

Delinquent Girls Grown Up: Young Adult Offending Patterns and Their Relation to Early
Legal, Individual, and Family Risk

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Journal of Youth and Adolescence (in press)

The original publication is available at www.springerlink.com

DOI: 10.1007/s10964-008-9341-4

Acknowledgements: This research was supported by Award No: 2006-IJ-CX-0014 awarded by the National Institute of Justice Programs, US Department of Justice. Criminal arrest data were provided by the New York State Division of Criminal Justice Services (NYS DCJS). Incarceration data were provided by the New York State Department of Correctional Services (NYS DOCS). The opinions, findings, methods of analysis, and conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of the Department of Justice, NYS DCJS or NYS DOCS.

Abstract

Although the number of girls served by the juvenile justice system has grown dramatically, little is known about the adult offending patterns of delinquent girls and the factors associated with their persistence and desistance from adult crime. To address this gap, we prospectively track 499 girls (62% Black, 16% Hispanic) discharged from juvenile justice facilities in the early 1990s and document their adult arrests, convictions, and incarcerations between the ages of 16 to 28. Trajectory analysis reveals four distinct early adult offending paths: Rare/Non-Offending (RN), Low Chronic (LC), Low-Rising (LR), and High Chronic (HC). Girls assigned to the LR and HC path are responsible for a disproportionate amount of adult arrests and are more likely than girls on the RN and LC path to come from homes characterized by high levels of family dysfunction and child maltreatment. Adoption of a therapeutic, trauma-sensitive and family-centered approach to female delinquency programming is recommended.

Girls constitute a small but growing presence in the American juvenile justice system. Although only 15% of juveniles in custodial care were female in 2003- the most recent year for which national statistics are available- the overall number of delinquent girls in care rose 96% between 1991 and 2003 (Snyder & Sickmund, 2006). This rapid influx of girls into juvenile justice facilities has drawn attention to the issue of female delinquency and highlighted the need for female-specific research. While numerous studies have described the adult offending behavior of delinquent boys and the factors associated with their persistence and desistance from crime, relatively little is known about delinquent girls and how they fare once they leave custodial care. Gathering such information is essential to the development of effective female delinquency programming, and has been identified as a research need by many in the juvenile justice field (Cernkovich, Lanctot, & Giordano, 2008; Hubbard & Matthews, 2008).

To help address this need, the present study prospectively tracks a large sample of delinquent girls released from New York State (NYS)-operated juvenile correctional facilities in the early 1990s and documents their involvement with both adult criminal justice and correctional services between the ages of 16 to 28. Three basic questions guide our research. First, given the lack of empirical research on the long-term functioning of serious delinquent girls, we begin by asking questions typically posed by program and policymakers when considering the effectiveness of juvenile justice services. What proportion of serious delinquent girls recidivate? How many are convicted as a young adult? How many are incarcerated?

Next, we explore whether identified groups of desisting and persistent offenders differ on early indicators of individual and family functioning. Placement and treatment decisions are often built around perceived levels of recidivism risk, yet few studies have explored whether juvenile characteristics are in fact predictive of adult female offending. To

answer this question, we compare recidivating and non-recidivating delinquent girls on a variety of legal, individual, and family factors assessed at intake into juvenile justice facilities.

Finally, we explore whether our understanding of girls' long-term functioning and risk for early adult offending is improved by applying a more developmental perspective to the examination of their early adulthood behavior. Although practitioners and policymakers typically use recidivism rates as the yardstick for measuring success, use of a static outcome measure such as desister/recidivist lumps all reoffenders together into a single homogeneous group, preventing the identification and consideration of potentially meaningfully distinct groups of persistent offenders. Individuals with a single adult arrest are treated the same as individuals who are rearrested multiple times over the course of the follow-up period, even though the length, timing, and frequency of their criminal careers may be vastly different. Moreover, use of a static, dichotomous outcome variable limits our ability to explore the forces that sustain, promote, or inhibit criminal involvement over time and across individuals. As Bushway and colleagues note, "...without information about when and for whom things change, it is hard to causally link explanatory factors to desistance. Causal study requires linking change in the independent variable with change in the dependent variable."

(Bushway, Piquero, Broidy, Cauffman, & Mazerolle, 2001, p.493)

To address these issues, we use semi-parametric group-based trajectory analysis techniques (Nagin, 2005). An application of finite mixture modeling, trajectory analysis uses longitudinal data to identify clusters of individuals within a larger population whose patterns of behavior are similar over time. Developmental psychologists and criminologists frequently use trajectory models to identify and describe distinctive life paths and to explore the forces that sustain, promote, or inhibit expression of the behavior of interest. We do the same here, first describing patterns of early adult offending and then examining the association between

observed groups and our measures of early legal, individual, and family risk. We then compare the results of classic recidivism and trajectory approaches to determine what, if anything, is gained from applying a more developmental approach.

Juvenile Offending and Adult Recidivism

Although studies vary considerably in sample selection, length of follow-up, and choice of recidivism measures, previous research on predominately male samples suggests that a sizeable proportion of adolescents who engage in delinquent activity as teens will continue to engage in criminal activity as adults. Eggleston & Laub (2002) reviewed 15 longitudinal studies of criminal offending across the life course and found that, on average, over half of the juvenile delinquents followed became adult offenders. Studies focusing on males released from juvenile facilities tend to report even higher recidivism rates, with over 80% of sample participants classified as adult offenders (Ezell & Cohen, 2005; Rivers & Trotti, 1995).

While research on the long-term functioning of delinquent girls is sparse, recent birth cohort research (e.g., Piquero, Brame, & Moffitt, 2005; Piquero & Buka, 2002) suggests that the association found between adolescent delinquency and adult crime in males also exists for females. More importantly, available research suggests that most girls who penetrate far into the juvenile justice system will continue to offend in adulthood. Warren and Rosenbaum (1986) identified 159 young women committed to the California Youth Authority in the 1960s and examined their adult arrest histories 12 to 20 years later when sample participants were 26 to 37 years old. All but six (96%) of the women followed were eventually rearrested. Similarly, nearly 75% of delinquent girls released from Arkansas' Serious Offender Program entered the State's adult correctional system within two years (Benda, Corwyn, & Toombs, 2001).

Despite the grim picture conveyed by these statistics, findings from two recently published longitudinal studies of serious delinquent boys indicate that considerable heterogeneity and intra-individual change in adult offending patterns can be found, even within high risk samples. Building on the Gluecks' landmark study, Sampson and Laub (2003a) used trajectory analysis to explore the lifetime arrest patterns of 500 delinquent boys committed to Massachusetts reform schools in the 1940s. Similarly, Ezell and Cohen (2005) tracked three cohorts of delinquent boys released from the California Youth Authority between 1981 and 1991. In both studies, trajectory analyses revealed six distinct classes of offenders within each sample/cohort that differed in both their overall rate of offending and in the timing of their peak offending years.

Over 90% of the young men followed by Ezell and Cohen (2005) were rearrested, but the frequency of arrest varied considerably across trajectory groups, with 19 to 38 arrests separating the lowest and highest offending groups within each cohort. Similarly, while all groups in Sampson and Laub's and Ezell and Cohen's studies eventually showed signs of desistance, observed offending patterns differed substantially across groups in early adulthood. Some groups reached their peak offending age in late adolescence/early twenties and then declined; others increased their rate of criminal activity throughout their early adulthood years. In addition, both studies had 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. Thus, as Ezell and Cohen (2005) argue, even though previously institutionalized juvenile offenders may “‘stand out’ compared to non-offenders or low-rate offenders in the general population, it does not mean they then ‘stand together’” (p.210) when their offending patterns are examined over time.

Predicting Recidivism Risk

Given the high degree of association found between early and later offending, considerable theoretical and empirical attention has been devoted to identifying factors associated with persistent offending. 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/placement) are frequently used by practitioners when making decisions regarding recidivism risk and have been found to be strong predictors of subsequent offending within samples of known delinquents (Cottle, Lee & Heilbrun, 2001).

Theories endorsing the notion of persistent offenders also anticipate differences in individuals' personal and intellectual functioning. According to Gottfredson and Hirschi (1990), the same difficulties in self-control that lead to higher levels of criminal propensity also predispose individuals toward other problem behaviors, such as alcohol and substance abuse. Low levels of self-control may also lead to performance difficulties in structured environments, resulting in poor school performance and work-related problems. Similarly, Moffitt (1993) argues that life course persistent offenders suffer from a variety of cognitive and neurological impairments early in life, which in turn may lead to poor performance on standardized assessment measures, such as IQ and reading tests. Research examining the links between these types of individual factors and offending lend support to these perspectives, with substance abuse, lower IQ and poor achievement test scores associated with greater recidivism risk (Benda, 2005; Cottle et al., 2001).

Poor parent-child relationships and family dysfunction are also thought to play an influential role in the initiation and maintenance of criminal behavior. In Moffitt's (1993) dual taxonomy theory, poor parenting and criminogenic family environments interact with individual deficits to produce life course persistent offenders. Similarly, Sampson and Laub (2003a) maintain that criminal behavior results when bonds to key social institutions (e.g., family) are weak. Consistent with this perspective, family problems, such as harsh parenting, negative family relations, substance abuse, and criminality have been associated with both the initiation of delinquency and recidivism (Cottle et al., 2001; Farrington, 1995; Farrington & Painter, 2004; Fergusson & Horwood, 2002; Moffit & Caspi, 2001; Tollett & Benda, 1999). In particular, both childhood physical and sexual abuse have been theorized to play a major role in the initiation of female delinquency (Bloom, Own, Rosenbaum, & Deschenes, 2003; Chesney-Lind, 1989) and have been shown to increase the likelihood of female recidivism (Archwamety & Katsiyannis, 1998; Benda, 2005; Cernkovich et al., 2008).

Whether these types of legal history, individual, and family-based risk factors are useful for distinguishing delinquent girls who offend only as juveniles from those who go on to offend in adulthood, however, has not been well explored. With a few notable exceptions (e.g., Archwamety & Katsiyannis, 1998; Benda, 2005; Cernkovich et al., 2008), most risk research has been conducted with predominately male samples. Research examining adolescent to adult offending transitions is also sparse, particularly in female samples. Additional research is therefore needed.

Hypotheses

Given the lack of longitudinal research on delinquent girls, the current study seeks to describe the adult criminal offending patterns of girls released from state juvenile justice facilities and explores the extent to which these adult offending patterns are associated with early legal, individual, and family-based risk factors. First, drawing on previous research, we

anticipate that a large proportion of our sample will eventually transition into the adult criminal justice system. Second, we anticipate that application of trajectory analysis techniques will enhance this descriptive picture, revealing multiple, persistent offending groups that vary in their overall level of criminal involvement and peak offending ages. Third, we expect girls who initiate their criminal careers earlier in life, evidence individual difficulties, and experience family problems to be more vulnerable to adult offending, with family factors, such as abuse and neglect, playing a particularly influential role.

Methods

Study design

The present study capitalizes on an existing research dataset rich in information on early risk factors to identify a large sample of adjudicated delinquent girls placed into juvenile facilities. We then use multiple state administrative databases to prospectively track sample participants' adult involvement with the NYS criminal justice system from arrest through disposition and sentencing. Girls are followed for a 12-year period, beginning at age 16 (when youth are considered to be adults within the NYS criminal justice system) and continuing through their 28th birthday. Girls who remain in juvenile correctional facilities past the age of 16 are tracked from date of community release forward.

Sample

Sample participants were originally identified as part of a three-year criminal recidivism study ordered by the New York State Legislature in 1995 (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 created. Extensive case file reviews were then conducted on a sub-sample of juvenile delinquents (n=2,418; 521 females) committed to one of 14 targeted facilities. To create the sample for the current

study, we selected all 501 delinquent girls with case file reviews who had reached their 28th birthday by the start of data collection. Two participants were subsequently dropped due to excessive missing data, leaving a final sample of 499 delinquent girls.

Consistent with the demographic composition of the larger female discharge cohort from which sample participants were drawn, the racial/ethnic composition of our female sample is as follows: 59% Black Non-Hispanic, 24% White Non-Hispanic, 10% White Hispanic, 3% Black Hispanic, 2% Other Hispanic, and 1% Other Non-Hispanic (e.g., Asian, Native American). Sample participants were serious delinquents who had an average of 3.9 arrests prior to their qualifying period of OCFS commitment. Sixty-four percent had previously been charged with a property crime, and 35% were arrested at least once for a violent felony. Average age at community release was 15.50 years (SD = 1.1).

Measures

Adult Arrest

Official adult arrest records were extracted from the NYS Offender-based Transaction Statistics Computerized Criminal History (OBTS/CCH) database. Maintained by the NYS Division of Criminal Justice Services and updated on a 24-hour basis, the OBTS/CCH system is a live, event-based, database that tracks all NYS-based arrests of individuals age 16 or older from point of arrest through disposition and sentencing. Identified events were coded for both severity (i.e., misdemeanor, felony) and primary charge type (i.e., violent, property, drug, other). Participants were then divided into two groups: *desisters* or those who did not experience an adult arrest between the ages of 16 and 28, and *recidivists*, those who are arrested at least once within this period. Aggregate variables describing each participant's arrest history between the ages of 16 and 28 were also created (e.g., *total arrests*, *total felony arrests*, etc). Finally, to create a series of time-dependent variables conducive to trajectory analysis, twenty-four dichotomous indicators of any criminal arrest

(0=no, 1=yes) were constructed for each 6-month chronological window within the 12-year follow-up period.

Incarceration

Given the high rate of recidivism, and hence potential incapacitation, predicted to occur within our high risk sample, we also collected information on participants' incarceration experiences. Total days spent in a NYS prison was calculated using admission and release records maintained by the NYS Department of Correctional Services. In NYS, sentences of less than a year are served in local jail facilities. As no official state database exists to track entrances and exits from local jails, we used official court sentences recorded within the OBTS/CCH system to determine jail time. *Total days incapacitated* was then calculated by aggregating the prison and jail data. A series of dichotomous indicators (0=no, 1=yes) reflective of girls' incarceration experiences were also created (e.g., *ever incarcerated, ever in NYS prison, ever local jail*).

Mortality

Prior research on incarcerated male samples suggests that serious delinquents may be at increased risk for premature death (Ezell & Cohen, 2005; Lattimore, Linster, & McDonald, 1997). To account for this possibility, participants' identifying information 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. NDI search results indicated that 11 girls (approximately 2% of our sample) died before their 28th birthday. As national death records for 2006 were not yet available at the time of our search request, 48 participants could only be searched through their 27th birthday.

Eligibility

Prior research examining patterns of offending over time suggests that omitting incarceration and mortality information from modeling algorithms may seriously alter

trajectory results, particularly for serious offenders (Eggleston, Laub, Sampson, 2004; Piquero, Blumstein, Brame, Haapanen, Mulvey, & Nagin, 2001). We therefore merge information on participants' age at community release, adult incarceration, and mortality to create a series of eligibility control variables, reflecting the proportion of time each girl was alive and living in the community during each 6-month follow-up window. These variables are then entered as time-varying covariates within our trajectory model.

Legal History

Information on girls' *age at first juvenile arrest* and *age at first placement* into a state-run juvenile facility was obtained from case file reviews (Frederick, 1999). Age at first arrest was not recorded in the case file for 36 cases and was subsequently imputed.

Individual Functioning

Four indicators of individual functioning were derived from electronic case records and prior case file reviews. Assessment scores were missing for 11 to 15% of sample participants and were subsequently imputed using mean replacement techniques, with substituted means based on race and age at facility placement. Assessment age varied slightly across participants, but never exceeded six months across offending groups.

Substance use was measured on a 4-point scale (Cronbach's alpha = .67) using three dichotomous, self-report items reflecting youth's use of alcohol, marijuana, and hard drugs during the 12 months prior to intake. Higher scores indicate use of more substances.

Mental health screen scores (0=no mental health need, 1=significant mental health need) were extracted from youth's electronic records. Screen scores are based on 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). Reliability of the scale could not be determined as only the final screen score, and not the individual assessment items, was available electronically.

Grade equivalent math and reading scores were derived from the Woodcock Johnson achievement test given during the facility stay.

Family Environment

Multiple dichotomous indicators (0=no, 1=yes) of family environment were derived from case file reviews that included copies of girls' probation reports, psychological reports, and home assessments (Frederick, 1999). *Family criminal history* indicates a parent or household member was known or suspected to be involved in criminal activity. *Family substance abuse* indicates the presence of an alcoholic or substance abusing parent or household member. *Negative maternal relationship* was coded when case file materials specifically cited a negative relationship between the participant and her natural or adoptive mother. *Physical abuse* and *sexual abuse* were indicated if case materials reported such mistreatment by a family or household member at any time in the girl's history. *Multiple abuse* seeks to capture the severity of girls' abuse experiences and was set to "yes" when both physical and sexual abuse were noted in the case file.

Finally, *foster care placement* (0=no, 1=yes) between the ages of 12 and 16 was coded using computerized records extracted from the state administrative database used to track foster care movements. As an electronic version of this database did not exist prior to the mid-1980s, only foster care movements after age 12 are reliably available for all participants.

Results

Recidivism Rates

As anticipated, most delinquent girls transitioned into the adult criminal justice system prior to their 28th birthday. Using our dichotomous indicator of recidivism, 19% of girls were classified as Desisters and 81% were classified as Recidivists. Sixty-nine percent of sample participants were convicted as an adult and 34% were incarcerated at least once

during the follow-up period. Among those who recidivated, the average number of adult arrests was 5.95. Additional information on the adult offending characteristics of the recidivating group can be found in the first column of Table 1.

Insert Table 1 about here

Recidivism Risk

Table 2 displays the mean scores for both the Desister and Recidivists groups on each early predictor variable and denotes the contribution of each variable within a multivariate logistic regression analysis conducted to predict adult recidivism. Being Black (AOR= 1.84, CI = 1.07-3.17, $p < .05$) increased the likelihood of adult arrest, while being Hispanic (AOR= .57, CI = .30- 1.09, $p \leq .10$) diminished recidivism risk. Consistent with prior research, being older at first juvenile arrest decreased the likelihood of adult recidivism (AOR= .77, CI= .57- 1.06, $p \leq .10$), though this effect was marginal in the multivariate model. Family criminality also played a role, with girls from households with criminally-involved family members at greater risk for adult offending (AOR= 2.24, CI= 1.34-3.3.76, $p < .01$). Contrary to prior research, girls with sexual abuse histories were less likely than other girls to recidivate (AOR=.43, CI= .20-.93, $p < .05$). However, a significant interaction between childhood physical and sexual abuse also emerged, indicating that experiencing multiple forms of childhood maltreatment significantly increased recidivism risk (AOR= 6.84, CI= 1.51 -31.03, $p < .05$).

Insert Table 2 about here

Trajectory Model Specification

Following procedures recommended by Nagin (2005), we used semi-parametric group-based analysis techniques to identify groups of delinquent girls with similar early adult arrest patterns. Trajectories were modeled in SAS using the two-group logit model, with eligibility entered as a time varying covariate. As displayed in Tables 3 and 4, model estimation procedures support a four-group solution, with eligibility significantly contributing to model estimation procedures. Both the total-observation and sample-dependent Bayesian Information Criterion (BIC) scores improve when moving from a three to four- group solution, and both decline with the change from a four to five- group model. A summary index of model fit, BIC pulls for model parsimony by balancing improvement in model estimation with a penalty for increasing model complexity. Higher BIC scores indicate better model fit. Moreover, using procedures described in Nagin (2005) for comparing models with varying numbers of approximated groups, we see that the probability of the four-group model being correct is approximately 94%.

Insert Tables 3 & 4 about here

Average posterior probabilities for the final four-group model indicate that the model selected adequately classifies sample participants into identified groups. Calculated as part of the model estimation process, posterior probabilities measure the likelihood that a specific individual belongs to a given trajectory group based on her measured behavior within each observation period. As shown in Table 5, the average posterior probability was .80 or higher for each of the four-specified groups, exceeding the .70 minimum per group recommended by Nagin (2005).

Insert Table 5 about here

Model Description

Figure 1 presents the actual and predicted trajectories for each estimated trajectory group. Consistent with prior trajectory research on serious male delinquents, our analyses reveal the presence of an adolescent-limited offending group that never or rarely offends after age 16. This group is considerably larger, however, than our “pure” Desister group, with approximately 32% of sample participants assigned to this “Rare/Non-Offending” path. Despite the occasional adult arrest, 82% of the girls assigned to this group are arrest-free after age 21.

Insert Figure 1 about here

In addition, model results support the presence of multiple, heterogeneous persistent offending groups that differ in overall level of arrest, conviction, and incarceration (see Table 1). The largest trajectory group, representing approximately 53.5% of the sample, is composed of “Low Chronic” offenders, who account for just over half (52%) of the 2409 adult arrests experienced by sample participants. Predicted arrest rates for this group are 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.

Our third group of offenders is characterized by a steadily increasing arrest trajectory and is comprised of approximately 9% of the total sample. Predicted arrest rates for this “Low-Rising” group grow from a low of 13.8% at age 16 to a high of 57% by age 28,

eventually surpassing all other groups. The 45 young women assigned to this group are frequent adult offenders, racking up a total of 589 adult arrests, or 24% of the sample total.

Our fourth and final trajectory group represents a path of “High Chronic” offending. The predicted arrest rate for this group far exceeds that of the other three groups in late adolescence and early twenties, with approximately 40% to 60% of group members experiencing arrest through age 21. Predicted arrest rates slowly decline thereafter, to a low of 26% by age 28. While only a small proportion (5.6 %) of the sample is assigned to this high offending trajectory group, 21% of all observed arrests are linked to group members.

Early Risk Profiles by Trajectory Groups

Mean scores for each of the four trajectory groups on each of our early risk factors are displayed in Table 2. The utility of each factor for predicting group membership is also reported based on a multinomial logistic regression analysis conducted with the Rare/Non-Offending group set as the reference category.

Consistent with the desister/recidivist framework discussed earlier, bivariate multinomial regression analyses (not shown) indicate that race, ethnicity, age at first arrest, and age at first OCFS placement vary significantly across offending groups. The proportion of Blacks steadily increases across the low to high rate offending groups, while the proportion of girls from Hispanic backgrounds is highest in the Rare/Non-Offending trajectory group. Similarly, both age at first arrest and age at first OCFS placement decrease steadily across the trajectory groups, with those in the High Chronic group arrested and taken into custody at significantly younger ages than those in the Rare/Non-Offending and Low Chronic groups. Contrary to our recidivism analysis, however, none of these characteristics is predictive of trajectory group membership in the multivariate model.

Conversely, while none of our individual level risk factors predict recidivism, girls in our two high offending trajectory groups differ from their less frequently offending peers on

indicators of mental health and cognitive performance. Girls in the High Chronic group are significantly less likely than girls in each of the other three groups to be assessed as having a significant mental health need at intake into juvenile facility. Their performance on both standardized reading and math tests is also poor, though these differences do not predict in the multinomial model, due perhaps to the small number of girls assigned to the High Chronic group. In addition, girls assigned to the Low-Rising group have math scores approximately half a grade to a grade lower than those in the Rare/Non Offending and Low Chronic groups.

Finally, consistent with expectations, several differences in family environment emerge in our four-group trajectory model. Again, we see that the Rare/Non-Offending and Low Chronic groups stick together on most indicators of family functioning, while the Low-Rising and High Chronic groups show significantly higher levels of dysfunction. Girls in the Low-Rising group are more likely than their peers to come from homes characterized by family criminality and family substance abuse, and are more likely than both Rare/Non-Offenders and Low Chronics to have experienced multiple forms of child maltreatment. Girls assigned to the High Chronic group also stand out on indicators of childhood victimization and foster care history, with a greater proportion of group members experiencing both sexual and physical abuse and out-of-home placement than girls in either the Rare/Non-Offending or Low Chronic groups.

Joint Estimation of Trajectory Group Membership

Following the three-step procedure for determining the effect of early predictors on trajectory group membership recommended by Nagin (2005), we reran our trajectory analysis including as time-stable covariates each of the six significant predictors discussed above. Math scores, family criminality, family substance abuse, and multiple abuse emerge as significant contributors within the final joint estimation model.

Discussion

Given the dearth of longitudinal research on delinquent girls and current interest in the development of effective female delinquency programming, the present study had two primary objectives: 1) to describe the early adult offending patterns of delinquent girls using both a traditional recidivism framework and trajectory analysis techniques, and 2) to examine the impact of early legal, individual, and family-based risk factors on girls' adult offending. To accomplish these tasks, we used state administrative databases to identify and prospectively track a historically understudied group of delinquent offenders-- girls released from juvenile justice facilities-- and gathered extensive information on their adult arrest, conviction, and incarceration experiences from age 16 to 28. Despite the homogenous nature of our high-risk sample, findings reveal considerable heterogeneity in delinquent girls' early adult offending patterns and suggest that family factors play an influential role in determining girls' adult criminality. Specific findings and their implications for both delinquency programming and future research are discussed below.

Consistent with prior recidivism research (Warren & Rosenbaum, 1986; Benda et al., 2001), the vast majority of delinquent girls included in our previously incarcerated sample migrated into the adult criminal justice system prior to their 28th birthday. In the 12-year period following their release from juvenile facility, 81% were rearrested, 69% were convicted, and 34% were incarcerated as an adult. Trajectory results replicate those found in prior longitudinal studies on delinquent boys (Ezell & Cohen, 2005, Sampson & Laub, 2003a), revealing multiple offending groups with distinct levels and patterns of early adult offending. Observed offending groups include: 1) Rare/Non Offenders, who are never or rarely arrested as young adults; 2) Low Chronics, who make up the bulk of adult offenders, and offend at a modest and gradually decreasing rate; 3) Low-Risers, whose rates of criminal participation are modest in late adolescence but increase sharply throughout early adulthood,

eventually exceeding all other groups; and 4) High Chronics, who offend at high rates into their early twenties and then steadily decrease their level of participation throughout the remainder of the follow-up period.

While both descriptive approaches provide insight into the early adult functioning of our high-risk sample, trajectory results enrich this picture in two notable ways. First, relying upon a single indicator of adult arrest to evaluate girls' adult functioning underestimates the number of girls who go on to lead relatively crime-free lives. Only 19% of the young women in our sample are classified as desisters in our recidivist model. However, when we take into account girls' functioning over the entire 12-year follow up period, we see that a much larger proportion of the young women followed are "successful", with 32% classified as Rare/Non-Offending adults. Eighty-two percent of the girls assigned to this group are arrest-free from age 21 on, suggesting that a sizeable proportion of even the most serious delinquent girls will desist from criminal activity by early adulthood. This proportion of Rare/Non-Offenders is considerably higher than the 10% or so observed in studies of previously incarcerated boys (Ezell & Cohen, 2005; Sampson & Laub, 2003a), suggesting that seriously delinquent girls may be less prone to persistent adult offending paths.

Second, findings lend credence to Ezell and Cohen's (2005) assertion that it would be unwise to view formerly incarcerated delinquents as a homogenous group. While approximately half of our delinquent girls are classified as Low Chronic Offenders and have an offending profile that closely resembles that of our generic Recidivist, trajectory findings reveal two distinct sub-groups of persistent offenders whose behavior is more problematic. Although girls assigned to the Low-Rising and High Chronic offending groups comprise only 14% of our delinquent sample, they are responsible for 45% of all adult arrests recorded during the follow-up period. Group members are arrested between 13 to 18 times on average, compared to the 5.95 arrests attributed to the average recidivist, and are convicted and

incarcerated at substantially higher rates. The fact that a small proportion of offenders are responsible for a large proportion of observed crimes mirrors findings found in birth cohort studies (e.g., Farrington, 1995; Piquero, 2000), and suggests that efforts to identify and target factors associated with membership in either high offending group may help to substantially reduce the societal costs of female delinquency.

In keeping with this goal, examination of girls' early risk profiles by both our recidivist and trajectory group categories suggests that juvenile factors, particularly those related to family functioning, may be useful for identifying those girls most vulnerable to high levels of early adult offending. According to strain theory, interpersonal relationships and the maintenance of close personal ties are particularly important to women, making impaired or abusive relationships a major source of strain, and thus criminality, for females (Broidy & Agnew, 1997). Consistent with this perspective and recent empirical investigations (e.g., Alarid, Burton, & Cullen, 2000; Bloom et al., 2003; Farrington & Painter, 2004) tying girls' offending behavior to family functioning, family factors emerge as strong predictors of girls' adult recidivism in both our multivariate models, diminishing or eliminating the contribution of other traditionally potent predictors of recidivism risk (e.g., age at first arrest). In particular, multiple family-related differences emerge across trajectory groups. Girls in the Low-Rising group experience higher rates of family criminality and substance abuse than girls in any other offending group, while girls in the High Chronic group are more likely to experience foster care.

Moreover, findings lend support to a growing empirical literature linking child maltreatment experiences to adult antisocial behavior, even among known offenders (Archwamety & Katsiyannis, 1998; Benda, 2005; Cernkovich et al., 2008). In their follow-up study of formerly incarcerated delinquent girls, Cernkovich and colleagues (2008) found both childhood sexual and physical abuse substantially increased the risk of self-reported adult

offending even when prior levels of juvenile delinquency were controlled. Although a history of sexual abuse or physical abuse alone did not increase girls' recidivism risk in the current study (due perhaps to the high rate of maltreatment found within our high-risk sample), the proportion of girls who experienced both forms of child maltreatment was significantly higher in both the Low-Rising and High Chronic trajectory groups.

Given the association between child maltreatment, family dysfunction, and later offending found here and in other studies, we recommend that programs serving delinquent girls adopt a therapeutic, trauma-sensitive, and family-centered approach to service delivery. Intake assessments should screen for indicators of child maltreatment and its severity, gather information on girls' family relationships, and assess the risk status of key family/household members. Similarly, intervention programs should incorporate treatment modalities specifically designed to address trauma, the family system, and caregivers' maladaptive behaviors (e.g., substance abuse, crime).

Findings also suggest several avenues for future research. While available risk factors shed some light on the forces that promote high levels of adult offending, we know little about the forces that promote desistence. With the exception of family criminality, none of our early risk factors reliably distinguishes those who never or rarely offend in early adulthood from those who continue to offend at a low, but chronic rate. Similarly, early family dysfunction is common among members of both the Low Rising and High Chronic trajectory groups. Yet, girls assigned to the Low Rising path have modest criminal participation rates in adolescence that escalate rapidly, while girls in the High Chronic group manifest the opposite pattern. Thus, our intake assessment factors appear to do a better job of distinguishing between high and low levels of reoffending, rather than the actual act of reoffending, or changes in offending patterns over time. We therefore recommend that future research examine the impact of concurrent factors, particularly family and interpersonal

relationships, on delinquent girls' early adult offending. While our data set is rich in early predictors and estimates of criminal eligibility, we lack information on girls' family and social bonds, employment, and service utilization and after release from juvenile justice facilities. Such information has proven crucial to the understanding of intra-individual change in criminal behavior in longitudinal studies of male delinquents (Sampson & Laub, 1990, 2003a, 2003b) and would likely further our understanding of the forces that inhibit, sustain, and promote later female offending.

Finally, while we believe our findings to provide valuable insights into the long-term functioning of delinquent girls and the risk factors associated with adult offending, several limitations of our work are worth noting. First, our trajectories are based upon a single cohort of girls formerly placed in juvenile facilities and may therefore not be generalizable to other time periods or less serious samples of delinquent girls. Second, although we were able to gather extensive information on girls' adult offending and incapacitation, our data collection was limited to arrests and incarcerations that occurred within NYS. Thus, it is possible that we have underestimated the adult offending behavior of some participants. Third, our selection of early predictors, while varied and conceptually relevant, was limited to single point in time assessments and included many dichotomous items, potentially reducing our ability to detect differences within our relatively homogeneous sample.

Despite these limitations, we believe the present findings constitute a valuable contribution to the growing body of literature addressing female delinquency. Findings suggest that while most formerly incarcerated delinquent girls make the transition into the adult criminal justice system, their patterns of adult offending vary considerably in both timing and level. Findings also highlight the importance of family relationships, particularly early maltreatment experiences, to the continuation of girls' offending behavior.

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Table 1 *Mean score on early adult criminal outcomes by adult offending groups*

| Characteristics | <u>Recidivists</u> | | <u>Trajectory group</u> | | |
|-----------------------|--------------------|-------------------------------|-------------------------|----------------------|------------------------|
| | (N=405) | Rare/Non-Offending (N=159) | Low Chronic (N=267) | Low-Rising (N=45) | High Chronic (N=28) |
| Total arrests | 5.95 | 0.45 | 4.65 | 13.09 | 18.07 |
| Violent arrests | 1.55 | 0.18 | 1.44 | 3.00 | 2.89 |
| Property arrests | 2.21 | 0.13 | 1.81 | 4.13 | 7.39 |
| Drug arrests | 1.22 | 0.06 | 0.75 | 3.71 | 4.21 |
| Other arrests | 0.95 | 0.09 | 0.64 | 2.18 | 3.57 |
| Felony arrests | 1.73 | 0.19 | 1.78 | 4.20 | 5.79 |
| Number of convictions | 3.41 | 0.21 | 2.49 | 7.96 | 11.54 |
| Ever Incarcerated | 0.40 | 0.03 | 0.38 | 0.69 | 0.96 |
| Ever NYS prison | 0.15 | 0.01 | 0.13 | 0.20 | 0.57 |
| Ever local jail | 0.35 | 0.01 | 0.31 | 0.67 | 0.93 |

Table 2 Mean score on early risk indicators by adult offending group

| Characteristics | Recidivism Group | | | Trajectory Group | | | | Sig. ^a |
|--|---------------------|------------------------|------|-----------------------------------|------------------------|--------------------------|------------------------|-------------------|
| | Desisters (N=94) | Recidivists (N=405) | Sig. | Rare/Non- Offending (N=159) | Low Chronic (N=267) | Low- Rising (N=45) | High Chronic (N=28) | |
| Demographics | | | | | | | | |
| Black | 0.46 | 0.66 | * | 0.53 | 0.65 | 0.69 | 0.79 | |
| Hispanic | 0.26 | 0.14 | † | 0.23 | 0.12 | 0.13 | 0.11 | |
| Legal History | | | | | | | | |
| Age at 1 st juvenile arrest | 14.30 | 13.94 | † | 14.16 | 14.04 | 13.75 | 13.25 | |
| Age at 1 st OCFS placement | 14.95 | 14.80 | | 14.90 | 14.86 | 14.60 | 14.46 | |
| Individual Functioning | | | | | | | | |
| Substance use history | 1.04 | 1.08 | | 1.05 | 1.06 | 1.24 | 1.07 | |
| Significant mental health need | 0.45 | 0.39 | | 0.40 | 0.40 | 0.49 | 0.21 ^b | * |
| WJ reading scores | 8.06 | 7.93 | | 8.06 | 8.01 | 8.00 | 6.68 | |
| WJ math scores | 7.63 | 7.49 | | 7.54 | 7.69 | 6.89 ^b | 6.69 | * |

Family Environment

| | | | | | | | | |
|--------------------------------|------|------|----|------|-------------------|-------------------|-------------------|---|
| Family criminal history | 0.37 | 0.58 | ** | 0.43 | 0.57 ^b | 0.73 ^b | 0.57 | * |
| Family substance abuse | 0.66 | 0.70 | | 0.63 | 0.69 | 0.91 ^b | 0.71 | † |
| Negative maternal relationship | 0.47 | 0.52 | | 0.53 | 0.47 | 0.64 | 0.46 | |
| History of sexual abuse | 0.18 | 0.17 | * | 0.14 | 0.15 | 0.29 | 0.32 | |
| History of physical abuse | 0.23 | 0.30 | | 0.26 | 0.27 | 0.42 | 0.39 | |
| Multiple abuse | 0.03 | 0.10 | ** | 0.05 | 0.06 | 0.24 ^b | 0.25 ^b | * |
| Foster care | 0.41 | 0.51 | | 0.42 | 0.50 | 0.62 | 0.68 ^b | † |

Model Goodness-of-Fit

| | | |
|------------------|---------|---------|
| -2log likelihood | 438.365 | 974.892 |
|------------------|---------|---------|

Notes. a: Global effect on the four trajectory groups using log-likelihood ratio test.

b: Significantly different from the Rare/Non offending group ($p \leq .05$).

† $p \leq .10$, * $p \leq .05$, ** $p \leq .01$

Table 3 *Trajectory model diagnostics*

| Number of groups | <u>BIC</u> | | <u>Probability correct model</u> | |
|------------------|-------------------|-----------------|----------------------------------|------|
| | BIC1 (N=12024) | 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 4 *Final trajectory model*

| | Coefficient Estimate | Standard Error | T-statistic |
|---------------------------|----------------------|----------------|-------------|
| <i>Rare/Non Offending</i> | | | |
| Intercept | -7.102† | 3.922 | -1.811 |
| Eligibility Covariate | 3.426 | 3.889 | 0.881 |
| <i>Low-Chronic</i> | | | |
| 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 |
| <i>Low-Rising</i> | | | |
| Intercept | -0.685* | 0.286 | -2.399 |
| Linear | 1.837** | 0.331 | 5.559 |
| Eligibility Covariate | -0.070 | 0.350 | -0.200 |
| <i>High-Chronic</i> | | | |
| 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 |

Notes: BIC=-4621.74 (N=499)

†p<.10, * p<.05, **p<.01

Table 5 *Average posterior probability by trajectory group*

| Groups | Number assigned | Percentage of total sample | Average posterior probability | Range |
|--------------------|-----------------|----------------------------|-------------------------------|-----------|
| Rare/Non Offenders | 159 | 32% | 0.82 | 0.58-0.94 |
| Low Chronics | 267 | 54% | 0.88 | 0.51-1.00 |
| Low-Rising | 45 | 9% | 0.80 | 0.52-1.00 |
| High Chronics | 28 | 6% | 0.88 | 0.57-1.00 |

Fig.1 Adult rearrest trajectory for former female juvenile delinquents (age 16-28)

