienced at least one criminal conviction, and 98% spent time in either NYS prison or a local jail.

Boys in our final trajectory group had lower arrest rates in late adolescence than both the Early Adult Desisting and Chronic groups, but steadily increased their rate of offending during early adulthood, eventually peaking at approximately age 22 with 40% of sample participants arrested. Overall arrest rates for this "Early Adult Peak" group were higher than all other trajectory groups from approximately age 18 through 26, bringing the total average arrest score for this group close to that observed in the Chronic group, our highest offending group. Seventeen percent of our male sample was assigned to this trajectory group, and group members were responsible for 26% of adult male arrests. All group members were convicted and most

were incarcerated at some point before their 28th birthday, but the proportion of group members experiencing a stay within the NYS prison system was far lower than that seen in the Chronic group (49% versus 89%).

Impact of Early Risk Factors. Efforts to identify factors associated with these trajectory patterns indicated that six predictors differed across groups at the bivariate level: race, age at first arrest, substance use, prior receipt of child welfare and foster care services, and multiple foster care placements (see Table 9). These factors tended to be useful for distinguishing boys assigned to the Early Adult peak group, with boys in this group tending to show significantly higher rates of child welfare involvement, and lower rates of substance use than other groups. Consistent with theories of persistent offenders and past research (e.g., Cottle et al., 2001; Gottfredson & Hirschi, 1990; Latttimore et al., 2004; Moffit, 1993), boys assigned to the Chronic group were arrested at a younger age than boys in the other offending groups. The proportion of Blacks assigned to the Chronic group was also marginally higher than that observed in the Rare/Non-Offending group, though this effect only approached statistical significance. Multivariate analyses produced similar results, with race, age at first arrest, substance use, and total count of child welfare services making a significant contribution.

Girls

Descriptive information on girls' adult arrest trajectories and their early risk profiles can be found in a previously published article by Colman, Kim, Mitchell-Herzfeld, and Shady (2009). We reproduce the model estimation and trajectory figure here, and provide an expanded table depicting the relations between early risk factors and girls' adult offending patterns.

Girls Model Estimation. Model estimation and diagnostic tests also supported a four-group trajectory model for our female sample (see Table 6). Probability of the four-group model

being correct was approximately 95%, and the average posterior probability was .80 or higher for each of the four specified groups. Coefficient estimates for each of the model groups and parameters can be found in Table 10.

Girls Model Description. Figure 2 presents the actual and predicted trajectories for each of the girls' trajectory groups, and Table 11 provides descriptive information on each group's type and level of adult criminal justice contact.

As in our male sample, analyses revealed the presence of a group that never or rarely offends after age 16. This group was larger, however, than that observed among sample boys, with approximately 32% of sample girls assigned to a "Rare/Non-Offending" path. Group members were also less criminally involved than their male Rare/Non-Offending counterparts. Only 41% of the girls in this group experienced an adult arrest, and group members were responsible for only about 2% of the adult female arrests observed. Conviction and incarceration rates are also modest, with only 19% of group members convicted and 3% incarcerated.

Our largest girls' trajectory group, representing approximately 53.5% of the female sample, was composed of "Low Chronic" offenders, who accounted for 52% of the 2409 adult arrests experienced by sample girls. Predicted arrest rates for this group were highest in late adolescence, peaking around age 18.5 with approximately 19% of the group arrested, and then slowly declining to less than 10% by the end of the follow-up period. Group members were moderate offenders, experiencing an average of 4.65 arrests before age 28. Almost all the girls assigned to this group experienced adult conviction (89%), and just over one-third were incarcerated during the follow-up period.

Forty-five, or 9%, of sample girls followed a "Low-Rising" trajectory path, in which arrest rates were relatively low in late adolescence but then increased steadily as the girls entered

their early twenties. However, unlike the Early Adult Peak group found among sample boys, arrest rates for this group continued to rise throughout the follow-period. Predicted arrest rates grew from a low of 13.8% at age 16 to a high of 57% by age 28, eventually surpassing that of even the High Chronic group described below. The average number of total arrests for girls in this group was similar to that found among Chronic boys (mean= 13.09). Overall, the young women assigned to this group incurred a total of 589 adult arrests, or 24% of the sample total. All group members experienced adult conviction and two-thirds were incarcerated.

Our fourth and final girls' trajectory group represented a path of "High Chronic" offending. The predicted arrest rate for this group far exceeded that of the other three girls' groups in late adolescence and early twenties, with approximately 40% to 60% of group members experiencing arrest through age 21. Predicted arrest rates then slowly declined thereafter, to a low of 26% by age 28. While only 5.6% of sample girls were assigned to this trajectory path, group members were responsible for 21% of adult female arrests. Girls in this group averaged more total arrests than Chronic boys (mean= 18.07), and over half spent time in a NYS prison, a relatively rare outcome for sample girls.

Impact of Early Risk Factors. As shown in Table 12, race, ethnicity, offense history, mental health needs, physical abuse, child welfare services, and family environment variables were all useful for distinguishing between our female trajectory groups when examined at the bivariate level. While the proportion of Black girls assigned to each group grew successively higher as offending level increased, the proportion of Hispanic girls was significantly higher in the Rare/Non-Offending group. Consistent with prior research (Cottle et al., 2001), age at first juvenile arrest and age at first OCFS placement also varied across groups, with girls in the higher offending groups having earlier initial contact ages. Similarly, rate of prior out-of-home

placement increased across groups, with girls in the High Chronic group having the highest rates of prior placement. Mental health problems, however, were substantially less common among girls following a High Chronic offending path.

Although maltreatment history has been associated with increased recidivism risk for girls (Archwamety & Katsiyannis, 1998; Benda, 2005, Cernkovich et al., 2008), the impact of prior physical abuse was only marginally significant, with maltreatment rates highest in the two high offending groups. However, prior receipt of both child welfare and foster care services steadily increased across groups, with rates lowest in the Rare/Non-Offending group and highest in the High Chronic group. Finally, girls in the Low-Rising group stood out on both indicators of family environment, showing significantly higher rates of family crime and family substance abuse than their peers.

Mental health, child welfare and family environment variables remained significant predictors in the multivariate model, while the impact of race, ethnicity, and offense history disappeared, suggesting that family functioning may play a more important role in determining girls' adult criminality than past offending.

Adult Criminal Outcomes Summary

As hypothesized, the vast majority of delinquent boys and girls included in the study sample became clients of the adult criminal justice system before age 28. Consistent with past research suggesting that men are more serious offenders than women (e.g., Deschenes et al., 2007), boys migrated into the adult criminal justice quicker than their female counterparts, and were more likely to experience adult arrest, conviction and incarceration. Delinquent girls were nonetheless problematic adult offenders, with nearly two-thirds arrested on felony level charges and one-third incarcerated prior to age 28.

Despite high overall recidivism rates, the juveniles we tracked exhibited markedly different adult offending behaviors following their release from residential care. Consistent with past research (e.g., Piquero, 2000), in both our male and female samples, small groups of offenders were found to be responsible for a disproportionately large proportion of adult crimes. The 41% of sample boys assigned to the two highest offending trajectories were responsible for 67% of male arrests. In our female sample, 15% of sample girls incurred almost half (44%) of all arrests. While some of these offenders were most active in their late adolescent years, 17% of boys and 9% girls increased their rate of offending during the early adult period. Conversely, in both models a sizeable proportion of youth followed a Rare/Non-Offending path. Prevalence and frequency of adult arrest were extremely low in these groups, suggesting that many youth were able to place themselves on healthier adult paths.

Taken together, these findings suggest that efforts to identify and target characteristics associated with either these high offending or desisting pathways may be particularly useful for informing and improving rehabilitation services. In keeping with past recidivism research (Archwamety & Katsiyannis, 1998; Benda et al., 2001; Cottle et al., 2001; Hubbard & Pratt, 2002), offense history variables were useful for distinguishing both boys and girls who followed high offending paths, with earlier criminal initiation ages associated with more frequent adult offending. Rates of child welfare and foster care services also tended to be higher in groups following a high offending path, a finding consistent with prior research demonstrating positive associations between foster care and delinquency (e.g., Ryan, Marshall, Herz & Hernandez, 2008). For high offending girls, other family factors also contributed, with family crime and substance abuse associated with a steadily increasing path of adult offending. In addition, for both boys and girls, presence of a criminally active family member was associated with shorter

time to adult arrest. Finally, findings suggest that risk of adult arrest and frequent adult offending is higher among minority boys and girls. The proportion of Blacks was highest within the high offending trajectory groups in both our male and female models, and for girls, being Black was associated with shorter survival times.

Adult Perpetration of Child Maltreatment

Descriptive Statistics

As anticipated, both the boys and girls in our delinquent sample were at risk for the later perpetration of child abuse and neglect, though prevalence and frequency of CPS involvement were considerably higher for girls. As shown in Table 13, 9% of sample boys and an astonishing 42% of sample girls were named as a confirmed perpetrator of abuse and neglect in at least one indicated CPS report prior to reaching their 28th birthday. Most perpetrating girls were named in multiple reports, averaging 2.54 confirmed reports within the follow-up period. Frequency of confirmed perpetration was less for boys, with males averaging 1.62 reports per confirmed perpetrator. Despite these differences in level of involvement, maltreatment type was similar across sexes. Consistent with national maltreatment statistics, both boys and girls were named most often in allegations involving child neglect, followed by physical and then sexual abuse (U.S. Department of Health and Human Services, 2007).

Observed gender differences are also consistent with national maltreatment statistics, which indicate that women are more likely than men to be identified as perpetrators of abuse and neglect. Findings also complement recent work on girls' antisocial behavior, which suggests that girls' violence is more likely than boys' to occur within the family sphere (Feld, 2009; Franke et. al, 2002; Zahn et al., 2008). Moreover, from a purely opportunity-based perspective, girls are

more likely than boys to spend time in caregiving roles (e.g., Zick & Bryant, 1996), increasing their opportunity to perpetrate.

Placing our observed perpetration rates in an appropriate context is a bit more challenging, as we know of no studies reporting on the prevalence of perpetrators in the general population. Moreover, even when researchers have examined the prevalence of perpetration within known risk populations, estimates of maltreatment prevalence often vary considerably. For example, one of the most frequently recognized and studied risk factors for the perpetration of child maltreatment is a parental history of child abuse or neglect (e.g., Dixon et al., 2005; Egeland et al., 1988; Ertem, Leventhal, & Dobbs, 2000; Kaufman & Zigler, 1987; Pears & Capaldi, 2001; Widom, 1989), yet reported estimates of intergenerational transmission effects have varied widely, from a low of 1% (Widom, 1989) to a high of nearly 40% (Egeland, Jacobvitz, & Paptola, 1989). Much of this variance is likely due to differences in research methods, including choice of study design (retrospective versus prospective), length of follow-up, and choice of maltreatment measure. Keeping these issues in mind, Kaufman and Zigler (1987) reviewed the early intergenerational transmission literature and concluded that approximately one-third of abused parents go on to maltreat their own children. Recent research by Pears & Capaldi (2001) supports this estimate, with the authors reporting a 23% transmission rate among families included in a longitudinal study of youth at risk for delinquency. Using these figures as a benchmark, we feel that it is worth noting that the delinquent girls included in our sample perpetrated at a rate higher than what might be anticipated within a group of abused parents, one of the most frequently targeted groups for child abuse prevention programs.

Survival Analysis

Survival Time. Unlike the quick transitions into the adult criminal justice system seen in Table 3, analysis of our child welfare data indicated that both boys and girls made a slow but steady migration into the child welfare system during the 12 years following their release into the community (see Table 14). Five years after community release, or at approximately age 21, the survival rate for girls was 81%, indicating that approximately half of the girls who were eventually named as a confirmed perpetrator had already been reported. For boys, this milestone was reached around age 24, with 5% of boys named as a perpetrator eight years after community release. Median survival time was 4349 days for boys and 4163 days for girls.

Impact of Early Risk Factors: Boys. Six risk factors were associated with boys' survival time at the bivariate level: race, age at first criminal arrest, age at first OCFS placement, prior out-of-home placement, history of sexual abuse, and incarceration time (see Table 15). Boys who were older at age of first juvenile arrest/placement had a lower hazard rate, indicating that risk for the perpetration of child maltreatment was lower among youth who initiated their delinquent careers at older ages. Similarly, Black males and boys who spent more time incarcerated in adulthood were less likely to be identified as confirmed perpetrators of child maltreatment in early adulthood. In contrast, boys with a history of sexual abuse and prior out-of-home placement were at increased risk for the perpetration of child maltreatment. When considered in a multivariate context, only the impact of sexual abuse and incarceration time remained significant. Boys who were sexually abused had a hazard rate 3.8 times greater than boys with no such history.

Impact of Early Risk Factors: Girls. For girls, family factors were significantly related to survival time, with child maltreatment, prior child welfare services, and family substance abuse

all increasing the likelihood that a girl would perpetrate. Prior out-of-home placement for juvenile justice- related reasons also increased perpetration risk, while other indicators of serious offense history (e.g., older age at first arrest, prior violent or weapons arrest) tended to be associated with less risk/greater longevity. Similarly, girls incarcerated for longer periods of time in early adulthood had lower hazard rates, indicating that as incarceration time increased the likelihood of adult perpetration decreased. In the multivariate girls' model, history of physical abuse, total count of child welfare services, and incarceration time made significant, independent contributions while the impact of family substance abuse, prior sexual abuse, and prior out-of home placement were reduced to marginal significance.

Adult Perpetration Trajectories

In our grant proposal, we proposed examining boys' and girls' engagement in child maltreatment via trajectory analysis in order to gain a richer, descriptive picture of youth's early adult perpetration behavior. In keeping with this promise, we estimated two trajectory models, one for boys and one for girls, using confirmed perpetration of child maltreatment as our outcome of interest and entering opportunity (i.e., time alive and incarceration-free) as a control variable. In both cases, model estimation procedures supported a two-group model trajectory model that largely mimicked our static non-perpetrator/perpetrator dichotomy. We therefore describe these models together.

Model Estimation. For both boys and girls, model estimation procedures clearly supported a two-group model, with procedures for comparing models with varying numbers of approximated groups (Nagin, 2005), indicating that the probability of the two-group model being correct was approximately 99% (see Table 17). Model fit was good, with average posterior

probabilities for both the male and female model exceeding the .70 minimum per group typically recommended (Nagin, 2005).

Model Description. Although the proportion of youth assigned varied by sex, both models depicted a "Non-Perpetrator" group, whose trajectory path was essentially flat, with predicted perpetration rates approximating zero throughout the follow-up period **(**see Figures 3 & 4). Ninety-four percent of sample boys and 78% of sample girls were assigned to this trajectory path. Both models also contained a "Perpetrator" group, whose predicted rates of maltreatment were modest in late adolescence and then increased over the follow-up period. For perpetrating boys, maltreatment rates increased slowly beginning around age 21 and then leveled off around age 25, at a high of 7%. For perpetrating girls, maltreatment rates rose steadily from age 16 to 24, peaking at 14%, and then declined slightly to 10% at age 28**.**

As these groups essentially reflect those presented in Table 13, additional tables presenting adult perpetration behavior by trajectory group are not provided.

Impact of Early Risk Factors: Boys. As shown in Table 18, boys who engaged in child maltreatment differed from their non-perpetrating peers on race and four juvenile characteristics. Black males were significantly less likely than non-Blacks to be identified as a confirmed perpetrator of abuse and neglect in both our bivariate and multivariate models. Perpetrating boys were also younger at the time of their first juvenile arrest/placement and had higher rates of prior out-of-home placement for juvenile justice-related reasons than non-perpetrators. However, none of these offense history-related differences remained significant in the multivariate model. Finally, prior sexual abuse differentiated perpetrators and non-perpetrators at both the bivariate and multivariate level.

Impact of Early Risk Factors: Girls. Perpetrating girls were more likely than their non-CPS involved peers to have been maltreated as a child and to have prior child welfare, foster care, and out-of-home placement experiences, supporting the hypothesized connection between early histories of child victimization and later perpetration (see Table 19). Three additional predictors approached significance at the bivariate level, including family substance abuse, prior violent arrest, and prior weapons arrest. Consistent with the presumed impact of family dysfunction, perpetrating girls were more likely than non-maltreaters to come from homes characterized by family substance abuse. They were less likely however, to have serious juvenile offense histories, with rates of both violent and weapons crime lower among perpetrating girls. In the multivariate model, prior out-of-home placement, physical abuse and total child welfare services were all marginally significant predictors of adult perpetration status, suggesting that risk increased with each additional factor.

Adult Perpetration of Child Maltreatment Summary

As anticipated, sample youth, particularly girls, were at high risk for the perpetration of child maltreatment. Nine percent of sample boys and an astonishing 42% of sample girls were named as a confirmed perpetrator of abuse and neglect in at least one indicated CPS report prior to reaching their 28th birthday. Although we anticipated that the prevalence of perpetration would be higher among sample girls than boys due to presumed differences in boys' and girls' degree of involvement in child care related roles, survival analyses suggest that incarceration time also significantly influences perpetration risk. The more time participants spent in prison/jail in early adulthood, the less likely they were to be identified as a confirmed perpetrator of abuse and neglect. As sample boys were much more likely than sample girls to experience incarceration and to have longer periods of incarceration, boys' greater entrenchment within the

criminal justice system may have shielded them from CPS involvement. Given that Black males are more likely to be incarcerated than non-Black males, racial disparities in incarceration experiences may also explain why the proportion of Black males identified as confirmed perpetrators was far lower than the proportion observed in our non-perpetrating group. Finally, in terms of early risk, both prior out-of-home placement and child abuse increased boys' and girls' risk of becoming a confirmed perpetrator of child maltreatment, as did childhood contact with the child welfare system for girls, suggesting that risk for adult perpetration may be exacerbated by past traumatic experiences.

Cross-Systems Involvement

Descriptive Statistics

Having considered youth's behavior within each domain separately, we were interested in integrating the data from both sources to see how knowledge of youth's cross-systems behaviors added to our understanding of the number of former delinquents who experience problems in early adulthood, and the scope and context of their difficulties.

Patterns of Cross-Systems Involvement by Sex. For the vast majority of juveniles exiting residential care, the transition into early adulthood was not an easy one. As shown in Figure 5**,** 89% of sample boys and 87% of sample girls engaged in some form adult antisocial behavior that brought them into contact with the criminal justice or child welfare system before age 28. Thus, even though boys were more likely than girls to experience adult arrest, and girls were more likely than boys to be confirmed perpetrators of child maltreatment, when we considered multiple aspects of adult deviance, the prevalence of adult antisocial behavior was highly similar across the sexes.

Comorbidity, or the co-occurrence, of multiple problem behaviors, however, appears to be a more significant issue for delinquent girls. The vast majority of sample boys were single system clients, engaging only in criminal activity. In contrast, girls were more varied in their patterns of adult deviance. While contact solely with the criminal justice system was the most common category for girls as well as boys, the proportion of girls entering both the criminal justice and child welfare system was 37%. For boys the rate was 9%.

In addition, sample girls were more likely than sample boys to touch only the child welfare system. Only one boy who was found to be a confirmed perpetrator of child maltreatment avoided adult criminal arrest. In contrast, 6% of sample girls perpetrated but did not criminally offend. Thus, while research efforts focusing solely on criminal justice outcomes will capture the antisocial behaviors of most males, adding child welfare outcomes enriches our understanding of the scope of former delinquents' deviance, particularly for girls, and captures some female perpetrators who would otherwise go undetected.

Finally, it is worth noting that there was a small but potentially meaningful group of both male and female delinquents who had no contact with either system in early adulthood. While this suggests that for some juvenile delinquents the transition into early adulthood may be characterized by resilience, this figure may also be misleading, particularly for boys. When participant mortality rates were considered, we found that 21% of boys in the No Contact group had died at some point within the follow-up period, compared to only 2% of those in the Criminal Justice Only group and 0% in the Dual Contact group. Had these boys survived, the proportion of males touching either the criminal justice or child welfare system may have been higher. For girls, mortality was more evenly distributed.

System Overlap. While criminal arrest and child welfare reports mark antisocial behavior within two separate systems, it is possible that a single act may lead to both criminal arrest and the generation of a CPS report. To examine the extent to which our criminal arrests reflect charges likely to engender a CPS report (e.g., child endangerment, sexual abuse) we identified all arrest charges coded as having a child-victim within the OBTS/CCH system. OBTS/CCH flags over 100 different arrest charges as child-victim crimes, including everything from sale of controlled substances to a minor to endangering the welfare of a child. Of the 6414 adult arrests attributed to study participants, only 191 or .03% were identified as child-victim crimes. Only six sample participants, five of whom were girls, were arrested solely on child-victim crimes, indicating that girls' high rate of criminal involvement was not driven by child welfare-related issues.

Given the high proportion of dual system clients, particularly among girls, we were also interested in exploring how often individuals served by one system touched the other. From a child welfare perspective, 97% of the boys who were confirmed perpetrators of abuse and neglect also had contact with the adult criminal justice system, as did 86% of maltreating girls. Conversely, from a criminal justice perspective, 10% of boys and 45% of girls who experienced adult criminal arrest were also identified as a confirmed perpetrator of child maltreatment. While neither of these groups is representative of the entire child welfare or adult criminal justice population, findings complement recent statistics derived from the National Survey of Child and Adolescent Well-Being (NSCAW), a probability study of U.S. children involved in child protective services investigations, that indicate that as many as one in three children reported for child maltreatment have a parent who has been arrested (Phillips & Gleeson, 2007).

Perpetration Status by Arrest Trajectory Group. We were also interested in exploring whether the proportion of delinquents identified as a confirmed perpetrator of child maltreatment varied across our arrest trajectory groups. As shown in Table 21, perpetration rates were highest among boys in the two highest offending arrest trajectory groups. Twenty-seven or 60% of boys identified as confirmed perpetrators were assigned to either the Chronic or Early Adult Peak arrest trajectory groups. For girls, the proportion of girls who perpetrated within each offending group was more evenly distributed, with one exception. While the overall perpetration rate was 42% for sample girls, 69% of the girls assigned to the Low-Rising adult arrest trajectory group were confirmed perpetrators. However, given the relatively small size of the Low-Rising group, it is worth noting that only 15% of girls identified as confirmed perpetrators of abuse and neglect were assigned this high offending trajectory group; 54% of female perpetrators were members of the Low Chronic adult arrest trajectory group. Taken together, these findings suggest that maltreatment and criminal offending often go hand in hand, with the risk of child maltreatment perpetration increasing as level of criminal offending rises.

Impact of Early Risk Factors: Boys. As shown in Tables 21 and 22, early risk factors did a better job of distinguishing between cross-systems groups for girls than boys. Boys who were dual system clients stood out from their No Contact and Criminal Justice Only peers on four characteristics. Boys who engaged in both crime and child maltreatment were less likely to be Black, initiated their juvenile careers earlier in life, and had higher rates of prior out-of home placement and childhood sexual abuse than boys in the other groups.

Impact of Early Risk Factors: Girls. Dual Contact girls differed from their juvenile peers on several characteristics. Girls who engaged in both crime and child maltreatment were more likely than their No Contact and Criminal Justice Only peers to be Black, and were less likely to

be Hispanic. Dual Contact girls also tended to be more likely than No Contact and Criminal Justice Only girls to have personal histories characterized by prior out-of-home placement, child maltreatment and child welfare services receipt. They were also more likely than their No Contact and Child Welfare Only peers to begin offending at younger ages and to come from homes characterized by family crime.

V. DATA LIMITATIONS

Although disturbing, our findings likely underestimate the propensity of former delinquents to engage in adult antisocial behavior. Both of our primary outcome measures, adult arrest and confirmed perpetration of child maltreatment, are drawn from official state records. Studies comparing self-reported and official crime indicators suggest that a fair proportion of illegal acts go undetected by the criminal justice system (Maxfield, Weiler, & Widom, 2000; Weisner, Capaldi, & Kim; 2007). Likewise, data taken from a national study of child abuse and neglect (Sedlak & Broadhurst, 1996) indicates that official indicators of child maltreatment, like CPS reports, capture only about one-third of the maltreatment cases seen by service providers (e.g., health care, education/child care, law enforcement, social service providers, etc). Our record searches were also limited to NYS databases, raising the possibility that arrest or perpetration incidents occurred within other states and went undetected. However, given that so many of our participants were found to touch either the adult criminal justice or child welfare system during the follow-up period, we can assume with some confidence that many of our participants resided in NYS for at least some portion of our follow-up period.

Moreover, although we account for opportunity to offend within our outcome analyses by controlling for mortality and incarceration time, two factors recognized to play a significant role in the estimation of adult criminal offending, we were not able to adjust our models for

"caregiving time." In order to maltreat, individuals must have access to children. As we did not have access to information regarding participants' parenting status or living arrangements, we were unable to limit our perpetration analyses to only those assuming caregiving roles. Had we been able to do so, perpetration rates may have been even higher among those delinquents. This may be particularly true for sample boys, as contact with children is likely more normative for young women, making our female estimate less susceptible to this type of bias.

We also advise our readers to view our examinations of the links between early risk factors and later deviance as exploratory. Many of our early risk indicators were derived from previous case record reviews and were not specifically developed with our research purposes in mind. Thus, while we tried to select items we felt were conceptually and theoretically relevant to our outcomes of interest, our attempts to characterize youth's individual needs, maltreatment experiences, and family environment were often based on only one or two dichotomous items, which may have lacked the sensitivity to detect meaningful differences within our relatively homogenous population.

Finally, it is worth remembering that the youth included in our study design represent the highly select and relatively small proportion of the juvenile justice population placed in residential, correctional settings. Whether our findings apply to other less serious groups of juvenile delinquents, such as those served in non-residential or diversionary settings, remains to be explored.

VI. CONCLUSIONS AND RECOMMENDATIONS

Our research was guided by two main objectives. Given the relative lack of research on delinquent girls and non-criminal justice based indicators of adult deviance, we sought to expand current understanding of the long-term consequences of juvenile delinquency by examining both

boys' and girls' adult involvement in two behaviors with clear societal impacts – adult crime and the perpetration of child abuse and neglect. We also sought to better inform the development and provision of juvenile justice services by exploring the relations between these adult outcomes and characteristics assessable at youth's intake into juvenile facility. We return to this big picture here, and offer the following summary of our main research findings and their implications for both practice and research.

Summary of Key Research Findings

1. Youth exiting the juvenile justice system are at high risk for both adult crime and the perpetration of child maltreatment.

The vast majority of juvenile delinquents included in our study sample continued to engage in antisocial behavior as they transitioned into young adulthood. Consistent with prior research on previously incarcerated samples (Ezell & Cohen, 2005; Sampson & Laub, 2003; Warren & Rosenbaum, 1986), almost all of the boys and girls we followed came into contact with the adult criminal justice system prior to reaching their 28th birthday. Eighty-nine percent of sample boys were arrested on adult charges at least once, as were 81% of sample girls. Heterotypic continuity was also evident, with many former delinquents migrating into the child welfare system as perpetrators of child maltreatment before age 28. An astonishing 42% of the young women we followed were named as a confirmed perpetrator of abuse and neglect within at least one indicated CPS report. Rates were lower but still worrisome for sample males, with 9% of boys identified as a confirmed perpetrator within the follow-up period.

2. Delinquent girls are serious adult offenders and are more likely than delinquent boys to show evidence of both heterotypic continuity and comorbidity in early adulthood.

Although the consequences of female delinquency are often believed to be less serious than those associated with male delinquency, the delinquent girls included in our study sample were serious adult offenders who were highly entrenched in the adult criminal justice system. As noted above, 81% of sample girls were arrested as an adult. Sixty-three percent were charged with a felony-level crime and nearly one-third spent time in either local jail or NYS prison during the follow-up period. Moreover, girls' rate of confirmed child maltreatment perpetration was over 4.5 times greater than that found among sample boys, and surpassed perpetration rates found in groups frequently targeted by child abuse prevention programs. Studies examining the intergenerational transmission of child maltreatment estimate that about one-third of parents with abuse and neglect histories go on to maltreat their own children (Kaufman & Zigler, 1987). Forty-two percent of the delinquent girls we followed were identified as a confirmed perpetrator before age 28, suggesting that delinquent girls are an extremely high-risk group for the perpetration of child maltreatment.

Finally, while males tended to confine their antisocial behavior to the criminal domain, delinquent girls were apt to offend within both the criminal and family sphere. Thirty-seven percent of sample girls were recognized offenders within both the criminal justice and child welfare systems before age 28, compared to only 9% of sample boys.

3. Patterns of adult deviance vary by sex and outcome domain studied. However, the overall proportion of youth engaging in adult antisocial behavior is highly similar across the sexes.

Boys were more likely than girls to be arrested, convicted, and incarcerated within the adult criminal justice system, and girls were more likely than boys to be identified as confirmed perpetrators of abuse and neglect. However, when both types of adult behavior were examined, the proportion of former delinquents engaging in some form of adult antisocial behavior, either crime, maltreatment, or both, was 89% for boys and 87% for girls.

4. Despite high rates of adult arrest, youth varied considerably in the timing, pattern, and level of their adult criminal behavior.

While static outcome measures indicated that most former delinquents experienced adult arrest, trajectory analyses suggest that it would be unwise to view youth released from correctional facilities/programs as a single, homogeneous group. Consistent with previous research on serious delinquent samples (e.g., Ezell & Cohen, 2005), trajectory models for both our male and female sample revealed the presence of four unique adult offending groups, each with distinct levels and patterns of adult arrest. Three themes resulting from these analyses are highlighted below.

First, despite levels of delinquent involvement deemed severe enough to warrant placement in a state-run or supervised correctional facility/program, a sizeable proportion of both delinquent boys and girls largely desisted from criminal activity by age 16. Twenty-two percent of sample boys and 32% of sample girls followed a Rare/Non-Offending adult arrest trajectory. Members of these groups either avoided adult arrest entirely or were infrequent adult offenders, and were responsible for only 2% to 3% of the adult arrests documented.

Second, both our male and female models included two serious high-rate adult offending groups. Members of these groups were arrested, convicted, and incarcerated significantly more

often then their peers and were responsible for a disproportionate amount of observed criminal justice contacts. The 41% of sample boys assigned to the two highest-offending male groups were responsible for 67% of observed male arrests. For girls, the discrepancy was even greater, with the 15% of sample girls assigned to the two highest offending groups incurring almost half (44%) of all female arrests.

Third, while arrest rates for most trajectory groups were highest in late adolescence and then declined, 17% of sample boys and 9% of sample girls followed trajectory paths in which the overall rate of offending increased in early adulthood. Boys who followed an "Early Adult Peak" trajectory path had one of the lowest offending rates in late adolescence but steadily increased their rate of offending through age 22. Arrest rates then began a gradual decline, but remained substantially higher than those observed among other male offending groups throughout the follow-up period. Similarly, 9% of sample girls followed a Low-Rising trajectory path in which the overall arrest rate steadily escalated throughout the follow-up period. At age 16, only 13.8% of girls assigned to the Low-Rising group experienced adult arrest. By age 28, over half (57%) of the girls assigned to this group had been arrested in the last six months, a rate substantially higher than those observed in our other female offending groups.

5. Youth who engage in high levels of criminal activity are more likely to evidence heterotypic continuity.

Cross-systems analyses indicated that youth assigned to high-offending criminal arrest trajectory groups were more likely than their less criminally active peers to become perpetrators of abuse and neglect. Fourteen percent of boys in the two highest criminal offending trajectory groups were identified as confirmed perpetrators of child maltreatment, compared to only 4% of

boys who followed a Rare/Non-Offending path. Similarly, 69% of girls assigned to the Low-Rising adult arrest trajectory group were identified as confirmed perpetrators of child maltreatment, compared to 43% of those in the Rare/Non-Offending group.

6. *A sizable proportion of delinquent youth served by residential programs come from backgrounds characterized by child maltreatment and family dysfunction. Girls were more likely than boys to have these types of problems noted in their case files.*

Case record reviews indicate that 25% of sample boys and 46% of sample girls were victims of child physical or sexual abuse prior to beginning their juvenile justice placement. In addition, just under half of sample boys came from families that had previously received child protective, preventive, or foster care services, as did nearly two-thirds of sample girls. Family crime and substance abuse were also common, afflicting the families of over half of our sample participants. While both sexes showed high levels of early risk, girls were significantly more likely than boys to come from backgrounds characterized by child maltreatment, prior child welfare intervention, and family substance abuse. Whether observed differences reflect the strong association hypothesized to exist between childhood maltreatment and the initiation of delinquency for girls, as some feminist researchers suggest (e.g., Bloom et al., 2003; Chesney-Lind, 1989), or system-based biases in how delinquent boys and girls are identified and treated by the juvenile justice system remains to be explored.

7. Race, offense history, childhood maltreatment, prior receipt of child welfare services, and family environment were associated with heightened risk for adult antisocial behavior for both

boys and girls, while mental health and substance use were relatively poor predictors of youth's early adult functioning.

In both our male and female samples, Blacks were more likely than other racial groups to be assigned to high-rate adult arrest trajectory groups, while Hispanic girls were more likely than other girls to be Rare/Non-Offenders. Race did not increase girls' risk for the perpetration of child maltreatment, but was a meaningful predictor of boys' perpetration. Contrary to the pattern observed in the criminal justice domain, Black males were significantly less likely than other youth to be identified as a confirmed perpetrator of abuse and neglect.

Consistent with notions of persistent offenders, youth who were younger at first juvenile arrest were more likely than other youth to be assigned to chronic, high-offending adult arrest trajectories. They were also more likely than their later starting peers to come into contact with both criminal justice and child welfare services in early adulthood. This pattern was observed in both our male and female samples, suggesting that early initiation of delinquent activity increases the risk of adult deviance across both gender and offense type.

Family-related factors were also influential. Boys with sexual abuse histories were more likely than other boys to be identified as confirmed perpetrators of abuse and neglect, leading to higher rates of dual system involvement. For girls, rates of sexual and physical abuse tended to be highest among girls assigned to a high offending arrest trajectory group, and a history of either abuse type significantly increased the risk of child maltreatment perpetration. In addition, prior receipt of child preventive, protective or foster care services increased the likelihood that both boys and girls would follow a high-rate criminal offending path in early adulthood. Prior receipt of child welfare services was also substantially higher among girls identified as confirmed perpetrators of abuse and neglect than among those who avoided contact with the

child welfare system. When the broader family context was examined, family crime was associated with quicker transitions into the adult criminal justice system for both boys and girls. Girls who came from homes characterized by family crime and substance abuse were also more likely than other girls to follow a steadily escalating path of early adult criminal offending.

8. While family factors were associated with increased risk for adult deviance in both our male and female sample as noted above, girls' early adult behavior was more consistently associated with indicators of family adversity (e.g., childhood maltreatment, prior receipt of child welfare services, family crime).

Research examining the links between family functioning and the initiation of delinquency suggests that family adversity increases the risk of engaging in delinquent behavior for both boys and girls (e.g., Moffitt et al., 2001; Zahn et al., 2008). Yet, current study findings suggest that gender differences may emerge later in life, with family-related risk playing a more influential role in shaping the long-term behavior delinquent girls. While many potential explanations for this discrepancy exist, we offer one possible explanation here.

Research on early adult transitions in non-clinical samples suggests that findings may reflect developmental differences in boys' and girls' connections to family. While both boys and girls are influenced by family context during early adolescence when delinquency typically starts and youth are more highly connected to home, contact with family generally decreases in late adolescence-early adulthood as youth begin to take on adult roles. Research on college populations indicates that girls are more likely than boys to maintain close connections to parents during this transition, and to be influenced by the quality of these connections (e.g., Lopez,

Campbell, & Watkins, 1988; Sneed et al., 2006). Thus, girls' greater attachment to the family sphere during young adulthood may create an on-going vulnerability to family-related risk.

Practice Recommendations

1. Child abuse prevention programs, such as family planning, parenting education, etc. should be routinely offered to delinquent youth in residential care.

From a child abuse prevention perspective, delinquent youth represent an extremely high-risk group for the perpetration of child maltreatment. Introducing pregnancy prevention, family planning, and parenting education into juvenile justice programming may therefore help to reduce the number of youth who migrate into the child welfare system as adults. To maximize potential impacts, system prevention efforts should target both sexes. While maltreatment rates are substantially higher for girls, boys comprise approximately 85% of juvenile delinquents in custodial care (Synder & Sickmund, 2006), making them an important intervention group in terms of sheer numbers.

In addition, greater effort should be taken to identify youth assuming parenting roles prior to or during their juvenile justice placement. In NYS, information on youth's parenting status is not systematically collected as part of the intake process. Collecting this type of information would enable system professionals to more readily identify and link parenting youth to appropriate community-based resources.

2. Juvenile justice programs should include trauma-sensitive therapies and approaches to service delivery.

Although their delinquent behavior often causes them to be viewed as offenders rather than victims, many youth served by the juvenile justice system, particularly girls, were once

maltreated children and/or came from families receiving child protective or preventive services. Case record reviews indicate that 25% of sample boys and 46% of sample girls experienced either physical or sexual abuse prior to beginning their juvenile justice placement. In addition, 46% of sample boys came from families that had previously received child protective, preventive, or foster care services, as did 65% of sample girls.

Viewed in conjunction with the recent upsurge in literature connecting delinquency to trauma (Cauffman, Feldman, Waterman, & Steiner, 1998; Greenwald, 2000, 2002), these findings suggest that juvenile justice programs may need to address youth's trauma histories if rehabilitation efforts are to be successful. In the early 1990s when sample participants were placed with OCFS, trauma was not routinely assessed or targeted by juvenile justice programs in New York State or elsewhere, an oversight that may have contributed to observed recidivism rates. Traditional juvenile justice practices often fail to adequately address common consequences of trauma (e.g., distrust, aggression, negative affect, impulsivity) and may even retraumatize vulnerable youth (Ford, Chapman, Hawke, & Albert, 2007; Greenwald, 2002; Hennessey, Ford, Mahoney, Ko, & Siegfried, 2004), impeding rehabilitation efforts. Consistent with this perspective, study findings indicate that prior abuse and child welfare services receipt increased the likelihood that youth, particularly girls, would become high rate criminal offenders and perpetrators of child maltreatment in early adulthood. Incorporating trauma-sensitive service models and treatments into programs for juvenile delinquents may therefore help to reduce the number of serious delinquent youth who manifest antisocial behavior in early adulthood. Research examining the benefits of trauma-based approaches with juvenile justice populations is still in its infancy, but several programs have been identified as promising by the National Child

Traumatic Stress Network (www.NCTSNET.org) and the National Center for Mental Health and Juvenile Justice (Ford et al., 2007).

3. Efforts should be made to link delinquent youth to community-based services and supports during the late adolescent- early adult period.

Study findings indicate that the late adolescent to early adulthood years represent a vulnerable time period for many juvenile justice youth. For most study participants, migration into the adult criminal justice system occurred soon after community release. Within one year of living in a community setting, over half of sample boys had experienced an adult criminal arrest. Within three years, or before age 19, over 50% of sample girls had been arrested and approximately 10% had been identified as a confirmed perpetrator of child maltreatment. Enhanced service provision and intervention efforts targeting this period may be particularly beneficial for reducing adult antisocial behavior within this high risk group.

4. Working with the families to reduce family challenges may help to prevent poor outcomes in early adulthood, particularly for delinquent girls.

Family-based assessment and intervention have not historically played a prominent role in either in-care or aftercare practices within the juvenile justice system. Yet, current findings suggest that family context may play an influential role in the initiation and maintenance of youth's antisocial behavior. Consistent with research demonstrating links between impaired family relationships and the initiation of delinquent behavior (e.g., Farrington & Painter, 2004; Moffitt et al., 2001; Thornberry et al., 2003) prior child welfare involvement and family dysfunction (e.g., crime, substance abuse) were common among the families of our delinquent

sample. In turn, as youth entered young adulthood, these factors increased risk for adult deviance, particularly for girls. Youth with criminally-involved family members migrated into the adult criminal justice system faster than other youth, and girls who came from households characterized by family crime and substance abuse were more likely than other delinquent girls to become high-rate adult offenders. As most youth return home following their release from OCFS' custody, identifying and targeting family needs/behaviors may help to increase youth's chances for healthier transitions.

Research Recommendations

1. Given that many juvenile delinquents continue to engage in antisocial behavior as they transition into young adulthood, additional research on this time period and the factors that contribute to youth's persistence and desistance from adult antisocial behavior is needed. Future research should more closely examine the links between promising indicators of early risk (e.g., maltreatment, child welfare services receipt), contemporary circumstances, and early adult outcomes.

In the current study, several dichotomous indicators (e.g., physical abuse, sexual abuse, foster care receipt) were shown to be significant predictors of adult antisocial behavior, suggesting that these experiences may be influential determinants of youth's long-term functioning. Research should explore these relations further and examine how type and timing of maltreatment (particularly neglect, the most common form of childhood maltreatment), age, length, and type of foster care placement, etc., influence youth's risk for adult deviance. Future research should also seek to more closely examine youth's lives during the late adolescence/early adult period, and attempt to identify concurrent factors (e.g., aftercare services, family/romantic

relationships, employment) that may augment and diminish youth's manifestation of adult antisocial behavior.

In particular, we find two types of adult arrest trajectory paths to be highly intriguing and worthy of future exploration. As noted above, both our male and female models identified groups of youth who rarely/never offended following community release. What types of factors are associated with this abrupt desistance from criminal activity? Do these youth differ in the type or amount of aftercare services they receive? In the family context to which they return? Conversely, both our male and female models also uncovered groups that had relatively modest arrest rates initially, and then increased their level of offending as they entered early adulthood. What happens in youth's lives during this period that augments their level of recidivism risk? Are these changes related to shifts in roles (e.g., establishment of romantic partnerships, parenthood, etc), changing family circumstances, or to an aging out of eligibility for certain services?

2. Research should seek to replicate and expand our findings pertaining to serious delinquent girls. In particular, given that a large proportion of girls exiting residential care become clients of both criminal justice and child welfare systems, efforts to explore the sequencing of these early adult behaviors, potential correlates of cross-system risk (e.g., substance abuse, poverty, etc), and the relative impact of crime/perpetration on the intergenerational transmission of antisocial behavior should be undertaken.

That women engage in criminal activity less often than their male counterparts, and are less serious offenders when they do engage, is widely accepted in the criminological literature and is often used to justify the field's predominately male focus. However, despite girls'

relatively small presence in the juvenile justice system, findings from the current study suggest that the consequences of female delinquency, when it does occur, are far from modest and may have serious implications for societal well-being. Future research should seek to replicate current study findings in other female juvenile justice cohorts and to expand our understanding of the circumstances and consequences associated with girls' involvement in adult antisocial behavior. Findings suggest that many delinquent girls experience problems that bring them to the attention of both the adult criminal justice and child welfare systems. How does contact with one system affect girls' involvement with the other? Are there certain issues, such as substance abuse, poverty, or choice of antisocial partners that increase girls' risk for both crime and maltreatment?

In addition, if we are to truly understand the consequences of female delinquency additional information on the offspring of delinquent girls and their service utilization must be gathered. How many children who enter the child welfare system come from parents with delinquent histories? How often are the children of delinquent parents maltreated? Placed into foster care? How many will eventually enter the juvenile justice system?

3. Given that most delinquent youth never enter residential care, research examining the long-term outcomes of youth receiving a broader array of juvenile justice services (e.g., diversionary and probationary services) is needed to determine if current findings can be generalized to other juvenile justice populations.

The present study examined the long-term outcomes of delinquent youth served in residential programs. While these youth represent a severe and presumably highly problematic segment of the juvenile justice population, making them an important group for study, many delinquent youth never enter residential care. Future research should examine whether the high

rates of criminal offending and child maltreatment observed among serious delinquents are also present in groups served at other levels of the juvenile justice system.

4. Future research should explore the interconnections between child welfare and criminal justice services.

Juvenile justice and child welfare services have traditionally functioned as independent entities. Yet, a growing body of research (e.g., Phillips & Gleeson, 2007), including the findings presented here, suggests that these systems are in fact highly intertwined, serving many of the same youth and families over time. As the state agency charged with overseeing all state-based delinquency prevention, juvenile rehabilitation, child welfare, and foster care services programs, OCFS should seek to document long-term patterns of system utilization and the factors associated with cross-system migration. Interesting questions include: Can youth who migrate from child welfare services into juvenile justice be distinguished from youth who enter child welfare but not juvenile justice? How does the provision of in-care and aftercare services affect delinquent youth's risk for adult child welfare contact?

5. Research should seek to explore how gender and race influence patterns of system involvement and adult outcomes.

While the purpose of the current study was to examine how delinquent youth fare once they exit residential care and begin the transition into early adulthood, findings suggest that the factors associated with out-of-home placement may vary for delinquent boys and girls, and that minority youth are disproportionately represented in in-care samples. Where youth go once they leave care also varies by sex and race. While adult arrest rates are relatively comparable across

groups, girls are less likely than boys to experience conviction and incarceration and are more likely to be identified as a perpetrator by CPS. Blacks are more likely than other racial groups to accumulate a high number of adult arrests and to experience conviction and incarceration in young adulthood. Race also influences cross-systems involvement, increasing the likelihood of dual system and criminal justice involvement for girls, and decreasing the likelihood of dual system contact for boys. Future research should explore whether these differences reflect differential involvement in adult antisocial behavior and/or sex/racial biases in system detection/entry and response.

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Table 1 Early Risk Profiles by Sex

Youth Characteristics	Males % or Mean (n=500)	Females % or Mean (n=499)	Chi-Square	F-statistic
Demographics				
Black	62%	62%	0.03	
Hispanic	21%	16%	3.81†	
Offense History				
Age at 1st arrest	13.87	14.01		2.54
Age at 1st OCFS placement	15.10	14.83		17.64***
Total arrests, 12 months pre-placement	5.23	3.34		52.55***
Prior violent arrest	55%	53%	0.63	
Prior weapons arrest	26%	16%	12.64***	
Suspected gang affiliation	10%	7%	1.53	
Prior out-of-home placement	20%	26%	5.16*	
Individual Functioning				
Significant mental health problem	24%	36%	16.85***	
Substance use scale	0.91	1.14		12.95***
Child Maltreatment				
History of sexual abuse	4%	29%	106.58***	
History of physical abuse	24%	32%	8.91**	
Receipt of Child Welfare Services				
Received child welfare services	46%	65%	36.20***	
Received foster care services	24%	48%	59.74***	
Multiple foster care placements	18%	38%	47.06***	
Family Environment				
Criminal history	51%	54%	0.85	
Substance abuse	57%	69%	15.83***	

†p≤.10, * p≤.05, **p≤.01, ***p≤.001

Table 2 Adult Criminal Justice Outcomes by Sex

Type of Criminal Justice Contact	Males (N=500)				Females (n=499)				Chi-Square	F-Statistic
	Prevalence		Frequency		Prevalence		Frequency			
	n	%	mean	range	n	%	mean	range		
Any Crime										
Arrest	443	89%	8.97	1-34	405	81%	5.95	1-45	10.77***	54.54***
Conviction	423	85%	5.61	1-26	341	68%	4.02	1-37	36.72***	26.96***
Felony Crime										
Arrest	413	83%	5.16	1-19	315	63%	2.72	1-17	47.91***	121.04***
Conviction	324	65%	2.07	1-6	123	25%	1.55	1-5	162.85***	22.43***
Misdemeanor Crime										
Arrest	381	76%	4.65	1-21	361	72%	4.21	1-37	1.94	1.97
Conviction	312	62%	3.40	1-21	218	44%	3.45	1-33	35.11***	.022
Violent Crime										
Arrest	384	77%	3.53	1-13	285	57%	2.21	1-21	43.75***	62.85***
Conviction	277	55%	1.81	1-8	144	29%	1.33	1-27	72.16***	21.16***
Property Crime										
Arrest	332	66%	3.47	1-21	273	55%	3.28	1-27	14.29***	.51
Conviction	216	43%	2.54	1-11	162	33%	2.38	1-17	12.24***	.41
Drug Crime										
Arrest	303	61%	3.36	1-19	181	36%	2.72	1-18	59.18***	5.32*
Conviction	230	46%	2.20	1-8	107	22%	2.24	1-13	67.38***	.04
Incarceration										
Jail	282	56%	n/a	n/a	139	28%	n/a	n/a	83.46***	n/a
Prison	260	52%	1586.01	22-3930	61	12%	935.41	80-2727	181.90***	23.66***
Either	356	71%	n/a	n/a	160	32%	n/a	n/a	153.18***	n/a

†p≤.10, * p≤.05, **p≤.01, ***p≤.001
Note: Mean and range are just for those who experience that type of criminal justice contact.

Table 3 Proportion of Youth Arrest-Free by Time Since Community Release

Months Post-Community Release	Survival Rate	
	Males	Females
6 months	65%	88%
1 year	41%	75%
1.5 years	29%	63%
2 years	24%	58%
2.5 years	21%	52%
3 years	18%	48%
3.5 years	16%	42%
4 years	15%	38%
4.5 years	14%	35%
5 years	14%	32%
5.5 years	12%	31%
6 years	12%	29%
6.5 years	12%	27%
7 years	12%	26%
7.5 years	12%	25%
8 years	11%	23%
8.5 years	11%	22%
9 years	11%	21%
9.5 years	11%	21%
10 years	11%	20%
10.5 years	11%	19%
11 years	11%	19%
11.5 years	11%	18%
12 years	11%	18%

Table 4 Impact of Early Risk Factors on Boys' Adult Arrest Hazard Rate

Youth Characteristics	Bivariate Analysis			Multivariate Analysis		
	Beta	**SE**	**Exp(b)**	**Beta**	**SE**	**Exp(b)**
Demographics						
Black	0.012	0.097	1.012	-0.014	0.115	0.986
Hispanic	-0.100	0.118	0.905	-0.086	0.135	0.917
Offense History						
Age at 1st arrest	-0.091	0.029	0.913***	-0.097	0.036	0.907**
Age at 1st OCFS placement	-0.030	0.045	0.971	0.066	0.053	1.069
Total arrests, 12 months pre-placement	0.009	0.010	1.009	0.016	0.011	1.016
Prior violent arrest	0.165	0.096	1.179†	0.110	0.104	1.117
Prior weapons arrest	-0.091	0.110	0.913	-0.131	0.119	0.877
Suspected gang affiliation	0.102	0.156	1.107	0.129	0.161	1.137
Prior out-of-home placement	0.259	0.117	1.296*	0.250	0.132	1.283†
Individual Functioning						
Significant mental health problem	-0.160	0.113	0.852	-0.155	0.117	0.857
Substance use scale	0.069	0.049	1.071	0.098	0.053	1.103†
Child Maltreatment						
History of sexual abuse	0.014	0.224	1.014	0.034	0.241	1.034
History of physical abuse	-0.094	0.112	0.910	-0.116	0.124	0.891
Receipt of Child Welfare Services						
Received child welfare services	-0.005	0.095	0.995			
Received foster care services	0.064	0.110	1.066			
Multiple foster care placements	-0.133	0.125	0.876			
Count of child welfare services				-0.023	0.047	0.977
Family Environment						
Criminal history	0.140	0.095	1.150	0.216	0.107	1.241*
Substance abuse	-0.132	0.096	0.876	-0.189	0.107	0.828†

Note: : †p≤.10, * p≤.05, **p≤.01, ***p≤.001

Table 5 Impact of Early Risk Factors on Girls' Adult Arrest Hazard Rate

Youth Characteristics	Bivariate Analysis			Multivariate Analysis		
	Beta	**SE**	**Exp(b)**	**Beta**	**SE**	**Exp(b)**
Demographics						
Black	0.361	0.105	1.435***	0.324	0.126	1.382**
Hispanic	-0.331	0.145	0.718*	-0.162	0.164	0.850
Offense History						
Age at 1st arrest	-0.090	0.038	0.914*	-0.074	0.049	0.929
Age at 1st OCFS placement	-0.046	0.047	0.955	0.045	0.062	1.046
Total arrests, 12 months pre-placement	0.001	0.014	1.001	-0.005	0.016	0.995
Prior violent arrest	0.000	0.100	1.000	-0.036	0.114	0.965
Prior weapons arrest	0.000	0.135	1.000	0.005	0.147	1.005
Suspected gang affiliation	0.159	0.187	1.172	0.241	0.197	1.273
Prior out-of-home placement	0.080	0.111	1.083	-0.064	0.129	0.938
Individual Functioning						
Significant mental health problem	-0.174	0.105	0.840†	-0.193	0.113	0.824†
Substance use scale	0.004	0.050	1.004	0.064	0.056	1.066
Child Maltreatment						
History of sexual abuse	0.090	0.110	1.094	0.104	0.119	1.110
History of physical abuse	0.120	0.105	1.127	0.009	0.116	1.009
Receipt of Child Welfare Services						
Received child welfare services	0.170	0.105	1.186 †			
Received foster care services	0.220	0.100	1.246*			
Multiple foster care placements	0.197	0.102	1.218*			
Count of child welfare services				0.102	0.042	1.107*
Family Environment						
Criminal history	0.340	0.101	1.406***	0.332	0.110	1.394**
Substance abuse	0.030	0.109	1.031	-0.125	0.120	0.882

Note: : †p≤.10, * p≤.05, **p≤.01, ***p≤.001

Table 6 Adult Arrest Trajectory Model Estimation by Sex

Males Model Number of groups	**BIC**		**Probability correct model**	
	BIC1 (n=12000)	**BIC2 (n=500)**	**BIC1**	**BIC2**
1	-6021.01	-6014.65		
2	-5590.33	-5576.03	0.00	0.00
3	-5527.22	-5504.97	0.03	0.00
4	-5524.24	-5494.04	0.65	0.00
5	-5524.94	-5486.80	0.32	0.99
Females Model Number of groups	**BIC**		**Probability correct model**	
	BIC1 (n=11976)	**BIC2 (n=499)**	**BIC1**	**BIC2**
1	-4978.14	-4971.78		
2	-4698.10	-4683.80	0.00	0.00
3	-4658.67	-4636.42	0.06	0.00
4	-4655.96	-4625.77	0.94	0.95
5	-4666.92	-4628.78	0.00	0.05

Table 7 Boys' Adult Arrest Trajectory Model Coefficients

	Coefficient Estimate	**Standard Error**	**T-statistic**
Rare/Non-Offending			
Intercept	-4.591***	0.597	-7.686
Linear	-1.658***	0.459	-3.611
Eligibility Covariate	1.149**	0.598	1.921
Early Adult Desisters			
Intercept	-3.423***	0.226	-15.156
Linear	-5.340***	0.493	-10.827
Quadratic	2.395***	0.650	3.684
Cubic	12.941***	1.841	7.030
Eligibility Covariate	1.767***	0.191	9.273
Chronic			
Intercept	-2.442***	0.163	-15.013
Linear	-0.776***	0.200	-3.889
Eligibility Covariate	2.760***	0.213	12.940
Early Adult Peak			
Intercept	-0.670**	0.249	-2.693
Linear	-0.358	0.282	-1.272
Quadratic	-3.343***	0.753	-4.441
Eligibility Covariate	0.461†	0.278	1.656

†p≤.10, * p≤.05, **p≤.01, ***p≤.001

Table 8 Boys' Adult Criminal Outcomes by Arrest Trajectory Group

Type of Criminal Contact Prevalence (Mean)	**Trajectory group**			
	Rare/Non Offending	**Early Adult Desisters**	**Chronic**	**Early Adult Peak**
	(N=109)	**(N=185)**	**(N=122)**	**(N=84)**
Any Arrests	48% (0.84)	100% (6.64)	100% (13.34)	100% (12.20)
Felony Arrest	29% (0.39)	95% (3.61)	100% (7.63)	99% (5.82)
Misdemeanor	30% (0.44)	84% (2.91)	91% (5.52)	96% (6.10)
Violent arrest	26% (0.30)	87% (2.51)	98% (4.73)	90% (3.32)
Property arrest	23% (0.30)	72% (1.90)	86% (3.69)	81% (3.80)
Drug arrest	13% (0.17)	63% (1.43)	84% (3.56)	83% (3.58)
Conviction	35% (0.48)	97% (3.89)	100% (7.89)	100% (7.62)
Incarceration	16%	78%	98%	89%
Ever NYS prison	6%	56%	89%	49%
Ever local jail	10%	52%	84%	87%

Table 9 Boys' Early Risk Profile by Adult Arrest Trajectory Group

Youth Characteristics	Prevalence or Mean Score				Chi-square	
	Rare/Non Offending (N=109)	Early Adult Desisting (N=185)	Chronic (N=122)	Early Adult Peak (N=84)	Bivariate	Multi-variate
Demographics						
Black	53%	61%	69%	64%	6.31†	7.94*
Hispanic	17%	20%	23%	23%		
Offense History						
Age at 1st arrest	14.18	13.91	13.53	13.85	11.09*	12.49**
Age at 1st OCFS placement	15.16	15.11	15.03	15.13		
Total arrests, 12 months pre-placement	5.28	4.82	6.11	4.81		
Prior violent arrest	54%	51%	65%	52%		
Prior weapons arrest	29%	25%	24%	24%		
Suspected gang affiliation	5%	12%	10%	10%		
Prior out-of-home placement	15%	21%	24%	20%		
Individual Functioning						
Significant mental health problem	25%	27%	21%	19%		
Substance use scale	0.90	1.04	0.91	0.67	8.81*	8.50*
Child Maltreatment						
History of sexual abuse	5%	5%	3%	5%		
History of physical abuse	27%	24%	17%	27%		
Receipt of Child Welfare Services						
Received child welfare services	36%	45%	46%	60%	10.86*	
Received foster care services	19%	21%	26%	36%	8.35*	
Multiple foster care placements	19%	15%	15%	30%	9.43*	
Count of child welfare services	.74	.81	.87	1.25		9.57*
Family Environment						
Criminal history	44%	51%	51%	58%		
Substance abuse	62%	57%	51%	60%		

Note: †p≤.10, * p≤.05, **p≤.01, ***p≤.001

Table 10 Girls' Adult Arrest Trajectory Model Coefficients

	Coefficient Estimate	**Standard Error**	**T-statistic**
Rare/Non-Offending			
Intercept	-7.102†	3.922	-1.811
Eligibility Covariate	3.426	3.889	0.881
Low-Chronic			
Intercept	-2.488**	0.243	-10.223
Linear	-0.871**	0.182	-4.780
Quadratic	-1.328**	0.427	-3.112
Eligibility Covariate	0.881**	0.228	3.857
Low-Rising			
Intercept	-0.685*	0.286	-2.399
Linear	1.837**	0.331	5.559
Eligibility Covariate	-0.070	0.350	-0.200
High-Chronic			
Intercept	-0.953**	0.307	-3.102
Linear	-0.899*	0.406	-2.213
Quadratic	-2.110*	0.971	-2.173
Eligibility Covariate	1.256**	0.309	4.068

†p≤.10, * p≤.05, **p≤.01, ***p≤.001

Table 11 Girls' Adult Criminal Outcomes by Arrest Trajectory Group

Type of Criminal Contact Prevalence (Mean)	**Trajectory group**			
	Rare/Non-Offending	**Low Chronic**	**Low-Rising**	**High Chronic**
	(N=159)	**(N=267)**	**(N=45)**	**(N=28)**
Any Arrests	41% (0.45)	100% (4.65)	100% (13.09)	100% (18.07)
Felony Arrest	18% (0.19)	81% (1.78)	98% (4.20)	100% (5.79)
Misdemeanor	25% (0.26)	93% (2.81)	100% (8.67)	100% (12.11)
Violent arrest	16% (0.18)	72% (1.44)	91% (3.00)	93% (2.89)
Property arrest	13% (0.13)	69% (1.81)	91% (4.13)	96% (7.39)
Drug arrest	6% (0.06)	43% (0.75)	82% (3.71)	71% (4.21)
Conviction	19% (0.20)	89% (2.46)	100% (7.96)	100% (11.54)
Incarceration	3%	37%	69%	96%
Ever NYS prison	1%	13%	20%	57%
Ever local jail	1%	30%	67%	93%

Table 12 Girls' Early Risk Profile by Adult Arrest Trajectory Group

Youth Characteristics	Prevalence or Mean Score				Chi-square	
	Rare/Non (N=159)	Low Chronic (N=267)	Low /Rising (N=45)	High Chronic (N=28)	Bivariate	Multi-variate
Demographics						
Black	53%	65%	69%	79%	10.91*	
Hispanic	23%	12%	13%	11%	9.33*	
Offense History						
Age at 1st arrest	14.16	14.04	13.75	13.25	12.10**	
Age at 1st OCFS placement	14.90	14.86	14.60	14.46	6.58†	
Total arrests, 12 months pre-placement	3.41	3.31	3.49	3.04		
Prior violent arrest	55%	52%	56%	39%		
Prior weapons arrest	18%	13%	20%	29%		9.63*
Suspected gang affiliation	6%	8%	11%	4%		
Prior out-of-home placement	25%	23%	36%	43%	6.88†	
Individual Functioning						
Significant mental health problem	36%	37%	42%	14%	7.40†	9.67*
Substance use scale	1.09	1.12	1.36	1.14		
Child Maltreatment						
History of sexual abuse	28%	27%	33%	46%		
History of physical abuse	28%	31%	47%	39%	6.28†	
Receipt of Child Welfare Services						
Received child welfare services	61%	63%	78%	86%	11.37*	
Received foster care services	40%	48%	60%	68%	10.97*	
Multiple foster care placements	31%	37%	47%	64%	12.89**	
Child welfare services factor	1.32	1.48	1.84	2.18		9.97*
Family Environment						
Criminal history	43%	57%	73%	57%	15.96***	8.88*
Substance abuse	63%	69%	91%	71%	15.55***	7.02†

Note: †p≤.10, * p≤.05, **p≤.01, ***p≤.001

Table 13 Adult Engagement in Child Maltreatment Perpetration by Sex

Perpetration Type	Males (N=500)				Females (n=499)				Significance Test	
	Prevalence		Frequency		Prevalence		Frequency		Chi-Square	F-Test
	n	%	mean	range	n	%	mean	range		
Confirmed Perpetrator	45	9%	1.62	1-5	211	42%	2.54	1-14	145.18***	9.24***
Neglect	41	8%	1.65	1-5	189	38%	2.66	1-15	124.10***	8.28**
Physical Abuse	8	2%	1.0	1	43	9%	1.30	1-3	25.34***	2.31
Sexual Abuse	4	0.8%	1.0	1	6	1%	1.17	1-2	n/a	n/a

†p≤.10, * p≤.05, **p≤.01, ***p≤.001

Note: Mean and range are just for those who had child maltreatment perpetration content.

Table 14 Proportion of Youth Perpetration-Free by Time Since Community Release

Months Post-Community Release	Survival Rate	
	Males	Females
6 months	100%	99%
1 year	100%	99%
1.5 years	100%	97%
2 years	100%	95%
2.5 years	100%	94%
3 years	99%	92%
3.5 years	99%	89%
4 years	98%	86%
4.5 years	97%	84%
5 years	97%	81%
5.5 years	97%	78%
6 years	96%	76%
6.5 years	96%	73%
7 years	95%	70%
7.5 years	95%	69%
8 years	95%	67%
8.5 years	94%	65%
9 years	94%	65%
9.5 years	94%	64%
10 years	93%	61%
10.5 years	92%	60%
11 years	92%	59%
11.5 years	92%	58%
12 years	91%	58%

Table 15 Impact of Early Risk Factors on Boys' Maltreatment Perpetration Hazard Rate

Youth Characteristics	Bivariate Analysis			Multivariate Analysis		
	Beta	**SE**	**Exp(b)**	**Beta**	**SE**	**Exp(b)**
Demographics						
Black	-0.821	0.302	0.440**	-0.390	0.361	0.677
Hispanic	-0.178	0.390	0.837	-0.168	0.434	0.845
Offense History						
Age at 1st arrest	-0.176	0.086	0.838*	-0.071	0.118	0.931
Age at 1st OCFS placement	-0.230	0.129	0.795†	-0.188	0.169	0.829
Total arrests, 12 months pre-placement	-0.065	0.041	0.937	-0.036	0.043	0.965
Prior violent arrest	-0.108	0.299	0.898	-0.104	0.327	0.901
Prior weapons arrest	-0.204	0.359	0.815	0.038	0.393	1.039
Suspected gang affiliation	-0.088	0.524	0.916	0.137	0.539	1.147
Prior out-of-home placement	0.630	0.322	1.878*	0.484	0.384	1.622
Individual Functioning						
Significant mental health problem	-0.253	0.373	0.776	-0.660	0.402	0.517†
Substance use scale	0.188	0.146	1.207	0.158	0.165	1.171
Child Maltreatment						
History of sexual abuse	1.284	0.439	3.610**	1.329	0.516	3.776**
History of physical abuse	-0.085	0.359	0.918	-0.728	0.416	0.483†
Receipt of Child Welfare Services						
Received child welfare services	0.140	0.298	1.150			
Received foster care services	0.354	0.322	1.425			
Multiple foster care placements	0.279	0.359	1.322			
Count of child welfare services				0.091	0.147	1.095
Family Environment						
Criminal history	0.092	0.299	1.097	0.240	0.350	1.271
Substance abuse	0.121	0.304	1.129	-0.146	0.352	0.864
Years Incarcerated	-0.281	0.081	0.755***	-0.283	0.087	0.753***

Note: : †p≤.10, * p≤.05, **p≤.01, ***p≤.001

Table 16 Impact of Early Risk Factors on Girls' Maltreatment Perpetration Hazard Rate

Youth Characteristics	Bivariate Analysis			Multivariate Analysis		
	Beta	**SE**	**Exp(b)**	**Beta**	**SE**	**Exp(b)**
Demographics						
Black	0.094	0.143	1.099	0.285	0.175	1.330†
Hispanic	-0.141	0.195	0.868	0.122	0.223	1.130
Offense History						
Age at 1st arrest	-0.092	0.053	0.912†	-0.060	0.072	0.942
Age at 1st OCFS placement	-0.126	0.067	0.882†	0.036	0.089	1.037
Total arrests, 12 months pre-placement	-0.018	0.021	0.983	0.010	0.025	1.010
Prior violent arrest	-0.252	0.138	0.777†	-0.283	0.156	0.754†
Prior weapons arrest	-0.340	0.206	0.712†	-0.212	0.222	0.809
Suspected gang affiliation	-0.186	0.286	0.830	-0.140	0.302	0.869
Prior out-of-home placement	0.433	0.148	1.542**	0.289	0.172	1.335†
Individual Functioning						
Significant mental health problem	0.196	0.142	1.217	-0.019	0.154	0.981
Substance use scale	0.045	0.070	1.046	-0.014	0.078	0.987
Child Maltreatment						
History of sexual abuse	0.395	0.146	1.484**	0.282	0.161	1.326†
History of physical abuse	0.466	0.141	1.594***	0.319	0.155	1.376*
Receipt of Child Welfare Services						
Received child welfare services	0.586	0.158	1.796***			
Received foster care services	0.515	0.140	1.673***			
Multiple foster care placements	0.398	0.139	1.489**			
Count of child welfare services				0.143	0.060	1.154*
Family Environment						
Criminal history	0.081	0.139	1.085	-0.050	0.149	0.951
Substance abuse	0.349	0.159	1.418*	0.298	0.173	1.347†
Years Incarcerated	-0.255	0.089	0.775**	-0.355	0.096	0.701***

Note: : †p≤.10, * p≤.05, **p≤.01, ***p≤.001

Table 17 Adult Child Maltreatment Perpetration Trajectory Model Estimation by Sex

Males Model Number of groups	**BIC**		**Probability correct model**	
	BIC1 (n=12024)	**BIC2 (n=500)**	**BIC1**	**BIC2**
1	-408.93	-402.57		
2	-413.01	-398.71	0.99	0.99
3	-431.27	-409.03	0.01	0.01
Females Model Number of groups	**BIC**		**Probability correct model**	
	BIC1 (n=11976)	**BIC2 (n=499)**	**BIC1**	**BIC2**
1	-1861.64	-1855.29		
2	-1780.29	-1765.98	0.99	0.99
3	-1799.08	-1776.84	0.01	0.01

Table 18 Boys' Early Risk Profiles by Adult Maltreatment Perpetrator Status

Youth Characteristics	**Non-Perpetrator (n=455)**	**Confirmed Perpetrator (n=45)**	**Chi-Square or F-statistic**	**Multi-Variate Chi-Square**
Demographics				
Black	64%	42%	7.85** [a]	3.86*
Hispanic	21%	18%		
Offense History				
Age at 1st arrest	13.91	13.39	4.89*	
Age at 1st OCFS placement	15.13	14.79	4.28*	
Total arrests, 12 months pre-placement	5.34	4.16		
Prior violent arrest	56%	53%		
Prior weapons arrest	26%	22%		
Suspected gang affiliation	10%	9%		
Prior out-of-home placement	19%	31%	3.82*	
Individual Functioning				
Significant mental health problem	24%	20%		2.70†
Substance use scale	0.90	1.09		
Child Maltreatment				
History of sexual abuse	4%	13%	9.38**	5.92*
History of physical abuse	24%	22%		2.85†
Receipt of Child Welfare Services				
Received child welfare services	45%	49%		
Received foster care services	24%	31%		
Multiple foster care placements	18%	22%		
Count of child welfare services	.87	1.02		
Family Environment				
Criminal history	51%	53%		
Substance abuse	57%	60%		
Opportunity				
Years incarcerated/dead	3.44	2.74		

Note: †p≤.10, * p≤.05, **p≤.01, ***p≤.001

Table 19 Girls' Early Risk Profiles by Adult Maltreatment Perpetrator Status

Youth Characteristics	**Non-Perpetrator (n=455)**	**Confirmed Perpetrator (n=45)**	**Chi-Square or F-statistic**	**Multi-Variate Chi-Square**
Demographics				
Black	61%	64%		
Hispanic	17%	15%		
Offense History				
Age at 1st arrest	14.07	13.92		
Age at 1st OCFS placement	14.89	14.74		
Total arrests, 12 months pre-placement	3.43	3.22		
Prior violent arrest	56%	48%	3.06†	
Prior weapons arrest	19%	13%	3.52†	
Suspected gang affiliation	8%	6%		
Prior out-of-home placement	21%	33%	8.39**	3.81†
Individual Functioning				
Significant mental health problem	33%	39%		
Substance use scale	1.11	1.17		
Child Maltreatment				
History of sexual abuse	25%	34%	5.34*	
History of physical abuse	27%	39%	8.88** [a]	3.47†
Receipt of Child Welfare Services				
Received child welfare services	58%	74%	13.57*** [a]	
Received foster care services	41%	57%	11.80***	
Multiple foster care placements	33%	44%	6.38**	
Count of child welfare services	1.32	1.75		2.99†
Family Environment				
Criminal history	53%	55%		
Substance abuse	66%	74%	3.63†	
Opportunity				
Years incarcerated/dead	.85	.99		

Note: †p≤.10, * p≤.05, **p≤.01, ***p≤.001

Table 20 Adult Child Maltreatment Perpetrator Status by Adult Arrest Trajectory Group

	% Confirmed Perpetrator of Child Maltreatment			
	Trajectory Group			
Males	Rare/Non	Early Adult Desisting	Chronic	Early Adult Peak
	4%	8%	14%	14%
Females	Rare/Non	Low Chronic	Low-Rising	High Chronic
	42%	33%	69%	46%

Table 21 Boys' Early Risk Profile by Cross Systems Contact Group

Youth Characteristics	Cross Systems Group			Chi-Square	
	No Contact (N=56)	CJ Only (N=399)	Dual (N=44)	Bivariate	Multi-variate
Demographics					
Black	70%	63%	41%	9.45**	6.64*
Hispanic	21%	21%	18%		
Offense History					
Age at 1st arrest	14.26	13.86	13.38	8.38*	7.15*
Age at 1st OCFS placement	15.06	15.15	14.81		6.86*
Total arrests, 12 months pre-placement	5.75	5.28	4.20		
Prior violent arrest	48%	57%	52%		
Prior weapons arrest	32%	25%	23%		
Suspected gang affiliation	4%	11%	09%		
Prior out-of-home placement	11%	20%	30%	5.75†	
Individual Functioning					
Significant mental health problem	29%	24%	20%		
Substance use scale	0.71	0.92	1.09		
Child Maltreatment					
History of sexual abuse	2%	4%	14%	7.42*	6.61*
History of physical abuse	23%	24%	23%		
Receipt of Child Welfare Services					
Received child welfare services	43%	46%	48%		
Received foster care services	21%	24%	30%		
Multiple foster care placements	21%	17%	20%		
Count of child welfare services	.86	.87	.98		
Family Environment					
Criminal history	50%	51%	52%		
Substance abuse	68%	55%	59%		4.62†

Note: †p≤.10, * p≤.05, **p≤.01, ***p≤.001

Table 22 Girls' Early Risk Profiles by Cross Systems Group

Youth Characteristics	**Cross Systems Group**				**Chi-Square**	
	No Contact	**CPS only**	**CJ Only**	**Dual**		
	(n=65)	**(n=29)**	**(n=223)**	**(n=182)**	**Bivariate**	**Multi-variate**
Demographics						
Black	45%	48%	66%	66%	12.97**	6.33†
Hispanic	28%	21%	13%	14%	7.94*	
Offense History						
Age at 1st arrest	14.29	14.32	14.01	13.85	7.70†	
Age at 1st OCFS placement	14.89	15.07	14.89	14.69	6.58†	
Total arrests, 12 months pre-placement	3.43	3.62	3.43	3.16		
Prior violent arrest	54%	55%	57%	47%		
Prior weapons arrest	18%	14%	19%	13%		
Suspected gang affiliation	9%	0%	8%	7%		
Prior out-of-home placement	14%	31%	23%	33%	11.27**	
Individual Functioning						
Significant mental health problem	38%	52%	32%	37%		
Substance use scale	1.12	1.07	1.11	1.18		
Child Maltreatment						
History of sexual abuse	29%	31%	23%	35%	6.37†	
History of physical abuse	22%	34%	28%	40%	10.36*	
Receipt of Child Welfare Services						
Received child welfare services	51%	83%	60%	73%	17.05***	
Received foster care services	32%	59%	44%	57%	14.75**	
Multiple foster care placements	26%	38%	35%	45%	8.70*	
Count of child welfare services	1.09	1.79	1.39	1.74		
Family Environment						
Criminal history	37%	38%	58%	57%	12.70**	10.53*
Substance abuse	62%	76%	67%	74%		

Note: †p≤.10, * p≤.05, **p≤.01, ***p≤.001

Figure1 Delinquent Boys' Adult Arrest Trajectory Groups

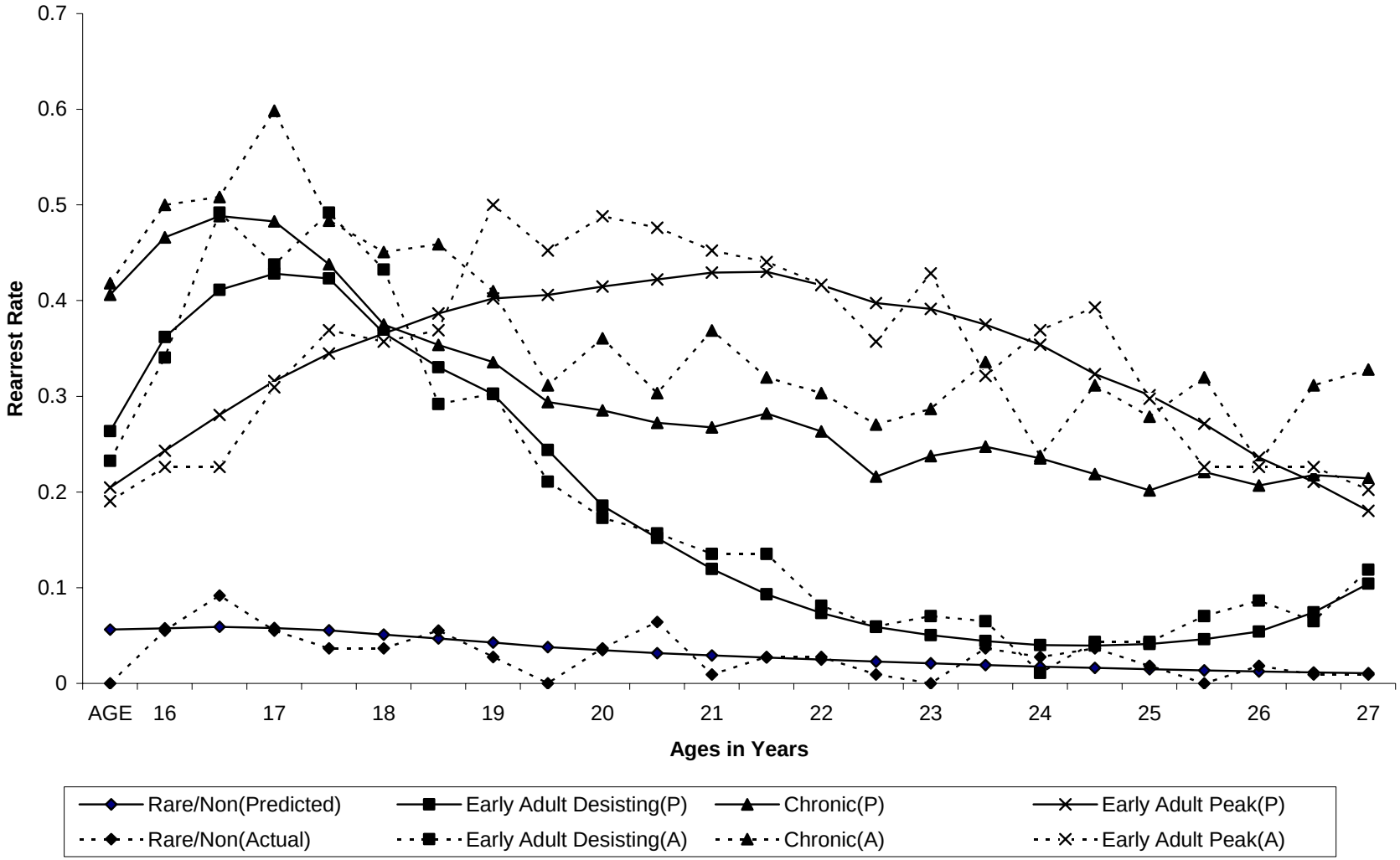


Figure2 Delinquent Girls' Adult Arrest Trajectory Groups

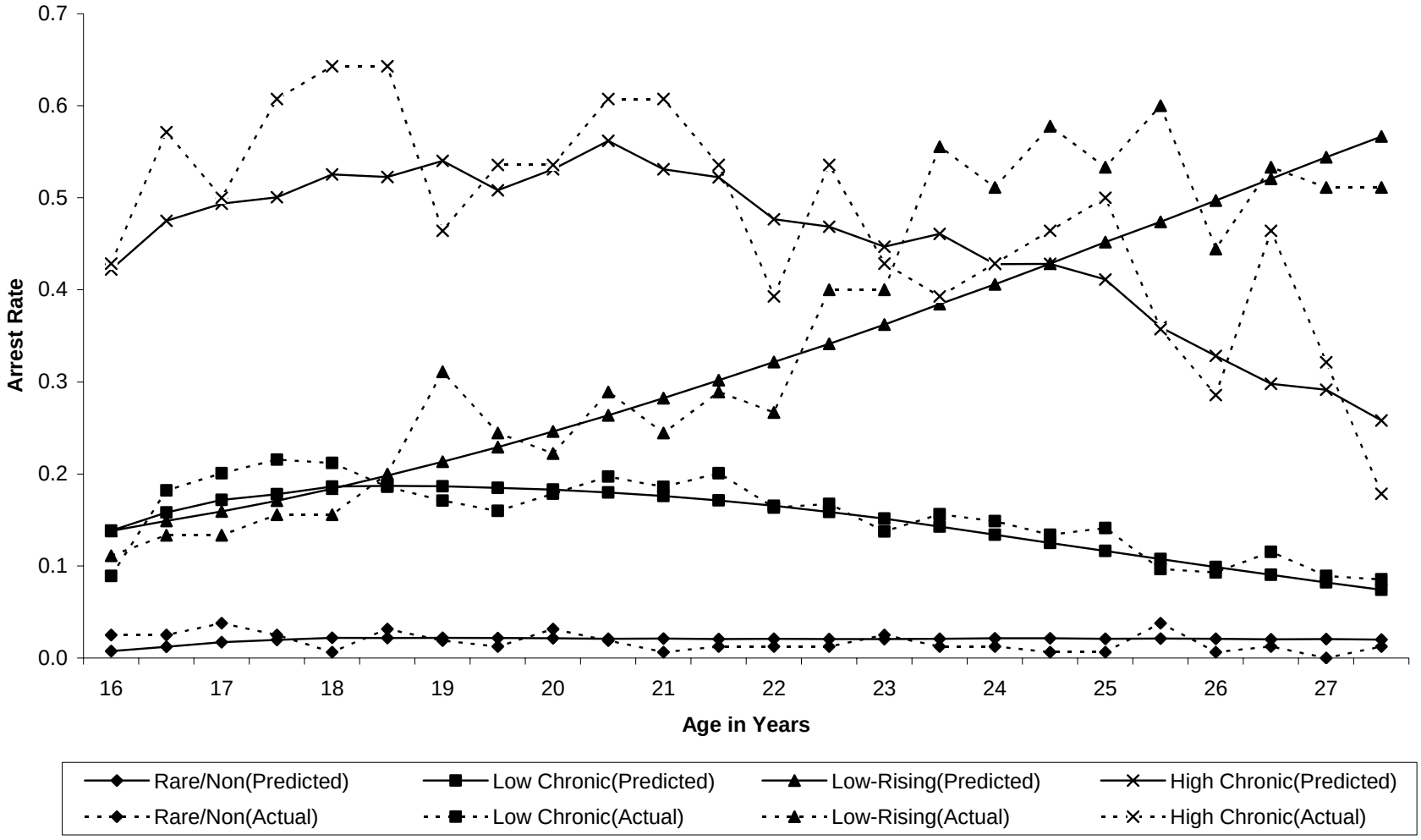


Figure3 Delinquent Boys' Confirmed Child Maltreatment Perpetrator Trajectory Groups

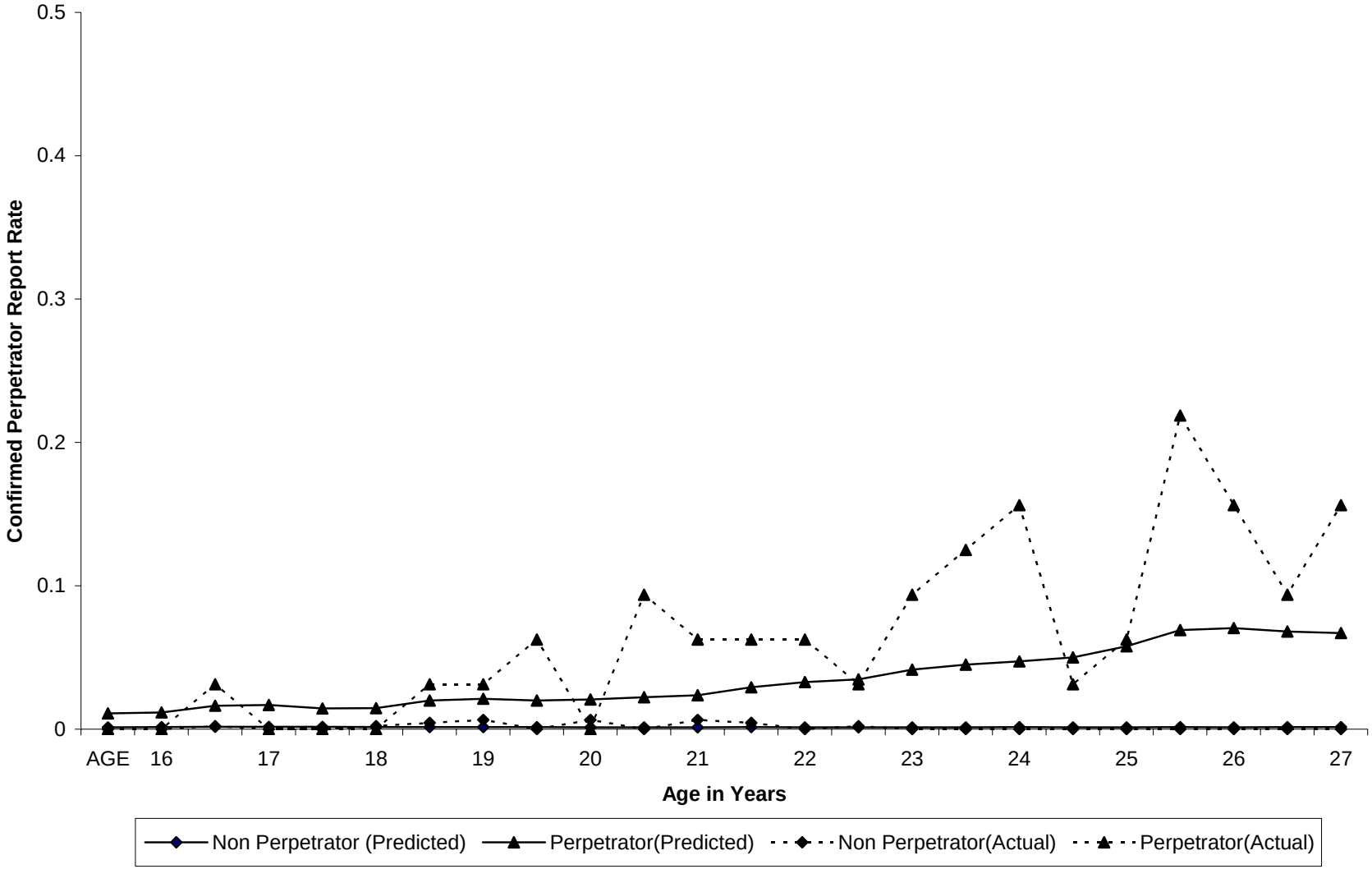


Figure4 Delinquent Girls' Confirmed Child Maltreatment Perpetrator Trajectory Groups

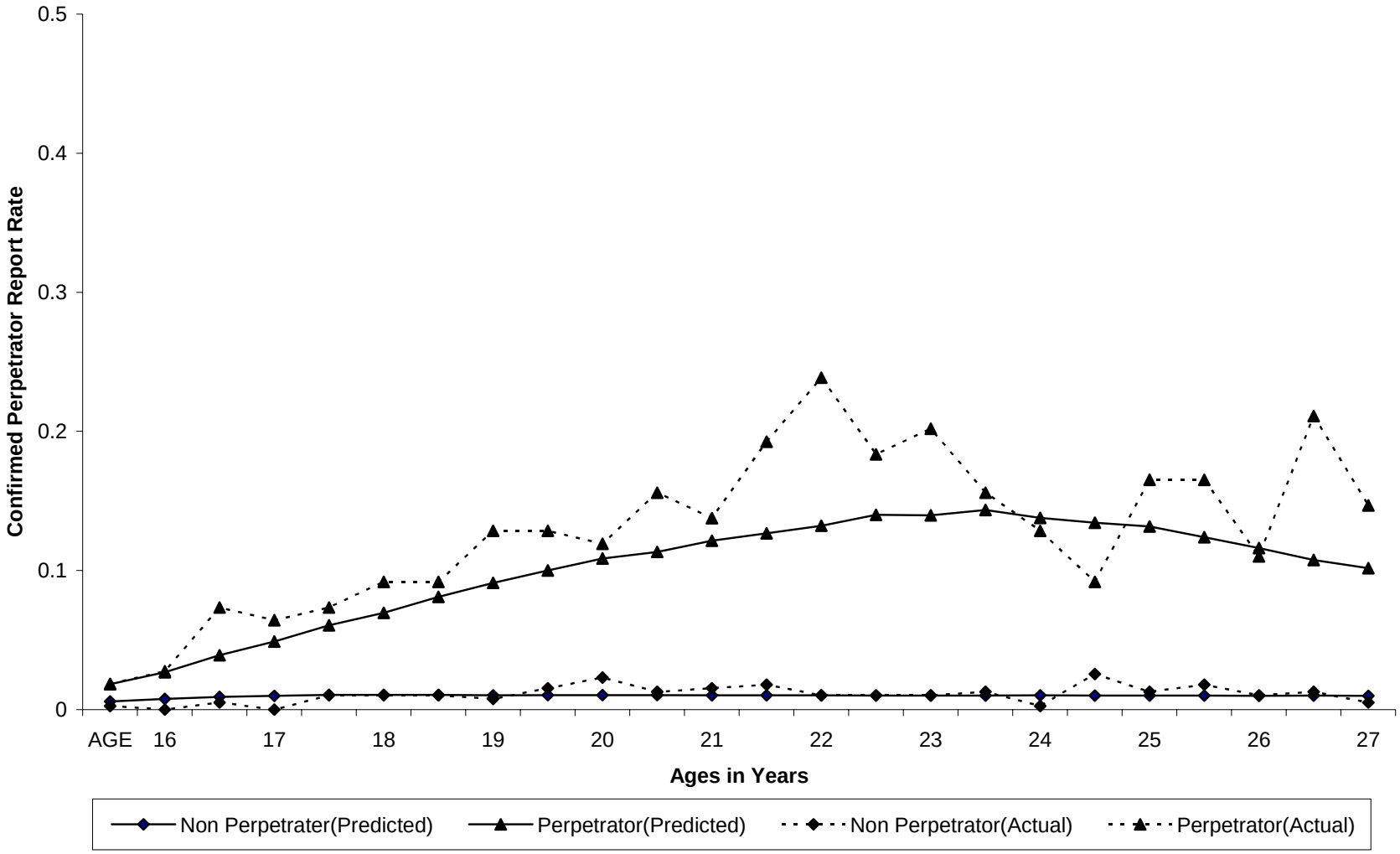
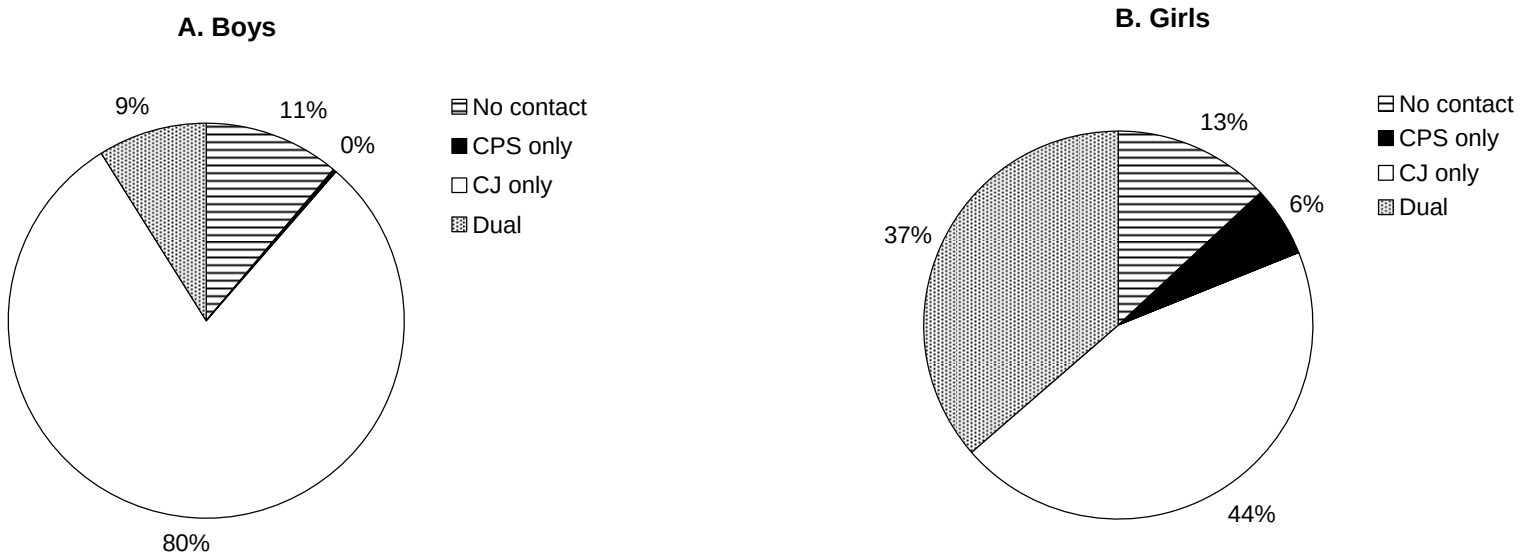


Figure5 Patterns of Cross-System Involvement by Sex



Appendix A Construct Definitions

Construct	Definition
Violent Crime	Includes arrests or convictions involving murder, non negligent manslaughter, rape, robbery, aggravated assault, simple assault, coercion and kidnapping, as well as charges flagged by the OBTS/CCH system as being violent in nature (e.g., burglary resulting in injury, sexual abuse of minor, etc)
Property Crime	Includes arrests or convictions involving burglary without injury, mischief, arson without injury, larceny, motor vehicle theft, embezzlement, stolen property, forgery, fraud, etc
Drug Crime	Includes arrests or convictions involving sale or possession of illicit substances, driving under the influence, etc
Any Crime	Includes arrests or convictions involving violent, property, and drug crimes, as well as prostitution, gambling, public order, family offenses, loitering, and other finger printable offenses.
Neglect	Includes allegations pertaining to a failure to meet children's basic needs for food, shelter, clothing, health care, supervision, and education
Physical Abuse	Includes injuries such as bruises, abrasions, lacerations, wounds, cuts, bone and skull fractures, and other evidence of physical injury
Sexual Abuse	Includes involving a child in sexual activity to provide sexual gratification for the perpetrator, molestation, pornography, exposure, incest, or other sexually exploitative activities