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Crime during the Transition to Adulthood

How Youth Fare as They Leave Out-of-Home Care

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Acknowledgments

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Introduction

While the transition to adulthood has arguably become a more ambiguous and complex period for all youth (Furstenberg, Rumbaut, and Settersten, 2005), it may be particularly difficult for youth aging out of the child welfare system. Many youth placed under the care of the child welfare system have grown up in high risk families and neighborhoods. They enter adulthood with low educational status, little employment experience, mental health problems, high rates of homelessness, and limited social and financial resources (Collins, 2001). On top of these disadvantages, the transition to adulthood may be more abrupt for foster youth than for youth more generally. Whereas many young people move gradually toward independent adulthood, while continuing to rely on the support and guidance of families, foster youth "aging out"[1] of care lose the support of the child welfare system that has assumed the role of parent or guardian when they reach a particular age of majority. Although formal independent living services exist to help youth formerly in out-of-home[2] care move into adulthood, these youth are often on their own when making the transition (Courtney and Hughes-Heuring, 2005).

In making the transition, youth in out-of-home care may be particularly at risk for engagement in crime or involvement with the criminal justice system (see Barth, 1990;

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[1] Aging out refers to the process of being discharged from the child welfare system due to age ineligibility rather than being discharged due to adoption or reunification with one's family of origin.

[2] We use the term "out-of-home care" to describe all youth placed under the supervision of the child welfare system for reasons of abuse or neglect rather than delinquent behavior. This includes youth placed in relative (kinship care) and non-relative foster homes, group homes/residential treatment facilities, adoptive placements, and independent living arrangements.

Courtney et al., 2001; Cusick and Courtney, 2007; Jones and Moses, 1984; Zimmerman, 1982). Yet not all former foster youth end up in trouble. Many follow pathways into adulthood marked by more success than failure (Hines, Merdinger, and Wyatt, 2005). However, very little is known about the factors associated with adaptive functioning, and avoidance of criminal behavior or criminal justice contact in particular, of former foster youth.

In this study, we examine criminal behavior and criminal justice system involvement among youth making the transition from out-of-home care to independent adulthood. We consider the importance of earlier experiences with maltreatment and within the child welfare system on criminal behavior during the transition to adulthood. In addition, we examine whether social bonds predict criminal behavior and the risk for criminal justice involvement among former foster youth.

The results of this research are intended to provide a theoretically and empirically driven basis for future efforts at reducing negative outcomes for youth formerly in out-of-home care as they become adults and for preventing crime among a particularly high risk population that has received limited attention by criminal justice researchers.

Review of Relevant Literature

The Impact of Maltreatment and Child Welfare Experiences on Offending

The link between childhood experiences of maltreatment and later delinquency represents an area of growing interest among researchers and child welfare practitioners. Although heavily debated due to methodological issues, studies generally show a positive

association between maltreatment, including physical abuse and neglect, and crime (McCord, 1983; Widom, 1989; Smith and Thornberry, 1995; Maxfield and Widom, 1996). While such research examines the link between the childhood experiences of maltreatment, which if detected may lead to involvement with the child welfare system, and later crime, few studies look at experiences *within* the system that may influence offending. Youth who are placed in out-of-home care are exposed to a system of services that impact behavior. There is, however, considerable variation across individuals in the duration, number, and type of placements they experience (Courtney and Wong, 1996; Wulczyn, Kogan, and Harden, 2003). For example, the length of stay in out-of-home care across all children who exited care in 2001 varied from less than 1 month (19 percent) to greater than 5 years (9 percent), with a median duration of 12 months (U.S. Department of Health and Human Services, 2003). Of the 542,000 children in out-of-home care in 2001, 48 percent were in non-relative foster family homes, 24 percent were in relative family homes, 18 percent were in group homes or institutions, 4 percent were in pre-adoptive homes, and 6 percent were in other placement types (U.S. Department of Health and Human Services, 2003).[3]

It is in relation to varying placement experiences such as these that a small number of child welfare researchers have examined the role of youths' placement experiences on offending behaviors. An early study by Runyan and Gould (1985) found that number of foster home placements was positively correlated with criminal behavior

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[3] These figures are based on all children in foster care in 2001, and therefore, these figures may differ from our sample based on differences in age distribution. The median age at entry and exit of all foster youth in 2001 was 8.7 and 10.2, respectively. We expect that placement experiences of our sample, containing only youth between the ages of 17-21, will differ from the total population of foster children. For example, older foster children are much less likely to live in a foster family setting than younger children (see Wertheimer, 2002).

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among youth aged 11 to 18 at a bivariate level. The authors attribute this relationship, however, to earlier behavior problems; children were removed from homes, and therefore experienced additional placements due to their behavior problems. Widom (1991) suggests a similar pattern. More specifically, she found that children with a lower number of placements and for whom the first placement was longer than ten years had the lowest rates of delinquency and adult criminality. Similarly, Jonson-Reid and Barth (2000) found that children with multiple placements had a higher risk of incarceration during adolescence.

By viewing offending among former foster youth through a life course perspective (Elder, 1985), we recognize that the path one takes during the transition adulthood is largely dependent on earlier life events. For youth leaving out-of-home care, behavior during the transition may be partially explained by earlier experiences of abuse or neglect as well as unstable or negative experiences within the child welfare system. It may be that these negative experiences decrease child well being and result in greater behavior problems among youth. It may also be that instability or placement in a group home setting is an indicator of a difficult case; a youth already showing significant problem behavior, a parent, caregiver, or household environment with problems, or both.

Independent Living Services

In addition to experiences with out-of-home care placements, specific services provided by the child welfare system to assist in the transition to adulthood may be important for later behavior. In response to the needs of youth once they leave care, the federal government has, since 1986, provided funding for independent living programs intended to assist in the transition to adulthood. In 1985, the Independent Living

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Initiative (Public Law 99-272), under title IV-E of the Social Security Act, provided states federal funds to help youth develop the skills needed to live independently after leaving care. In 1993, funding for the Independent Living Program (ILP) was reauthorized (Public Law 103-66), which allowed for longer-term planning of state programs. Services included outreach programs to attract eligible youth, training in daily living skills, education and employment assistance, counseling, case management, and a written transitional independent living plan. As an amendment to Title IV-E, The Foster Care Independence Act (FCIA) of 1999 (Public Law 106-169) doubled federal funding to $140 million per year and provides states greater flexibility in the use of these funds, extends age restrictions, and provides funding for education and training vouchers.

Despite these legislative efforts, the number of youth who actually benefit from independent living services as they transition to adulthood is unknown. A report by the United States General Accounting Office (GAO) found that only about 60 percent of all eligible youth received some type of independent living service in 1998 (GAO, 1999). Moreover, the efficacy of independent living services is, as of yet, uncertain. Although Collins (2001) suggests that there is empirical evidence that youth who receive independent living services have greater success transitioning to adulthood, she cautions that the sparse and methodologically flawed state of research precludes a definitive statement of service usefulness. No study to date has examined how variation in receipt of independent living services affects criminal behavior during early adulthood.

Race, Placement, and Crime

A neglected aspect in research noted above on the link between out-of-home care experiences and delinquency or crime is racial disparity. Studies of delinquency show

that African American youth have higher rates of both official and self-reported offending than Caucasian youth (Elliot and Ageton, 1980; Hawkins et al., 2000), particularly for serious violent behaviors (McNulty and Bellair, 2003). In addition to higher rates of criminal behavior, African American children are disproportionately represented within the child welfare system (Shyne and Schroeder, 1978; Stehno, 1982; Lu et al., 2004). A recent volume of works on the overrepresentation of African American children in the child welfare system reports that although African American children comprised 15 percent of the U.S. child population in 1999, they constituted 45 percent of the children in out-of-home care. Conversely, white children, who comprised 60 percent of the child population, accounted for only 36 percent of children in out-of-home care (Derezotes, Poertner and Testa, 2004).

Of those children requiring out-of-home care, experiences within the system also differ by race. In an extensive review of the literature, Courtney et al (1996) found that African American children received fewer services from the child welfare system and experienced poorer case outcomes, including longer stays in care, greater reentry rates, less placement stability, and lower adoption rates. Moreover youth who are placed in kinship care, an arrangement that is predominantly composed of African American youth (Testa, 1997), typically remain separated from their parents, and linger in the child welfare system longer than those who are not placed with kin.

Although African American youth are both more likely to engage in criminal behaviors and to have more negative experiences within the child welfare system, few studies to date have examined how the potential variation in specific placement experiences by race is, or is not may, related to crime during the transition to adulthood.

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Given the disparities between the experiences of African Americans and other groups in the child welfare system, it is important to consider the possibility that placement experiences may differentially influence later criminal behavior and justice system involvement of these groups.

The Importance of Social Bonds at the Transition to Adulthood

Drawing on the literature noted above, we recognize that experiences, both from being abused or neglected and from involvement with the child welfare system, are unique to youth placed in out-of-home care and variation in these experiences may predict later offending. Yet, maltreatment histories and foster care experiences alone likely do not explain why some former foster youth engage in criminal behavior into adulthood while others do not. To more fully understand offending within this population, we turn to what is known to set youth toward a successful transition to adulthood and to avoid engagement in crime more specifically.

Although there are many pathways into adulthood (Maow, 2005; Osgood, Ruth Eccles, Jacobs, and Barber, 2005; Shanahan, 2000) successfully navigating the transition is largely a function of the support, guidance, and resources offered by families. More so than in a previous generation, transitioning to adulthood now requires parental assistance (Furstenberg, Rumbaut, and Settersten, 2005). Young people rely on their families for a range of emotional and tangible support (Schoeni and Ross, 2005). Young people may also receive a "patchwork of institutional support as they leave adolescence" (Furstenberg, Rumbaut, and Settersten, 2005, p. 20). Education and employment institutions are two common institutions. Completing high school and pursuing a college education increase employment opportunities in adulthood. Similarly, employment

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opportunities nurture the development of work related skills and set the stage for future responsibilities and careers as adults.

Social bond theory (Hirschi, 1969) suggests that attachments to adults and commitment to and involvement with conventional social institutions reduce crime and delinquency by acting as agents of informal social control (Sampson and Laub, 1990). Bonds to parents or school discourage delinquency during adolescence (Cernkovich and Giordano, 1992; Felson and Staff, 2006; Hirshi, 1969; Sampson and Laub, 1993) while bonds to spouses and jobs discourage offending during adulthood (Horney et al.,1995; Laub et al., 1998; Sampson and Laub, 1993). Attachment and commitment to and involvement with families and educational or employment institutions are in many ways the building blocks to a successful transition to adulthood because they facilitate the exploration and gradual movement toward independence that has increasingly come to define the transition to adulthood. However, they also may play a role in discouraging negative behavior more specifically.

Here we review detail the many social bonds that may be related to crime, with a focus on the notion that establishing these bonds at the transition to adulthood may be particularly difficult for foster youth.

Parents and Caregivers
By being placed in out-of-home care, foster youth all have had disrupted family relationships, which could lead to weaker social bonds to families during the transition to adulthood. In spite of this, many former foster youth report have ongoing contact with their families of origin, including parents (Barth, 1990; Cook et al., 1991; Courtney et al., 2001; Courtney and Dworsky, 2006; Festinger, 1983; Frost and Jurich, 1983; Harai, 1980; Jones and Moses, 1984; Zimmerman, 1992). However, compared to a general

population, foster youth are less likely to report being close to parents (Perry, 2006). A recent study of foster youth found that only 52 percent reported being somewhat or very close to mothers and only 28 percent reported being somewhat or very close to fathers during the transition to adulthood (Courtney et al., 2001).

For youth placed in out-of-home care, a parent can include individuals beyond biological parents. Foster parents, a group home worker, or even the larger child welfare system that has legally assumed guardianship may play an important role for foster youth. Yet, as with biological parents, not all youth feel attached to these parental figures. Former foster youth generally report feeling satisfied with their experiences in foster care (Chapman, Wall, and Barth, 2004; Courtney et al., 2001; Courtney and Dworsky, 2006) and some report close relationships with foster parents or other caregivers. In this study, we examine attachment not only to biological parents, but also this range of individuals that play a parental role to foster youth.

Education and Employment

Education and work are also central to the lives of young people during the transition to adulthood. Although changes in federal legislation increased the funding provided for education and training opportunities for former foster youth making the transition to adulthood[4], studies suggest that many former foster youth are disconnected

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[4] The Education and Training Voucher (ETV) Program resulted from the passage of child welfare legislation which provided states with greater funding and flexibility to assist youth during the transition to adulthood. The Foster Care Independence Act of 1999 (Public Law 106-169), which established the John H. Chafee Foster Care Independence Program, doubled the funding provided to states for concrete living needs, such as housing, and extended that age youth can remain in foster care from 18 to 21 years (Kessler, 2004; Massinga and Pecora, 2004). The Promoting Safe and Stable Families Amendment of 2001 provided the federal dollars for Education and Training Vouchers (ETV).

from educational and employment pursuits. Studies show that individuals formerly placed in out-of-home care have fewer years of education and many foster youth do not graduate from high school (Barth, 1990; Cook et al., 1991; Courtney et al., 2001; Courtney and Dworsky, 2007; Festinger, 1983; Frost and Jurich, 1983; Jones and Moses, 1984; Zimmerman, 1992). A study by Courtney et al. (2001) found that 37 percent of former foster youth had not completed high school or obtained a GED, and only 9 percent had taken any college courses within 12 to 18 months of discharge from care. Unemployment rates are higher among former foster youth than the general population of young people (Cook et al., 1991; Goerge et al., 2001; Jones and Moses, 1984; Zimmerman, 1982) and having serious financial trouble during the transition to adulthood is common among this population (Dworsky, 2005).

Contributions of the Current Study

Of course, not all former foster youth have weak bonds to parents or educational and employment institutions. Some have ongoing, close relationships with biological or foster families, attend college, and obtain full-time, stable employment as they leave the child welfare system and enter adulthood. The focus of this study is to examine which factors, above and beyond maltreatment and out-of-home care placement experiences are predictive of criminal behavior and criminal justice involvement among these young people.

This study contributes to the knowledge base on crime among foster youth transitioning to adulthood in a number of ways. The first concerns our study design and data sources. We use data from largest longitudinal study of young people aging out of foster care and transitioning to adulthood since the passage of the John Chafee Foster

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Care Independence Act in 1999. The use of both official and self-reported data allows us to examine behaviors that may not come to the attention of authorities as well as those which elicit legal action. The use of both data sources also allows us to examine offending for the full sample, including those leaving the study over time. Although relevant recent work (see Ryan, Testa, and Zhai, 2008) examines crime among male foster youth only, our study includes both males and females. We feel this is another important contribution of our study as all too often crime among females and, in particular among female foster youth, is given less attention because it is less common, although no less troubling, than among males.

Second, out study expands on prior research that has examined the link between experiences with the child welfare system and outcomes. For example, previous studies have examined the relationship between placement instability and offending (see Runyan and Gould, 1985; Jonson-Reid and Barth, 2000; Ryan, Testa, and Zhai, 2008). Yet these studies focused on outcomes during childhood and adolescence rather than during the transition to adulthood, as is the focus of our study. In addition, our study is the first to examine the link between receipt of independent living services from the child welfare system and criminal behavior.

Third, our study contributes substantively to the growing body of research on both social bonds and crime during the transition to adulthood more generally and social bonds and crime among foster youth more specifically. Although studies have examined the effect of social bonds on crime during the transition to adulthood (Piquero, Brame, Mazerolle, and Haapanen, 2002), the focus has tended to be on job stability and marriage in the mid- to-late 20's and early 30's rather than factors that may be more salient in the

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very early transition years. Less is known about the influence of bonds to families, particularly parents or caregivers, education, and early employment, on crime as one prepares for the transition to adulthood. In addition, although recent work has examined the relationship between social bonds and crime among foster youth (see Ryan, Testa, and Zhai, 2008), such work is limited by focusing on adolescence rather than the transition to adulthood and considers only bonds to foster caregivers rather than to biological parents.

Research Questions

1) Are offending patterns during the early transition to adulthood (ages 17-22) among youth formerly in out-of-home care different from those of the general population?

Before examining what predicts variations in criminal behavior or criminal justice involvement, we first identify whether offending patterns during the early transition to adulthood among foster youth are the same or differ from those seen in the general population. The early transition to adulthood marks an important stage in the life course to examine offending patterns as it is during this period from the end of high school through the early twenties that offending, on average, declines. Data show that offending increases during adolescence, reaches a peak around age 16 (for property offenses) and 18 (for violent offenses) and then declines thereafter (Hirschi and Gottfredson, 1983; Farrington, 1986). We examine whether foster youth display this same general pattern.

2) Do experiences in out-of-home care, including number of placements, placement type, age at entry, and receipt of independent living services predict later criminal

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behavior or criminal justice involvement during the transition to adulthood among youth aging out of the child welfare system? Is the relationship between out-of-home care experiences and crime moderated by race?

The limited body of prior literature on the relationship between placement experiences and criminal behavior suggests that youth who experience more "negative" placements are those who are more likely to offend. Similarly, it has been hypothesized, but never examined, that youth who receive aid from the child welfare system in making the transition to adulthood will have fewer negative outcomes. It could be that the relationship between out-of-home care experiences and subsequent offending is spurious, and that both are influenced by already existing problem behaviors. Those youth who exhibit problem behaviors may be moved into and out of placements, placed in group homes, have strained relationships with caregivers, and not receive the support of the child welfare system. Controlling for prior delinquency as well as background individual and family demographic factors and maltreatment history, we examine how foster care experiences are related to criminal behavior during the transition to adulthood.

In addition, we examine whether the relationship between placement experiences and criminal behavior varies by race. As noted earlier, African American youth have different experiences in out-of-home care than youth of other races. Negative effects of placement experiences may be greater among African American youth. Therefore, we test for statistical interactions between placement experiences and race.

3) Above and beyond prior experiences with maltreatment and within the child welfare system, do the bonds to parents or caregivers, education, or employment

that foster youth have as they approach the transition to adulthood predict later criminal behavior or criminal justice involvement?

With this final research question, we examine whether social bonds that youth have as they approach the transition to adulthood predict criminal behavior or criminal justice involvement during the transition. Because our focus is on the early part of the transition, we examine social bonds that we hypothesize may be most important at this point in the life stage. In particular, we examine bonds to parents or caregivers, school, work, and the child welfare system, while controlling for earlier experiences with maltreatment and out-of-home care, background risk factors, and demographic characteristics.

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Methods

Data and Sample

Data for this project come from The Midwest Study of the Adult Functioning of Former Foster Youth, which is a longitudinal panel study that is part of a collaborative effort of the state public child welfare agencies in Illinois, Iowa, and Wisconsin, Chapin Hall at the University of Chicago, and the University of Washington. The larger purpose of the Midwest Study is to gather information about services provided to selected youth served in participating states and the adult self-sufficiency outcomes achieved by the youth. The participating states fund and/or operate the full range of services supported by the Chafee Foster Care Independence Program (e.g., life skills training, mentoring, tutoring, employment services, transitional housing), but these services vary considerably in availability between and within the states. In addition, the policy regimes differ across the three states in ways that affect the supports available to youth who age out of care. For example, at the time of this study, youth in Illinois were legally permitted to remain in care until age 21, while youth in Iowa and Wisconsin remained in care until approximately age 18.

Youth from the three states who met the following basic criteria were eligible for inclusion in the original sample: (1) they reached the age of 17 years old while in out-of-home care, (2) they had been in care for at least one year prior to their 17th birthday, and 3) they were placed in out-of-home care for reasons of abuse or neglect rather than delinquency. In the states of Iowa and Wisconsin, the sample reflects the universe of

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youth in out-of-home care who fit these criteria. In Illinois, a random sample of youth

were selected, who represent two-thirds of those youth in out-of-home care that fit the

sampling criteria. A group of 767 youths who met the sample selection criteria was

identified.

Survey data were collected directly from the youth in the sample over three

waves. Respondents participated in in-person interviews that were approximately ninety

minutes long. The interview schedule was made up almost entirely of fixed response

questions. During the first wave of interviews, conducted between May 2002 and March

2003, 732 interviews were completed, for a response rate of approximately 95 percent.

Youth were between the ages of 17 and 18 when they were first interviewed. The second

interview took place in March through December 2004, between respondents'19th and

20th birthdays. At Wave 2, 603 youth were located, for a follow-up response rate of 83

percent. The third wave of interviews, conducted between March 2006 and January

2007, took place as soon as possible after their 21st birthday. At Wave 3, 590 of the

original sample took part, for a response rate of 81 percent.

To supplement the survey data, we accessed official arrest[5] data from each state

for this study. Youth were matched to arrest records based on identifying information

such as name, date of birth, social security number, gender, and race. In each of the three

state databases, we included all criminal arrests that occurred between respondents' Wave

1 interview and August 31, 2007, by which time all of the study participants were at least

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[5] We note that only data on arrests are used in this study; not all arrests result in a conviction.

21 years old.[6] Official arrest information was obtained for 728 of the original 732

sample.[7]

Survey Instruments

A main source of information for this research comes from survey data collected

over three waves. As will be discussed further, independent variables examined in this

study come largely from the Wave 1 interview. The survey instrument at Wave 1

targeted a number of areas that prior research suggests might be related to later offending

for this population, including: family background, experiences prior to and during out-of-

home care, maltreatment history, health status, mental health status, delinquency,

substance abuse and other high risk behaviors, teen parenthood, receipt of independent

living services, and social support systems. In developing the survey, emphasis was

placed on using standardized measures that have been employed in other large-scale

studies of youth (e.g., the National Longitudinal Study of Adolescent Health). Questions

about respondents' experiences in out-of-home care including ongoing relations with

foster care providers and the youth's family of origin were taken from Dr. Courtney's

earlier study in Wisconsin. Questions about independent living services were based on

the range of potential services identified by the Service Standards and Outcome Measures

Workgroup appointed by the U.S. Children's Bureau to help create implementation

regulations for the John Chafee Foster Care Independence Program. Hence, these

questions reflect current practice in the field.

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[6] We chose August 31, 2007 as the end of the study period in order to maximize the amount of time post-wave 1 interview in which to measure arrests that were available in the data.

[7] Four respondents did not provide permission to access administrative records.

Analytic Methods

To answer our research questions, we used a combination of statistical methods, including bivariate and multivariate approaches. To address the first research question, we first compared the prevalence of offending across a range of criminal behaviors from our sample at ages 17-18, when offending should be at it's peak, through ages 19 and 21, when offending should be declining, to those from the Add Health study[8]. We also compared self reported arrest rates of our sample to the national sample. We also examined changes in offending within our sample of foster youth that participated in all three interviews and responded to questions about criminal behavior (n=438). T-tests for differences in proportions are used to compare foster youth to the Add Health sample and within the Midwest Study sample over time. We next identified groups of foster youth who appear on different offending or desisting paths as they enter adulthood. Previous research has identified categories of offenders (Moffitt, 1993; Chung et al., 2002) and developed methods to predict different offending trajectories (see Nagin and Land, 1993; Nagin and Trenblay, 1999; Bushway et al., 2001). Based on the notion that there are different categories of offenders, we conducted a latent class analysis to determine whether our sample of foster youth consist of distinct classes of offenders during the early transition to adulthood. These descriptive analyses are helpful in providing a picture of the overall pattern of offending during the early transition to adulthood for

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[8] This research uses data from Add Health, a program project designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris, and funded by a grant P01-HD31921 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, with cooperative funding from 17 other agencies. Special acknowledgment is due Ronald R. Rindfuss and Barbara Entwisle for assistance in the original design. Persons interested in obtaining data files from Add Health should contact Add Health, Carolina Population Center, 123 W. Franklin Street, Chapel Hill, NC 27516-2524 (addhealth@unc.edu). No direct support was received from grant P01-HD31921 for this analysis.

former foster youth, as well as identifying the proportion of the sample that appear to be continuing or desisting from crime.

To address the second and third research questions, we used two multivariate approaches, First, we estimated a series of Poisson and negative binomial regression models to examine Wave 1 predictors of self-reported criminal behavior (violent and non-violent) at age 21 (Wave 3). We conducted Poisson and negative binomial regression analyses because the dependent variables for criminal behavior, described below, had a large number of zero (no criminal behavior) values and a positive skew. However, rather than use a logistic regression which would treat all levels of offending the same (no criminal behavior vs. any criminal behavior), the Poisson and negative binomial analyses allow us to model variation among "high" and "low" offenders. When the deviance statistic for a Poisson model indicated over dispersion (when the true variance is bigger than the mean), the negative binomial model was favored. We controlled for background risk factors and demographic characteristics and tested for statistical interactions between race and placement experiences. Our sample included 504 youth who responded to questions about criminal behavior during the Wave 3 interview. [9]

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[9] Of those 590 youth interviewed at Wave 3, 86 youth refused or did not respond to the questions on criminal behavior. Because some of the questions in the interview dealt with sensitive topics that study participants might not have felt comfortable talking with the interviewer about, a portion was administered using Audio Computer Aided Self Interviewing (ACASI). Study participants listened to a recording of these questions through headphones and entered their responses into a computer. Questions about criminal behavior were part of the ACASI. Therefore, not taking the ACASI explains the majority (n=53) of those 86 who did not respond to the criminal behavior questions. This included 35 youth who were interviewed by telephone and 18 who refused to complete the ACASI or were unable to do so (e.g. they were unable to read). Although being incarcerated did not necessarily preclude youth from taking the ACASI (7 incarcerated youth did not complete the ACASI), 29 of the remaining 33 youth who did complete the ACASI but did not respond to criminal behavior questions were incarcerated during the Wave 3 interview. Twelve of these youth had been incarcerated for more than 12 months.

Second, we estimated Cox proportional hazard models, or "survival models" to examine whether out-of-home care experiences and social bonds predict the risk for arrest during the early transition to adulthood. Compared to the survey data analyses, in which self reported criminal behavior is the outcome, these hazard models offer three benefits. First, all survey respondents can be included in the models, rather than only those who participated in the Wave 3 interview. Second, we are able to measure official arrests for a longer period than was available with the survey data. Third, these models allow us to examine the timing of arrest, rather than simply the occurrence of an arrest. Such models are useful for examining time to event data, such as the time to a first arrest, because they allow for censored observations of the experiences of individual s that do not experience the event (Allison, 1995). The model estimated is a semi-parametric survival model that does not require specification of a baseline hazard function.[10] The hazard can be thought of as the instantaneous risk of experiencing an arrest at time t, given that an arrest has not already occurred prior to time In our analyses, $t = 0$ represents the time at which the Wave 1 interview was conducted. The general form of the Cox proportional hazard regression equation is

$$h(t_i) = h_0(t)\exp(\beta_1\chi_{1_i} + \beta_2\chi_{2_i} + ... + \beta_k\chi_{k_i}) \; ,$$

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[10] Prior research on time to arrest as a measure of re-arrest or recidivism suggest the use of a parametric estimates which allows for the risk for arrest to be highest immediately following release and then decrease, or to be highest immediately following release, to then decrease, and subsequently increase again. Although we are examining arrest as an outcome, we are not examining arrest as an indicator of recidivism, as was the focus of these earlier studies. Therefore, we have no theoretical reason to hypothesize that the hazard function follows a particular parametric distribution. The age crime curve would suggest that the hazard function of arrests from late adolescence into early adulthood might take a functional form that is monotonically decreasing, thus following a Weibull distribution. We found that our data more closely follows a Weibull distribution than the log-normal distribution that has been used in recidivism studies. Regression analyses specifying a Weibull distribution and using a Cox model, however, produced the same results. Because our interest is in the theoretical relationship between covariates and the risk for arrest rather than the specific form of the duration dependency, we chose to present results of the Cox model which is less sensitive to the functional form of the model (Box-Steffensmeier and Jones, 2004).

and the hazard rate for the ith individual is

$$h_i(t) = h_0(t) \exp(\beta' x),$$

where $h_0(t)$ is the baseline hazard function. Once an individual experiences an arrest, they are removed from the risk set. We present model results for the full sample and separately by gender.

Variables

Dependent Variables

Our main outcomes are self-reported criminal behavior and official arrest. First, self reported criminal behavior was measured during each wave of the survey, based on questions from the National Longitudinal Study of Adolescent Health (Add Health). For the bivariate analyses, we examined ten items, coded as 'yes' if the respondent reported engaging in the behavior during the past 12 months and 'no' if they had not reported the behavior. These include a range of criminal behaviors from stealing something worth less than $50, to vandalism, to using or threatening to use a weapon to get something.

For multivariate (negative binomial) regression analyses, we examined two self-reported criminal behavior dependent variables: 1) any violent behavior, and 2) any non-violent behavior,[11] following the example of LaGrange and Silverman (1999) and Haynie and Giordano (2005) who each used a similar self-reported crime outcomes. Respondents were asked a series of questions at Wave 3 about their criminal behavior.

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[11] We also estimated models for an outcome of any criminal behavior, which combined violent and non-violent behavior, and determined that the model using the full criminal behavior scale was not as informative as the models that looked at violent and non-violent crime separately. Therefore, separate violent and non-violent scales are presented as outcomes in this report.

Each item was measured on a scale of zero to three for incidence frequency, with zero indicating they had never engaged in the activity and 3 indicating they had engaged in the activity more than 5 times.[12] Questionnaire items were grouped into non-violent and violent scales; items were summed to create outcome measures for any non-violent crime (8 items, alpha = .703) and any violent crime (4 items, alpha = .736). Non-violent crime included deliberately damaging property, stealing something worth less than $50, stealing something worth more than $50, going into a building or house to steal something, selling marijuana or other drugs, buying, selling, or holding stolen property, writing a bad check, and using someone else's credit card, bank card, or automatic teller card without their permission or knowledge. The violent crime scale included using or threatening to use a weapon to get something, taking part in a group physical fight, using a weapon in a fight, and hurting someone badly enough in a physical fight that he/she needed medical attention. Outliers were recoded to help reduce skew. As noted above, of the 590 respondents who participated in the Wave 3 survey, only 504 responded to items about criminal behavior. Therefore, these regression analyses were conducted on these 504 respondents with valid outcome data.

To estimate the risk for arrest, we used official criminal arrest records to measure the dependent variable. For these analyses, our outcome of interest is the first arrest[13,14]

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[12] 0 = never, 1 = 1 or 2 times, 2 = 3 or 4 times, 3 = more than 5 times.

[13] Forty-two respondents were arrested for minor offenses, mainly traffic offenses such as speeding or driving without a valid license, or public order offenses, such as disorderly conduct. We did not include such arrests in this study as these minor offenses may be systematically recorded differently across the three states.

[14] Only arrests that occurred in the state in which respondents were residing during the wave 1 interview are included. Therefore, our data do not contain arrests that occurred outside of the residing state at Wave 1. An arrest in another state is possible, particularly if an individual moved out of state. As noted by Schmidt and Witte (1988), covariates that correlate positively with mobility may therefore have a spurious correlation with the outcome, yet data limitations for such analyses do not permit an easy solution and the use of arrest data from only one state in survival analyses is

during the transition from adolescence to adulthood. We assume that all of the respondents are at-risk for arrest at the time of their first interview and estimate a hazard model that predicts when that first arrest occurs. Hazard models utilize two dependent variables to capture both the occurrence and timing of an event. First, the survival time reflects the duration of time between the beginning of the observation period (i.e., the date of the Wave 1 interview[15]) and either the date of first arrest or the end of the observation period (i.e., August 31, 2007). A second variable indicates whether an arrest occurred during the observation period, or in other words, if the respondent "failed". This variable is coded '1'if the respondent was arrested and '0' if he/she was not. As all respondents were 17 or 18 years old at the Wave 1 interview, our dependent variable captures arrests that occurred during the early transition to adulthood, between age 17 at the Wave 1 interview to nearly 24 years at the end of the observation period[16]. Unlike survey data analyses, which only included respondents who were interviewed at Wave 3, these analyses included all respondents for which official arrest records were available (n=728).

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common (see recidivism studies by Bottcher and Ezell, 2005; Schmidt and Witte, 1988; Visher, Lattimore, and Linster, 1991). However, out-of-state mobility is low among this population. We found that at least 30 individuals in our sample moved out of state at some point after their first interview, although the date is unknown. Analyses excluding these individuals resulted in no differences across survival models, suggesting that our substantive results are not impacted by unobserved out-of-state arrests.

[15] Wave 1 interviews were conducted throughout 2002 and early 2003.

[16] At the end of the observation period (8/31/2007) the mean age was 22.7, with ages ranging from 21.8 to 23.6 years.

Independent Variables

In both the Poisson/negative binomial regression and proportional hazard regression analyses, independent variables were measured from the Wave 1 survey. Measurement of all independent variables is described below.

Social Bonds

We measured bonds to parents as the degree of closeness respondents reported feeling toward parents, based on a 4-point ordinal scale ('1'= not at all close; '2' = not very close; '3' = somewhat close; '4' = very close). Separate measures were included for closeness to mother (biological or step-mother) and closeness to father (biological or step-father).[17] Because young people placed in out-of-home care also have parental or family figures in the form of their out-of-home caregiver, we also created a measure of closeness to caregiver (non-relative foster parents, relatives in kinship care placements, or adults working in group homes in which the respondent was placed during the Wave 1 interview), also coded on the same 4-point ordinal scale.[18]

We measured bonds to educational and employment institutions through three variables. First, school enrollment was measured as a dichotomous variable coded '1' if the respondent was enrolled in some form of school (high school, vocational school, or college) at the time of the Wave 1 interview and '0' otherwise. We measured commitment to educational pursuits through a dichotomous variable of educational

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[17] We also tested the effect of closeness to grandparents, which was not significant in any models, and therefore, not included in the final models reported here.

[18] Respondents without a living mother or father or who did not know if their parent was alive did not receive questions about closeness to biological parent. For these cases systematically missing a value, we coded the closeness to mother or closeness to father variables as 'not at all close' to represent the lack of this connection. In regression models, we included an indicator variable coded '1' if the respondent did not have the specified parental figure on the item and '0' otherwise. Similarly, respondents in independent living settings were coded as 'not at all close' to caregiver because no parental figure or guardian is present in this type of placement.

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expectations, coded '1' if the respondent reported that he/she would like to graduate from college or beyond and '0' otherwise. Having bonds to employment was measured through employment status at Wave 1, coded '1' if the respondent was employed and '0' otherwise.[19]

In addition to the measures of social bonds noted above, we used a global measure of perceived social support[20], which captures support across emotional, tangible, positive social interaction, and affectionate domains. This measure is based on the MOS Social Support Survey (Sherbourne and Stewart, 1991). Respondents were asked to indicate on a 5-point scale how often each type of support was available to them (i.e., '1' = none of the time; '2' = a little of the time; '3' = some of the time; '4' = most of the time; '5' = all of the time). Each of 19 items were summed and converted to a score on a scale of 0-100[21], with higher scores indicating greater social support.[22] The alpha reliability score for these 19 items is .96.

In addition to attachment to parents, school, and employment, we measured attachment to the child welfare system. We asked respondents how likely they were to turn to the child welfare system for assistance with personal, employment, family, housing, health, or other problems or for financial help after being discharged.

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[19] In analyses not shown, we examined the effect working more than 20 hours per week, as prior research has found that high intensity employment is related to offending among adolescents. We found no relationship between this measure and the risk for arrest.

[20] Although empirical support is limited, scholars have argued that social support, both expressive and instrumental, may reduce an individual's likelihood of offending (Colvin, Cullen, and Vander, 2002; Cullen, 1994).

[21] Documentation on this social support scale can be found in Sherbourne and Stewart, 1991 and at http://www.rand.org/health/surveys_tools/mos/mos_socialsupport_scoring.html.

[22] In addition to the global measure, we also tested the effect of each social support sub-scale (emotional, tangible, positive social interaction, and affectionate). We found similar effects of each sub-scale on the outcome, and therefore opted to include only the full social support scale in the final models.

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Responses for each of the seven types of assistance were coded on a 4-point ordinal scale ('1' = very unlikely; '2' = unlikely; '3' = likely; '4' = very likely). We created an overall scale of the likelihood of turning to the child welfare system for assistance after discharge as the mean of these seven items. The alpha reliability score for these seven items is .92.

Maltreatment and Out-of-Home Care Experiences

Although all the young people in the sample entered out-of-home care due to reasons of abuse or neglect, and therefore, represent a maltreated population, there was variation in the extent of respondents' abuse history. Therefore, we included a measure of the number of different acts of physical abuse the respondent reported having experienced prior to entering care, as well as a measure of the number of different acts of neglect experienced.[23] Prior sexual abuse or assault was also included as a dichotomous variable coded '1' if the respondent ever experienced either type of victimization and '0' otherwise.

The goal of out-of-home care is to protect children and youth and assist in positive development, yet certain placement experiences may negatively affect individuals and impede a successful transition to adulthood, and more specifically, may

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[23] Physical abuse includes being thrown or pushed, hit hard with a fist or kicked or slapped really hard, being beaten up (hit or kicked repeatedly), being attacked with a weapon, being tied up, held down, or blindfolded so that they could not protect themselves, attempted to be choked, strangled, or smothered, and being locked in a room or closet. Neglect includes that the respondent had a serious illness or injury or physical disability, but his/her caretakers ignored it or failed to obtain necessary medical or remedial treatment for it; caretakers failed to help respondent with washing and grooming so that he/she was often dirty, had uncombed hair, or wore dirty clothes; caretakers often failed to provide regular meals for respondent so that he/she had to go hungry or ask other people for food; respondent had to go without things that he/she needed because family's paycheck was spent on the adult's interests; respondent was required to do chores that were too difficult or dangerous; respondent was actually abandoned by a caretaker; respondent's caretakers were physically or emotionally ill to the extent that he or she was unable to care for respondent or pay attention to respondent because of the illness; respondent missed school because he/she had to stay home to take care of a parent, grandparent, brother or sister, or to do chores; respondents caretakers failed to protect you from being physically harmed by someone else.

be related to arrests. For example, arrest has been associated with multiple placement moves (Johnson-Reid and Barth, 2003; Runyan and Gould, 1985; Widom, 1989) and group home care. To control for these different experiences within the child welfare system, we included measures of out-of-home care experiences that reflect the stability and type of placements. First, we measured placement instability as the total number of out-of-home care placements the respondent had experienced to date. Second, we measured type of out-of-home care placement as one prepares for the transition to adulthood as the current placement type during the Wave 1 interview.[24] Dummy variables for kinship care, group care, and independent living setting or other placements were compared to the reference placement of traditional foster care. Type of care that young people are placed in just before they begin the transition to adulthood may also indicate different access to support from caregivers. We also controlled for the age, in years, at which respondents first entered care.

The John H. Chafee Foster Care Independence Program of 1999 provides states federal funds to help prepare young people during the transition from out-of-home care to independent living. These funds may be used for educational services, vocational training or employment services, budgeting and financial management services, health education services, housing services, or services to promote their positive youth development (Collins, 2001). We asked respondents if they received any training or services in preparation for independent living across domains of education (8 items), employment (11 items), financial management (7 items), housing (9 items), health

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[24] Although we feel current placement is the best indicator of how different placements might impact behaviors following discharge, we also examined the effect of ever being placed in group care and ever being placed in kinship care. Neither of the lifetime placement variables was related to the risk for arrest.

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education (9 items), and youth development (3 items). We measured independent living services (ILS) support as a count of the number of services received across the six domains.[25] The alpha reliability score for these 47 items is .96.

Finally, because our sample consists of young people across three states that follow different child welfare practices that could impact behavior and in which three different reporting systems were utilized to measure arrests, we included two dummy variables to represent respondents who were placed in care in the states of Iowa and Wisconsin, with respondents from Illinois serving as the reference category.

Demographic and Background Control Factors

We controlled for several demographic characteristics, background risk factors, and out-of-home care placement experiences of respondents. Gender was included as a dichotomous variable with males coded '1' and females coded '0'. We measured race of respondent through a series of dummy variables, with African American and other[26] racial groups being compared to the reference category of White respondents. Although we attempted to interview all respondents near to their 17th birthday, the logistics of locating respondents and scheduling interviews resulted in variation in the timing of Wave 1 interviews. To account for age and potential developmental differences in respondents based on the timing of their first interview, we included a variable measuring respondents' age (in years) at their Wave 1 interview. We also included a variable

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[25] A small amount of data on independent living services was missing. For missing items, we imputed an individual's mean score within the relevant domain. If all items in a domain were missing, we imputed the sample mean.

[26] Our decision to collapse all other racial groups was based on the distribution of race in the sample, with approximately 12% of respondents reporting a race other than White or African American (.5% "Asian/Pacific Islander", 1.4% "American Indian/Native Alaskan", 9.7% mixed, .5 "other"). In addition, we controlled for Hispanic ethnicity in earlier models (youth of Hispanic ethnicity comprised 8.6% of the sample). This measure had no relationship with the outcome and was subsequently removed from the final model presented in our results.

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indicating whether the respondent was a teen parent, coded '1' if he/she had children and '0' if he/she did not have children at the Wave 1 interview.

We also included background risk measures that are associated with crime. First, in negative binomial regression models where we predict self-reported criminal behavior, we controlled for prior self-reported delinquency, which we calculated as a summed scale based on 11 items that range from minor theft to using a weapon, each coded from zero (never) to three (5 or more times). In the hazard models where we predicted time to first arrest, we controlled for prior self-reported arrest. Prior arrest was coded '1' if respondents reported that they had been arrested at any point prior to the Wave 1 interview and '0' otherwise.[27]

We also included two measures of mental and behavioral health disorders. These measures were gathered using the Composite International Diagnostic Interview (CIDI; World Health Organization, 1998), which is a highly structured interview designed for use by non-clinicians that renders both lifetime and current psychiatric diagnoses according to definitions and criteria of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV). We distinguished between alcohol and drug related diagnoses and other mental health diagnoses through two measures taken from the CIDI. First, we measured whether respondents had any lifetime alcohol or substance dependence diagnosis. Second, we measured whether respondents had any other lifetime mental health disorder diagnosis, including major depression, panic disorder, social phobia, generalized anxiety disorder, or post-traumatic stress disorder.

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[27] We chose to use the self reported measure of prior arrest because official arrest records for juveniles are not consistently available.

Missing Data

Within each wave of data collection, respondents may have missing data for some items. For regression analyses, respondents were excluded from analyses in which the dependent variable was missing. We imputed the sample mean for missing values on independent variables.[28] For scale items (e.g. independent living services or social support measure), we first imputed the respondent's individual mean on those missing items before calculating the scale. For respondents missing values for all items in a scale, we imputed the sample mean. Missing data for independent variables was minor. For the full sample of 732 youth, no independent variable was missing on greater than 4 percent of cases.

For the analyses examining self reported offending within each of the three waves, only those youth with valid responses to the questions about delinquent and criminal behavior were included. Missing values were not imputed as these data were not missing at random. Rather this occurred either because youth did not participate in a particular interview or because youth did not participate in the ACASI portion of the interview. Also, when examining offending over time, for example in the latent class analysis, only those youth who participated in all three waves of data collection and had valid data on the crime measures were included.

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[28] We note that the mean from the specific sample being used in each analysis was used for imputation.

Findings

Offending Patterns

1) Are offending patterns during the early transition to adulthood (ages 17-22) among youth formerly in out-of-home care different from those of the general population?

In examining whether offending patterns during the early transition to adulthood among youth formerly in out-of-home care differ from those in the general population, we address three main issues: 1) how do youth in out-of-home care compare to youth more generally in terms of self-reported offending during the early transition to adulthood; 2) does offending decline overall between late adolescence and early adulthood among former foster youth as has been shown in previous research on general populations; and 3) is there variation in offending patterns during the early transition to adulthood among former foster youth, again as has been shown in previous research on general populations.

To address these issues, we first compared self reported offending among respondents in the Midwest Study to same aged peers from in a national survey. We present data from each of the three waves of the Midwest Study. During the first interview when respondents were 17-18 years old, questions on self-reported offending were answered by all but two youth in the sample (n=730). After attrition, the sample during the second wave of interviews, at which point respondents were 19 years old, consisted of 603 respondents (82 percent of participants in the first interview), of which

95 percent reported on criminal behavior (n=574). By the third wave at which point respondents were about 21 years old, 590 respondents were interviewed, of which 85 percent reported on criminal behavior (n=504).

We compared self reported offending among foster youth to a sample of same aged peers from the National Longitudinal Study of Youth (Add Health). Add Health is a nationally representative study that examines the causes of health-related behaviors of adolescents and their outcomes in young adulthood.[29] The data cited in this report were collected from the Add Health study participants in the core sample who were 17-18 years old during the first wave of the study (n=1,938), and 19 (n=498) or 21 (n=740) years old at the time of a third interview in order to compare to our 17-18 year olds at Wave 1, 19 year olds at Wave 2, and 21 year olds at Wave 3, respectively. We note that the although Add Health is a longitudinal study, in order to select youth approximately the same age as those in our Midwest Study, the sample analyzed here does not include the same youth over time.

The Midwest Study and the Add Health study had significantly different racial distributions at each of the time points, with the Midwest Study being represented by a higher proportion of African American and multiracial respondents.[30] The high percentage of African American youth in the Midwest sample is not surprising, given that African American children are historically and currently overrepresented in the child welfare system (Shyne and Schroeder, 1978; Stehno, 1982; Lu et al., 2004). These different racial distributions, however, make comparing the samples on criminal behavior

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[29] Several groups were over-sampled (e.g., African American youth from highly educated families or a parent with a college degree), but only youth in the core sample were included in our analyses.
[30] For example, at age 17-18, 57% of the Midwest Study was African American and 10% multiracial compared to only 18% and 4% respectively in the Add Health Study.

problematic because African American youth tend to have higher rates of both official and self-reported offending than Caucasian youth (Elliot and Ageton, 1980; Hawkins et al., 2000), particularly for serious violent behaviors (McNulty and Bellair, 2003). Given the differences in both the hypothesized crime rates and racial distributions of the two samples, it would be more appropriate to compare youth aging out of the child welfare system to a sample in the general population with a more similar racial distribution. In order to account for differences in the racial distributions of the two samples, we computed a case weight for youth in the Add Health sample by dividing the percentage of Midwest Study youth who identified themselves as belonging to a particular race by the percentage of Add Health youth who identified themselves as belonging to that same race.[31][32]

Sample Comparisons

Figure 1 shows the percentage of youth in each sample who reported engaging in each of the delinquent or criminal behaviors during the last 12 months before the interview when youth were approximately 17-18 years old. This represents offenses committed when youth were about 16-17 years old. Behaviors ranged from minor property offenses, such as taking something from a store worth less than $50 to serious acts of violence, such as such using or threatening to use a weapon to get something from someone and shooting or stabbing someone. Using independent samples t-tests to

[31] For example, 57 percent of the Midwest Study youth were African American compared with approximately 19 percent of Add Health youth. The weight assigned to each African American youth in the Add Health sample was 57/19=3.00.

[32] Although by weighting for race we attempt to make the two samples more directly comparable, we recognize that the Add Health sample is not a formal comparison group. These two groups were sampled at different points in time, using different methods. Therefore, we cautiously use the Add Health sample to estimate a general population of youth, compared to a sample of foster youth.

compare the proportions, we found that a significantly higher proportion of youth in the Midwest sample reported engaging in each offense. For most offenses, the proportion of youth in out-of-home care engaging in each offense was at least twice that found in the Add Health study.
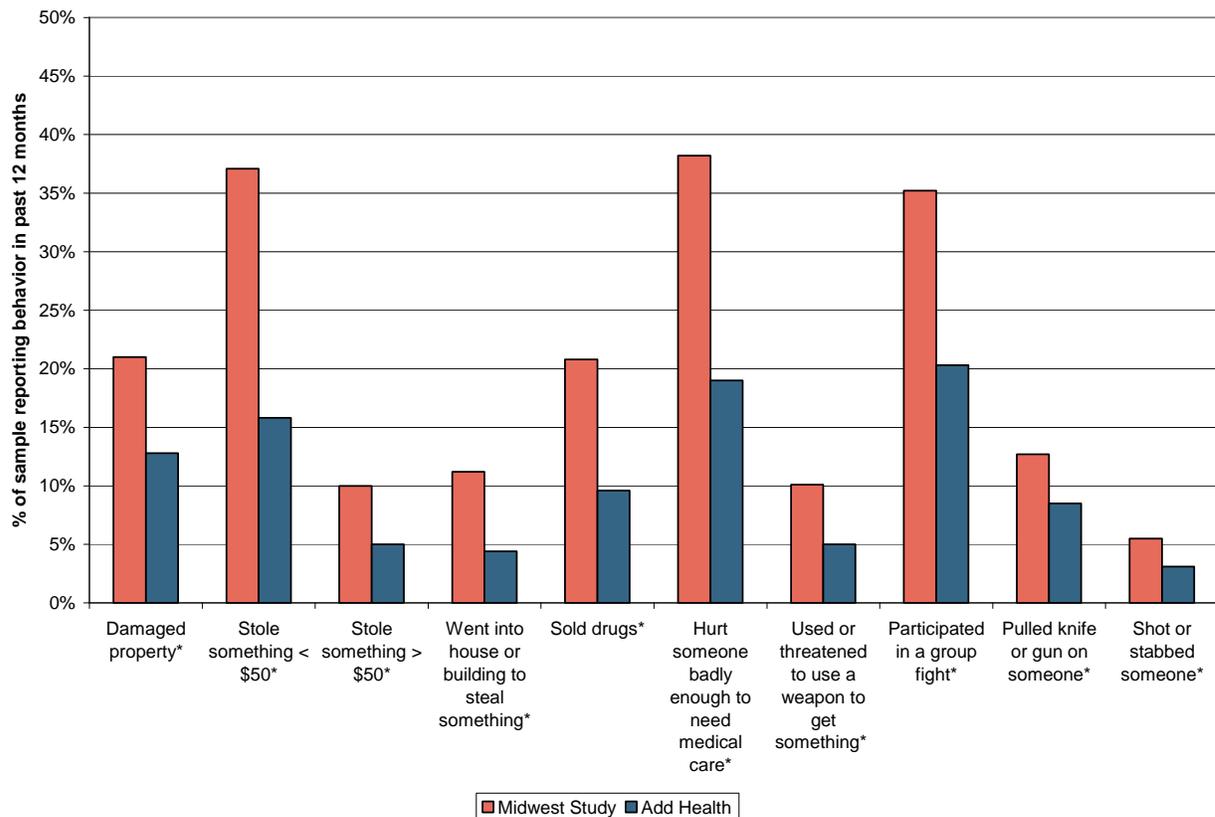
We found fewer differences in offending between the youth in out-of-home care and their Add Health peers as reported at age 19 than found two years earlier. As shown in Figure 2, offending at about age 18 was lower in general for both foster youth and youth in general than offending at ages 16-17. Yet, a significantly higher proportion of youth in out-of-home care reported damaging property, stealing something worth more

than $50, taking part in a group fight, and pulling a knife or gun on someone. Although the sample sizes are smaller during this second period, and thus, the power to detect variation across samples is reduced, it does not appear that this explains the lack of many statistically significant differences across the groups. Unlike the comparisons made during late adolescence, few offenses differed by more than two to three percent across the two groups. We note, however, that youth in out-of-home care are more likely to engage in some violent offenses, with nearly a quarter participating in a group fight and six percent having pulled a knife or gun on someone.

Figure 2. Self Reported Criminal Behavior: Midwest Study vs. Add Health (19 year olds)

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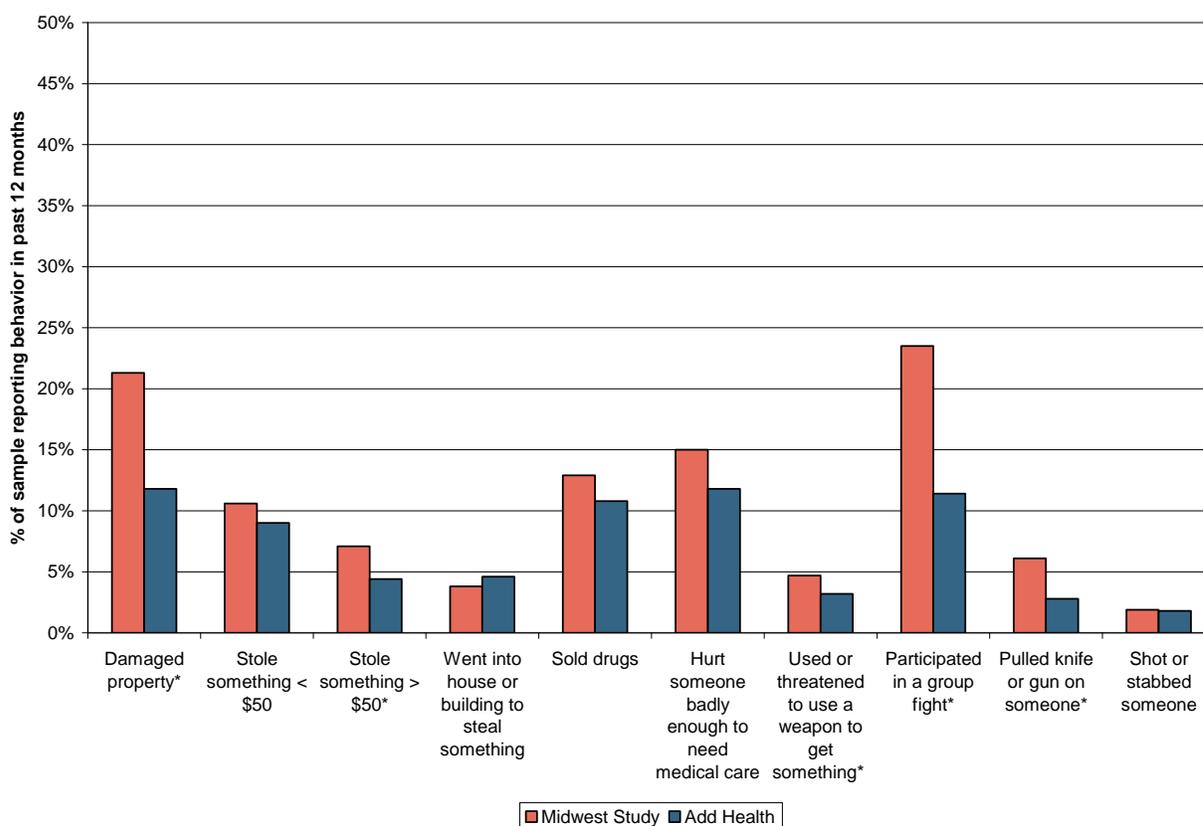
By Wave 3, when respondents were 21-22 years old, we found even fewer differences between foster youth and their peers more generally. The only significant differences between the two samples were for damaging property, going into a house to steal something, and pulling a knife or gun on someone. Respondents from the Midwest Study were more likely than their peers in Add Health to report engaging in these three criminal behaviors.

Figure 3. Self Reported Criminal Behavior: Midwest Study vs. Add Health (21 year olds)
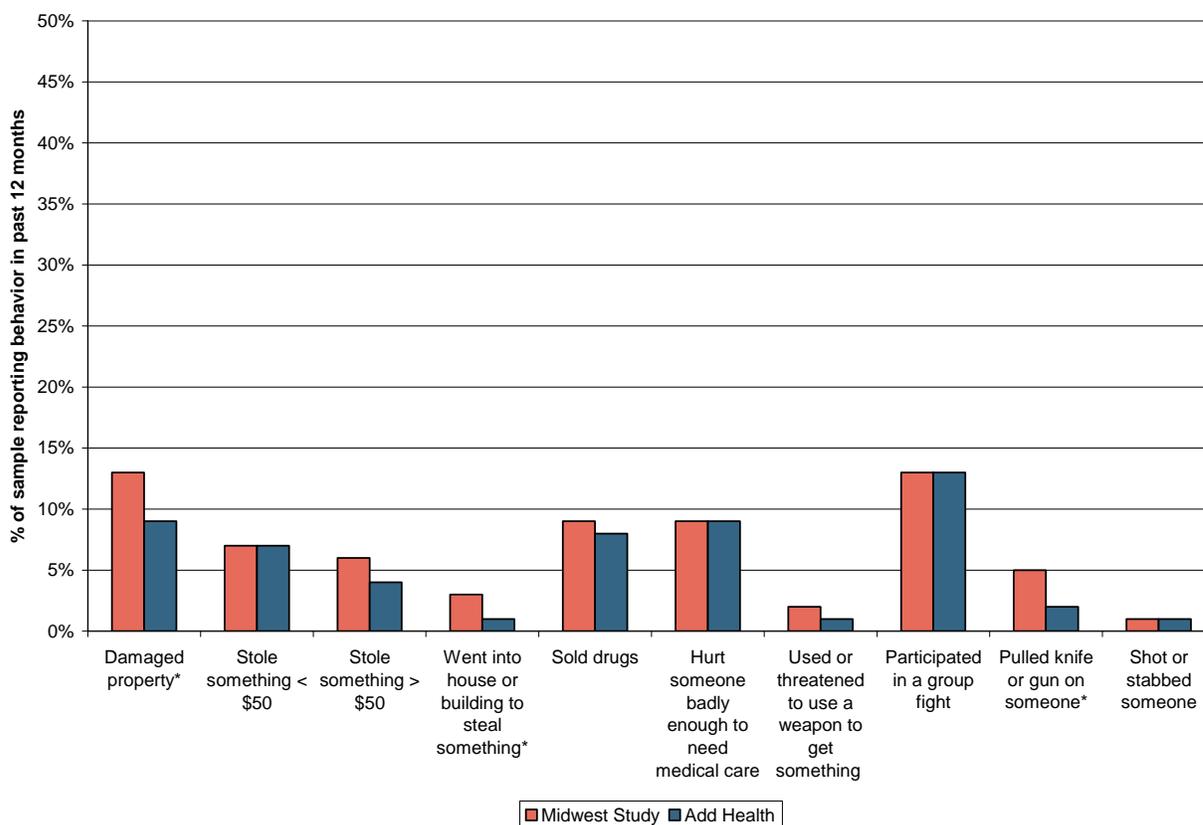
Large differences across the two groups are seen when comparing self reported arrests by age 19 and since age 18 for those interviewed at age 19.[33] As shown in Table

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[33] A comparable figure of self report arrest between the Midwest Study and Add Health Study was not available at age 21.

1, a significantly higher proportion of youth in out-of-home care reported having ever been arrested by age 19 and having been arrested since age 18 when compared to youth in general. This is true for both males and females. For arrests since age 18, we found even larger differences between the Midwest and Add Health studies. Even more striking, the percentage of female foster youth ever experiencing an arrest was not only higher than females in the Add Health sample, but also higher than that for Add Health males. The higher levels of self-reported arrest among foster youth could reflect the tendency for youth in out-of-home care to engage in violent behaviors at higher rates than youth in general, as shown above, though the differences between the two groups in self-reported arrest are much higher that the differences in self-reported criminal behavior. Alternatively, higher arrest rates could be a result of greater scrutiny being applied to foster youth by child welfare authorities and the police.

Table 1. Self Reported Arrests: Midwest Study vs. Add Health Study				
	Males		Females	
	Midwest Study	Add Health Study	Midwest Study	Add Health Study
Ever arrested by age 19	57.0%	20.1%	34.4%	2.8%
Arrested since age 18	35.9%	1.9%	17.9%	1.1%

Variation in Offending by Gender

We next compared offending in the Midwest and Add Health samples by gender to determine if the differences noted above were true for both males and females separately. As shown in Table 2, we found a significantly higher proportion of female foster youth reported all offenses when compared to female youth in general at ages 17-18. A higher proportion of male foster youth also reported most offenses. Exceptions included pulling a knife or gun on someone and shooting or stabbing someone, for which the two samples did not significantly differ.

Table 2. Percentage Engaging in Selected Offenses (17-18 year olds)						
	Females			Males		
	Midwest Study	Add Health		Midwest Study	Add Health	
Damaged property	15.7	8.0	*	26.6	17.8	*
Stole something < $50	31.9	10.9	*	42.7	20.7	*
Stole something > $50	5.0	3.0		14.9	6.5	*
Went into house or building to steal something	5.8	2.4	*	16.9	6.5	*
Sold drugs	14.1	4.7	*	27.9	14.7	*
Hurt someone badly enough to need medical care	27.1	8.6	*	50.0	29.7	*
Used or threatened to use a weapon to get something	5.9	3.2	*	14.7	6.9	*
Participated in a group fight	28.5	12.1	*	42.4	28.6	*
Pulled knife or gun on someone	9.0	3.1	*	16.7	13.9	
Shot or stabbed someone	4.0	.1	*	7.1	5.6	

*p<.05; one-tailed test

When comparing offending as reported at age 19 across the two samples by gender (see Table 3), we found fewer differences among males, while female foster youth continued to report more offending. A significantly higher proportion of female foster youth reported all offenses except stealing something worth less than $50, selling drugs, and shooting or stabbing someone. On the other hand, the only significant difference between male foster youth and male youth in general was for participating in a group fight.

Table 3. Percentage Engaging in Selected Offenses (19 year olds)						
	Females			Males		
	Midwest Study	Add Health		Midwest Study	Add Health	
Damaged property	17.6	4.2	*	25.8	20.7	
Stole something < $50	6.9	4.6	*	15.2	14.5	
Stole something > $50	4.7	1.0	*	10.2	8.3	
Went into house or building to steal something	1.9	.3	*	6.3	9.5	
Sold drugs	6.3	6.2	*	21.1	16.3	
Hurt someone badly enough to need medical care	8.5	2.9	*	23.1	22.6	
Used or threatened to use a weapon to get something	3.8	.5	*	5.9	6.2	
Participated in a group fight	14.8	4.5	*	34.4	19.6	*
Pulled knife or gun on someone	4.4	.2	*	8.2	5.8	
Shot or stabbed someone	1.0	.0		3.1	4.1	

p<.05; one-tailed test

The gender differences at age 21 reflect those seen in the full sample (see Table 4). By age 21, even the female differences in self-reported offending declined, with only one statistically significant difference. A higher percentage of female foster youth reported pulling a knife or gun on someone. Similarly, there was only one difference between males, with a higher percentage of male foster youth reporting going into a house or building to steal something. In both of these cases, however, percentages in each sample were low.

Table 4. Percentage Engaging in Selected Offenses (21 year olds)						
	Females			Males		
	Midwest Study	Add Health		Midwest Study	Add Health	
Damaged property	8.8	6.4		17.2	12.3	
Stole something < $50	3.5	3.8		11.3	10.7	
Stole something > $50	2.8	2.8		9.0	6.0	
Went into house or building to steal something	1.1	.9		3.6	1.9	*
Sold drugs	4.9	4.0		14.5	13.5	
Hurt someone badly enough to need medical care	3.5	3.8		15.8	15.4	
Used or threatened to use a weapon to get something	.4	.2		3.2	1.6	
Participated in a group fight	6.0	5.2		20.8	22.0	
Pulled knife or gun on someone	4.2	1.4	*	5.9	2.8	
Shot or stabbed someone	1.1	.7		.9	.3	

p<.05; one-tailed test

In comparing the samples over time, we note that the Add Health sample consists of different individuals at each time point. The Midwest Study sample, however, consists of individuals from the same base sample. Thus, it is possible that the Midwest Study loses individuals over the three waves that are most at risk for offending. If this is the case, offending at ages 19 and 21 among the Midwest Study may be underestimated. In turn, differences to Add Health at these ages could be masked here.

To better gauge whether attrition in the Midwest Study results in underestimates of self-reporting offending, we compared offending at ages 17-18 (Wave 1) between those retained in the study and those not subsequently interviewed. Those who left the study after the first wave of interviews were not significantly more or less likely to report engaging in delinquent or criminal behaviors at Wave 1 than those who were subsequently interviewed at Waves 2 and/or 3. We also compared official arrests rates of those who were interviewed at Wave 3 to those who had left the study. Of those

interviewed at Wave 3, 46 percent had an arrest recorded compared to 47 percent of those not interviewed (the difference is not statistically significant). These findings suggest that the study did not lose those youth most likely to offend. We also found that 43 percent of those youth interviewed at all three waves had an official arrest. Again, this suggests study attrition did not result in the selective loss of those displaying the worst behavior.

Offending Over Time among Foster Youth

The analyses presented above suggest that like their peers more generally, offending among foster youth tends to decline during the early transition to adulthood, at least among those youth for whom offending information was available. Offending is likely to be high among foster youth during late adolescence because, in general, it is during this period that offending increases (Hirschi and Gottfredson, 1983; Farrington, 1986). Yet, little is known about whether young people aging out of the child welfare system desist from offending as they transition to adulthood. The Midwest Study allows us to examine changes in offending behavior among the same sample of former foster. To do so, we compared self-reporting offending among respondents who completed all three interviews. First we compared offending of respondents at age 17-18 to offending at age 19, and then between offending of respondents at age 19 to offending at age 21. Paired samples t-tests revealed that offending generally decreased from one time point to the next (see Table 5). Exceptions included damaging property and stealing something worth more than $50, in which we found no significant declines between age 17-18 and 19. Damaging property, selling drugs, hurting someone badly enough to need medical

care, using or threatening to use a weapon, and participating in a group fight all significantly declined from age 19 to age 21.

Table 5. Percentage of Foster Youth Engaging in Selected Offenses Over Time (n=438)			
	17-18 Year Olds	19 Year Olds	21 Year Olds
Damaged property	19.9	18.6	11.9***
Stole something < $50	35.4	9.6***	7.1
Stole something > $50	8.9	6.8	5.5
Went into house or building to steal something	8.7	3.6***	3.2
Sold drugs	18.0	11.9**	7.5*
Hurt someone badly enough to need medical care	34.7	15.3***	8.5***
Used or threatened to use a weapon to get something	7.8	3.7**	1.6*
Participated in a group fight	34.3	21.5***	12.1***
Pulled knife or gun on someone	11.9	5.7***	4.6
Shot or stabbed someone	4.3	2.1*	1.0

Note: *p<.05, **p<.01, ***p<.001; one-tailed test (19 year olds vs. 17-18 year olds; 21 year olds vs. 19 year olds)

These findings suggest that patterns of offending among youth aging out of care are similar to those seen in the general population, with offending peaking during late adolescence and appearing to decline into adulthood. They do not, however, highlight any possible variation in offending trends within our sample of foster youth. In other words, while overall offending among our sample declines during the early transition to adulthood, some youth may continue offending while others may even begin offending after adolescence.

In order to further identify variations in offending patterns over time among our sample of foster youth, we conducted a latent class analyses for the Midwest Study respondents participating in all three interviews and who reported on criminal behavior (n=438). Latent class analysis, or LCA, is a method that presumes observed variables are

indicators of a latent categorical variable that represents a mixture of distinct

subpopulations within the data (McCutcheon 1987). The result is an empirical

classification of individuals who share a common profile. In this case, we classify

individuals who share common patterns of offending across the three waves of data. The

analyses were conducted using Latent GOLD software (Vermunt and Magidson 2005).

In this LCA, we included six indicators of self-reported offending that represent

any violent offending and any non-violent offending at each wave. The analysis revealed

a five class model best fit the data. For reporting the profiles of the classes on the

indicators used in the analysis and for validating class distinctions across additional

characteristics of interest, cases were assigned to membership in the single class for

which they have the highest, or modal, probability. Profiles of the latent classes are

presented in Table 6. The first row shows the relative proportion of the sample in each

class. The remaining rows present the probabilities on the indicators used in the latent

class analysis.

	Rare or Non-Offenders 34%	Adolescent Offenders 28%	Desisting Offenders 19%	Chronic Offenders 11%	Chronic Non-Violent Offenders 8%
Class Size					
Indicators					
Any violent offense - w1					
No	0.7686	0.3998	0.1504	0.0852	0.7328
Yes	0.2314	0.6002	0.8496	0.9148	0.2672
Any non-violent offense – w1					
No	0.8891	0.2593	0.4392	0.1422	0.3739
Yes	0.1109	0.7407	0.5608	0.8578	0.6261
Any violent offense – w2					
No	0.9898	0.9927	0.0166	0.1659	0.9935
Yes	0.0102	0.0073	0.9834	0.8341	0.0065
Any non-violent offense – w2					
No	0.9709	0.7169	0.6212	0.2351	0.0812
Yes	0.0291	0.2831	0.3788	0.7649	0.9188
Any violent offense – w3					
No	0.9212	0.9982	0.6725	0.2954	0.7496
Yes	0.0788	0.0018	0.3275	0.7046	0.2504
Any non-violent offense – w3					
No	0.9212	0.8864	0.9286	0.222	0.3518
Yes	0.0788	0.1136	0.0714	0.778	0.6482

Table 6. Profiles of Latent Classes (n=438)

"Rare or Non-Offenders" - The largest class, representing approximately 34 percent of the sample, reported consistently low offending experiences across the three waves when compared to respondents in other classes. For example, respondents in this first class had only a .23 probability of reporting a violent offense and a .11 probability of reporting a non-violent offense at Wave 1. Over the next two waves, the probability of reporting either violent or non violent offenses dropped to below .10. Therefore, although some respondents in this class did report offending across each wave, the general pattern of this class, particularly compared to other classes, was to be non-offenders.

"Adolescent Offenders" – The second largest class, with about 28 percent of the sample, is distinguished from the other classes by relatively high levels of delinquent or criminal behaviors at age 17-18, but lower levels over time. By age 19 and 21, the probability of a violent offense dropped to almost zero. Non-violent offenses also become much less likely than seen during adolescence. Thus, this class of Adolescent Offenders appears similar to what Moffit (1993) referred to as "adolescent limited", meaning that offending is limited to what may be thought of as normative adolescent behavior that decreases as youth enter adulthood.

"Desisting Offenders" - The third largest class, with about 19 percent of the sample, is noteworthy for reporting delinquent and criminal behaviors at ages 17-18 and age 19, but reporting a decrease in these behaviors by age 21. Whereas the Adolescent Offenders limited their offending to adolescence, this group of Desisting Offenders continued offending into late adolescence/early adulthood at age 19, but appears to change, or desist from, their behavior as they enter their 20's.

"Chronic Offenders" – The fourth class includes only 11 percent of the sample. This class is distinguished from other classes by having the highest reported probability of violent and non-violent behaviors over time. This group, although small, was most likely to report engaging in both types of behavior at all three waves of the study. For example, although decreasing slightly over time, the probability of reporting any violent or non-violent offense remained above .70 at each of the three waves. Therefore, this class appears to describe chronic offenders.

"Chronic Non-Violent" - The smallest class includes only about 8 percent of the sample. Like the Chronic Offenders, respondents in this last class had a high probability

of engaging in non-violent offenses at each of the three waves. However, unlike the Chronic Offenders and more similar to Non-Offenders, respondents in this class had a relatively low probability of engaging in violent offenses at any time point. Therefore, it appears that this class consists of chronic non-violent offenders.

To further describe the latent classes found in the LCA, we examined demographic characteristics and background factors, foster care experiences, and social bond factors for each class. As shown in table 7, Non-Offenders and Adolescent Offenders were more likely than other classes to include females than males. With respect to race, higher proportions of African American youth are found among Non-Offenders, Desisting Offenders, and Chronic Offenders than in the other classes. Respondents who reported experiencing childhood neglect were disproportionately represented among Chronic Offenders. Adolescent Offenders were more likely to include respondents who entered foster care as adolescents while Non-Offenders were more likely to include respondents who entered foster care at younger ages. Desisting Offenders were more likely to include respondents whose last placement was a relative home while Chronic Offenders were overrepresented by respondents who reported last placement was in a group home. Chronic Offenders were also overrepresented by respondents who reported experiencing high levels of placement instability in foster care. Non-Offenders were more likely to report being enrolled in school at ages 19 and 21 than respondents in the other classes. Finally, Chronic Offenders were overrepresented by respondents who reported lower social support. We found no statistically significant difference in the state (Illinois, Iowa, or Wisconsin) in which foster youth were placed across the latent classes.

	Class 1	Class 2	Class 3	Class 4	Class 5	Total	X^2
Table 7. Characteristics of Latent Classes (n=438)							
	Rare or Non Offenders (n=155)	Adolescent Offenders (n=124)	Desisting Offenders (n=89)	Chronic Offenders (n=41)	Chronic NonViolent Offenders (n=29)	(n=438)	
	%	%	%	%	%	%	
Demographics							
Female	70.3	66.9	44.9	26.8	31.0	57.5	44.8***
Race:							24.7**
White	32.3	44.4	16.9	31.7	48.3	33.6	
Black	56.8	41.9	62.9	53.7	48.3	53.0	
Other	11.0	13.7	20.2	14.6	3.4	13.5	
State:							10.5
Wisconsin	28.4	33.1	31.5	29.3	24.1	30.1	
Illinois	64.5	54.0	64.0	65.9	58.6	61.2	
Iowa	7.1	12.9	4.5	4.9	12.2	8.7	
Physical abuse	31.0	39.5	27.0	48.8	44.8	35.2	9.4*
Neglect	53.5	62.1	49.4	73.2	65.5	57.8	9.3*
Age at entry: 12 and older	51.0	66.1	48.3	53.7	31.0	57.3	15.2**
Foster Care Experiences							
Last placement type:							44.2***
Kinship care	39.4	23.4	42.7	17.1	27.6	32.6	
Foster care	41.9	37.9	33.7	26.8	34.5	37.2	
Group care	5.2	18.5	14.6	34.1	27.6	15.1	
Independent living/Other	13.5	20.2	9.0	22.0	10.3	15.1	
5 or more placements	28.4	54.0	38.2	58.5	51.7	42.0	25.4***
At-risk behaviors							
Prior arrest	29.0	54.8	56.2	70.7	62.1	47.9	37.8***
Substance abuse diagnosis	9.0	28.2	18.0	39.0	24.1	20.1	26.6
Mental health diagnosis	21.9	30.6	22.5	17.1	24.1	24.2	4.5
Teen parenthood	19.4	9.7	12.4	17.2	14.2	14.2	11.4
Social Bonds							
Social support (MOS)	58.7	41.1	48.3	31.7	48.3	48.4	13.8**
Close to maternal caregiver	59.4	62.9	68.5	63.4	58.6	62.6	2.2
Close to paternal caregiver	43.9	45.2	44.9	36.6	27.6	42.7	3.9
Close to foster caregiver	78.7	69.4	82.0	68.3	79.3	75.8	6.9
Wave One:							
In school	85.8	82.3	79.8	78.0	79.3	82.4	2.4
Employed	40.6	42.7	34.8	29.3	32.9	38.8	3.2
Wave Two:							
In school	56.8	37.9	39.3	43.9	41.4	45.7	12.4 *
Employed	47.1	45.2	36.0	36.6	44.8	43.2	3.8
Wave Three:							
In school	32.2	23.4	16.9	12.2	13.8	23.5	13.2**
Employed	59.4	56.9	58.4	35.0	69.0	56.9	10.0*

*p<.05, **p<.01, ***p<.001

Predictors of Criminal Behavior

Descriptive Statistics

Descriptive statistics for the criminal behavior dependent variables are presented in Tables 8. Most respondents did not report engaging in any of the non-violent or violent behaviors at Wave 3. Again, 8 items, measured from 0 (never) to 3 (more than five times), were used to construct the non-violent scale. This could result in a maximum possible score of 24 for someone who reported engaging in every behavior more than five times. Four items were used to construct the violent scale, for a maximum possible score of 12. However, as shown in Table 8, the maximum score for each outcome was 5. These statistics indicate that most respondents did not report engaging in the targeted behaviors.[34]

Table 8. Descriptive Statistics: Dependent Variables				
	N	Mean	Standard Deviation	Max
Non-violent Criminal Behavior	504	0.66	1.33	5
Violent Criminal Behavior	504	0.37	1.00	5

Descriptive statistics for independent variables included in the models predicting non-violent and violent criminal behavior are shown in Table 9. Respondents reported closer relationships with out-of-home caregivers than with either mothers or fathers. Most of the sample was enrolled in some type of educational setting and nearly three-quarters reported plans to graduate from college. Only 38 percent were employed at Wave 1. Perceived social support was relatively high among the sample, with a mean social support score of 73.15 out a possible 100. Attachment to the child welfare system,

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[34] Although the scales skewed toward zero, our analytic models (Poisson and negative binomial) do account for variation beyond "yes" vs. "no" as would be the case in a binomial distribution.

however, appeared limited. For example, the average score on a scale indicating

likelihood to ask the child welfare system for help after discharge was only 2.4, on a scale

from 1-4. On average, respondents received 13.68 independent living services.

Considering 47 independent living services were potentially available, this figure

suggests that young people aging out of care receive limited preparation for making the

transition from adolescence to independent adulthood.

Table 9. Descriptive Statistics:
Independent Variables in Violent and Non-Violent Criminal Behavior Models (n=504)

	Males (n=221)		Females (n=283)		Total (N=504)			
	Mean	s.d.	Mean	s.d.	Mean	s.d.	Min	Max
Controls and Risk Factors								
African American	.52	.50	.55	.50	.54	.50	0	1
White	.37	.48	.30	.46	.33	.47	0	1
Other race	.12	.32	.14	.35	.13	.34	0	1
Teen parenthood	.06	.24	.20	.40	.14	.35	0	1
Prior delinquency scale	5.16	3.82	3.42	3.28	4.18	3.62	0	11
Physical abuse	.92	1.53	1.14	1.79	1.04	1.69	0	7
Neglect	1.56	2.00	1.80	2.14	1.69	2.08	0	9
Sexual abuse/assault	.16	.37	.39	.49	.29	.45	0	1
Substance abuse diagnosis	.23	.42	.17	.38	.20	.40	0	1
Mental health diagnosis	.13	.34	.31	.46	.23	.42	0	1
Out-of-Home Care Experiences								
Age at entry (in years)	10.71	3.87	10.92	4.04	10.83	3.96	0	16
Number of placements	6.10	6.39	5.12	5.10	5.55	5.72	1	42
Type of placement at wave 1								
Foster care	.38	.49	.35	.48	.36	.48	0	1
Kinship care	.32	.47	.34	.47	.33	.47	0	1
Group care	.19	.40	.13	.34	.16	.36	0	1
Independent living/Other	.12	.32	.19	.39	.16	.36	0	1
Number of independent living services received	14.53	12.11	13.01	11.87	13.68	11.99	0	47
Social Bonds								
Closeness to mother	2.69	1.23	2.66	1.21	2.67	1.22	1	4
Missing mother indicator	.16	.37	.10	.30	.13	.33	0	1
Closeness to father	2.11	1.23	2.12	1.22	2.11	1.23	1	4
Missing father indicator	.30	.46	.21	.41	.25	.44	0	1
Closeness to foster caregiver	3.15	1.06	2.92	1.23	3.02	1.16	1	4
Social support	71.47	21.73	74.46	22.26	73.15	22.05	0	100
In school	.85	.36	.80	.40	.82	.39	0	1
College plans	.68	.47	.75	.43	.72	.45	0	1
Employed	.36	.48	.39	.49	.38	.48	0	1
Likely to ask child welfare system for help	2.39	.72	2.43	.80	2.41	.77	1	4
State								
Illinois	.56	.50	.65	.48	.61	.49	0	1
Iowa	.09	.28	.09	.28	.09	.28	0	1
Wisconsin	.35	.48	.27	.44	.30	.46	0	1

Results of the Poisson/Negative Binomial Models

Violent Crime

A Poisson distribution was chosen to model violent crime (deviance = 1.08). The results for the full model can be seen in Table 10. As expected, there is a large and statistically significant difference in delinquency by gender. Exponentiation of the parameter estimate for males, $\beta = 0.98$, reveals that boys have an average level of violent crime over 2.5 times the average for females. Youths who reported delinquency in Wave 1 also have higher criminal behavior in Wave 3, about 18 percent higher for each 1 unit increase in Wave 1 delinquency.

Out-of-home care experiences were also significantly related to violent crime. High numbers of foster care placements contributed to an increase of about 3 percent in violent offending for each placement, and youths in group care at Wave 1 are expected to report about 80 percent more crime than the average for youths in traditional foster care. Youths who access independent living services however, have decreases in violent behavior of about 2 percent for each service used.

Finally, we found that having college plans at Wave 1 decreases violent behavior by about one-third compared to those without college aspiration. Being a victim of sexual abuse is also related to a decrease of more than 50 percent in violent crime reported.

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Table 10. Estimates from Poisson Regression of Violent Criminal Behavior on Covariates (n=504)			
Variables	B	SE	Exp(β)
Demographic and Background Risk Factors			
Male (vs. female)	.980***	.199	2.66
African American (vs. white)	.206	.205	1.23
Other race (vs. white)	-.188	.284	0.83
Prior delinquency	.161***	.024	1.18
Neglect	.064	.044	1.07
Physical abuse	-.011	.056	0.99
Sexual abuse/assault	-.808**	.245	0.45
Substance abuse diagnosis	-.231	.198	0.79
Mental health diagnosis	-.068	.213	0.93
Teen parenthood	.251	.236	1.29
Iowa (vs. Illinois)	-.180	.388	0.84
Wisconsin (vs. Illinois)	-.538**	.198	0.58
Out-of-Home Care Experiences			
Age at entry	.013	.022	1.01
Number of placements	.025*	.012	1.03
Type of placement at wave 1 (vs. traditional foster care)			
Kinship care	.125	.214	1.13
Group care	.582**	.214	1.79
Independent living/other	.471	.399	1.60
Number of independent living services	-.019**	.007	0.98
Social Bonds			
Closeness to mother	-.018	.087	0.98
Missing mother indicator	.776**	.255	2.17
Closeness to father	.001	.081	1.00
Missing father indicator	-.129	.211	0.88
Closeness to caregiver	.166	.117	1.18
Social support	.007	.004	1.01
In school	.053	.209	1.05
College plans	-.403*	.160	0.67
Employed	-.003	.166	0.99
Likely to ask child welfare system for help	-.038	.108	0.96

*p<.05, **p<.01, ***p<.001 (two-tailed tests)

Violent Crime by Race

To test the hypothesis that the relationship between out-of-home care placement experiences and crime differ by race, we included interaction terms between a dummy variable for race (African American = 1, white = 0) and each out-of-home care placement variable[35]. Results for the interactions are shown in Table 11.

Contrary to our hypothesis, we did not find much evidence that the relationship between out-of-home care placement experiences and violent criminal behavior was moderated by race, specifically when comparing white and African American youth. Only two interactions were significant – being in group care versus traditional foster care and being in independent living or other care settings versus traditional foster care. Being in group care is associated with a higher rate of violent behavior for African Americans than for whites. In addition, being in an independent living or other arrangement versus traditional foster care was associated with an increase in violent crime for white youth, but not for African Americans. However, we note this finding with caution due to the small number of youth who were living independently (or "other" placement) in Wave 1.

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[35] Because the interaction of interest was white versus African American youth, we limited the sample to only white and African American youth (n=438) for the model testing interactions between race and placement experiences.

Table 11. Estimates from Poisson Regression of Violent Crime on Covariates with Interaction between Race (African American vs. White) and Out-of-Home Placement Experiences (n=438)			
Variables	B	SE	Exp(β)
Demographic and Background Risk Factors			
Male (vs. female)	1.134***	.226	3.11
African American (vs. white)	1.074	.739	2.93
Prior delinquency	.156***	.028	1.17
Neglect	.021	.049	1.02
Physical abuse	-.016	.069	.98
Sexual abuse/assault	-.656*	.274	.52
Substance abuse diagnosis	-.421	.233	.66
Mental health diagnosis	.239	.233	1.27
Teen parenthood	.165	.286	1.18
Iowa (vs. Illinois)	-.519	.417	.60
Wisconsin (vs. Illinois)	-.552*	.219	.58
Out-of-Home Care Experiences			
Age at entry	.063	.048	1.07
Number of placements	.010	.020	1.01
Type of placement at wave 1 (vs. traditional foster care)			
Kinship care	.513	.426	1.67
Group care	-.397	.494	.67
Independent living/other	1.466**	.497	4.33
Number of independent living services	-.002	.014	1.00
Social Bonds			
Closeness to mother	-.124	.076	.88
Missing mother indicator	.560	.418	1.75
Closeness to father	.062	.078	1.06
Missing father indicator	.826*	.334	2.28
Closeness to caregiver	.273*	.126	1.31
Social support	.003	.004	1.00
In school	.068	.234	1.07
College plans	-.406*	.175	.67
Employed	.195	.191	1.22
Likely to ask child welfare system for help	.088	.116	1.09
Interactions (with African American vs. white)			
Age at entry*race	-.051	.055	.95
Number of placements*race	.030	.025	1.03
Type of placement at wave 1 (vs. traditional foster care			
Kinship care*race	-.404	.495	.67
Group care*race	1.163*	.566	3.20
Independent living/other*race	-1.776*	.731	.17
Number of independent living services*race	-.030	.016	.97

*p<.05, **p<.01, ***p<.001 (two-tailed tests)

Nonviolent Crime

We estimated non-violent criminal behavior through negative binomial regression, the results of which can be seen in Table 12. As seen in the violent crime model, gender and Wave 1 delinquency are both significant and positive in the non-violent crime model. Males are estimated to engage in 68 percent more non-violent criminal behavior than females, a much less dramatic difference than seen in the violent crime model. The effect of Wave 1 delinquency was also smaller, though still significant, contributing a 12 percent increase in expected nonviolent crime for each 1 unit increase in prior delinquency. Study particpants with multiple foster care placements are predicted to have higher levels of crime, as each placement is associated with a 4 percent increase in average criminal behavior. No social bonds variables were found to be significant in the nonviolent model.

Table 12. Estimates from Negative Binomial Regression of Non-Violent Criminal Behavior on Covariates (n=504)			
Variables	*B*	*SE*	*Exp(β)*
Demographic and Background Risk Factors			
Male (vs. female)	.519*	.227	1.68
African American (vs. white)	-.305	.272	0.74
Other race (vs. white)	-.196	.330	0.82
Prior delinquency	.115***	.030	1.12
Neglect	.031	.056	1.03
Physical abuse	.056	.073	1.06
Sexual abuse/assault	-.417	.256	0.66
Substance abuse diagnosis	.108	.262	1.11
Mental health diagnosis	-.043	.271	0.96
Teen parenthood	-.314	.392	0.73
Iowa (vs. Illinois)	.019	.392	1.02
Wisconsin (vs. Illinois)	.013	.239	1.01
Out-of-Home Care Experiences			
Age at entry	-.015	.030	0.99
Number of placements	.037*	.017	1.04
Type of placement at wave 1 (vs. traditional foster care)			
Kinship care	-.428	.267	0.65
Group care	.554	.309	1.74
Independent living/other	.387	.494	1.47
Number of independent living services	-.012	.009	0.99
Social Bonds			
Closeness to mother	.149	.107	1.16
Missing mother indicator	.362	.359	1.44
Closeness to father	-.150	.101	0.86
Missing father indicator	-.249	.272	0.78
Closeness to caregiver	.147	.151	1.16
Social support	-.003	.005	0.99
In school	-.235	.269	0.79
College plans	.109	.222	1.12
Employed	-.165	.211	0.85
Likely to ask child welfare system for help	-.074	.134	0.93

*p<.05, **p<.01, ***p<.001 (two-tailed tests)

Non-violent Crime by Race

As with the violent criminal behavior model, we tested for statistical interactions between placement experiences and race. The regression results for the interaction terms are shown in Table 13. Again, we found little support for the hypothsis that the relationship between out-of-home care experiences and non-violent crime differs between African American and white youth. Only one interaction term, number of placements by race, was significant, such that more out-of-care placements increased non-violent crime for African Americans. Conversely, non-violent crime was similar for white youth with different numbers of placements. This suggests that moving through many out-of-home care placements may be more detrimental for African American youth.

Table 13. Estimates from Poisson Regression of Non-Violent Crime on Covariates with Interaction between Race (African American vs. White) and Out-of-Home Placement Experiences (n=438)

Variables	β	SE	Exp(β)
Demographic and Background Risk Factors			
Male (vs. female)	.805**	.247	2.24
African American (vs. white)	-.428	.815	.65
Prior delinquency	.100**	.034	1.11
Neglect	.089	.061	1.09
Physical abuse	-.058	.083	.94
Sexual abuse/assault	-.179	.283	.84
Substance abuse diagnosis	.188	.283	1.21
Mental health diagnosis	.146	.302	1.16
Teen parenthood	-.544	.359	.58
Iowa (vs. Illinois)	.124	.418	1.13
Wisconsin (vs. Illinois)	.229	.253	1.26
Out-of-Home Care Experiences			
Age at entry	.019	.050	1.02
Number of placements	.005	.028	1.01
Type of placement at wave 1 (vs. traditional foster care)			
Kinship care	-.909	.553	.40
Group care	.362	.458	1.44
Independent living/other	.679	.625	1.97
Number of independent living services	-.031*	.015	0.97
Social Bonds			
Closeness to mother	.077	.097	1.08
Missing mother indicator	.126	.737	1.13
Closeness to father	-.115	.099	.89
Missing father indicator	-.133	.532	.88
Closeness to caregiver	.140	.164	1.15
Social support	-.006	.005	.99
In school	.106	.305	1.11
College plans	-.022	.238	.98
Employed	-.198	.234	.82
Likely to ask child welfare system for help	-.120	.148	.89
Interactions (with African American vs. white)			
Age at entry*race	-.076	.062	.93
Number of placements*race	.075*	.036	1.08
Type of placement at wave 1 (vs. traditional foster care			
Kinship care*race	.703	.641	2.02
Group care*race	.496	.614	1.64
Independent living/other*race	.102	.635	1.11
Number of independent living services*race	.030	.019	1.03

*p<.05, **p<.01, ***p<.001 (two-tailed tests)

Predictors of Criminal Justice Involvement: The Risk for Arrest

Descriptive Statistics

Descriptive statistics for the covariates predicting time to first arrest are presented in Table 14. Results are similar to those presented in Table 9 for the Wave 3 sample.

Table 14. Descriptive Statistics: Covariates in Hazard Models Predicting Arrest (n=728)								
	Males (n=352)		Females (n=376)		Total (N=728)			
	Mean	s.d.	Mean	s.d.	Mean	s.d.	Min	Max
Controls and Risk Factors								
African American	.56	.50	.58	.49	.57	.49	0	1
White	.32	.47	.30	.46	.31	.46	0	1
Other race	.12	.32	.12	.33	.12	.33	0	1
Teen parenthood	.07	.26	.20	.40	.14	.35	0	1
Age at wave 1	17.9	.34	17.9	.37	17.9	.36	17.1	18.8
Prior arrest	.62	.49	.41	.49	.51	.50	0	1
Physical abuse (sum)	.39	.49	.40	.49	1.06	1.71	0	7
Neglect (sum)	.60	.49	.65	.48	1.75	2.06	0	7
Sexual abuse/assault	.14	.34	.40	.49	.30	.46	0	1
Substance abuse diagnosis	.23	.42	.16	.37	.20	.40	0	1
Mental health diagnosis	.13	.34	.32	.47	.23	.42	0	1
Out-of-Home Care Experiences								
Age at entry	10.5	4.0	10.9	4.07	17.9	.36	17.1	18.8
Number of placements	6.3	6.4	5.3	5.4	5.8	5.9	0	42
Type of placement (wave 1)								
Foster care	.36	.48	.36	.48	.36	.48	0	1
Kinship care	.29	.45	.32	.47	.31	.46	0	1
Group care	.21	.41	.15	.36	.18	.38	0	1
Independent living/Other	.07	.25	.09	.28	.08	.27	0	1
Number of independent living services received	14.29	12.13	13.0	11.9	13.6	12.0	0	47
Social Bonds								
Closeness to mother	2.65	1.2	2.69	1.2	2.67	1.2	1	4
Closeness to father	2.12	1.2	2.11	1.2	2.12	1.2	1	4
Closeness to foster caregiver	3.10	1.1	2.95	1.2	3.03	1.2	1	4
Social support	72.2	22.4	74.2	23.14	73.2	22.8	0	100
In school	.83	.38	.82	.39	.82	.38	0	1
College plans	.69	.46	.75	.43	.72	.45	0	1
Employed	.32	.47	.38	.48	.35	.48	0	1
Likely to ask child welfare system for help	2.36	.74	2.42	.74	2.39	.79	1	4
State								
Illinois	.61	.49	.68	.47	.65	.48	0	1
Iowa	.08	.49	.09	.29	.09	.28	0	1
Wisconsin	.31	.46	.23	.42	.27	.44	0	1

Results of the Hazard Model

We first examined the time that young people aging out of care survived, on average, before experiencing an arrest. Forty-six percent of the sample was arrested between the Wave 1 interview (from 2002-2003) and the end of the study period (August 31, 2007), which is about 5.3 years. This figure is not surprising, given the high risk for offending for maltreated youth in general (Maxfield and Widom, 1996; McCord, McCord, and Thurber, 1983; Smith and Thornberry, 1995; Widom, 1989) and considering that over half of the sample reported a previous arrest before the Wave 1 interview. Over the period, the probability of arrest reaches almost .50, as shown in Figure 4 (the cumulative probability of first arrest).

**Figure 4. Cumulative Probability of First Arrest**
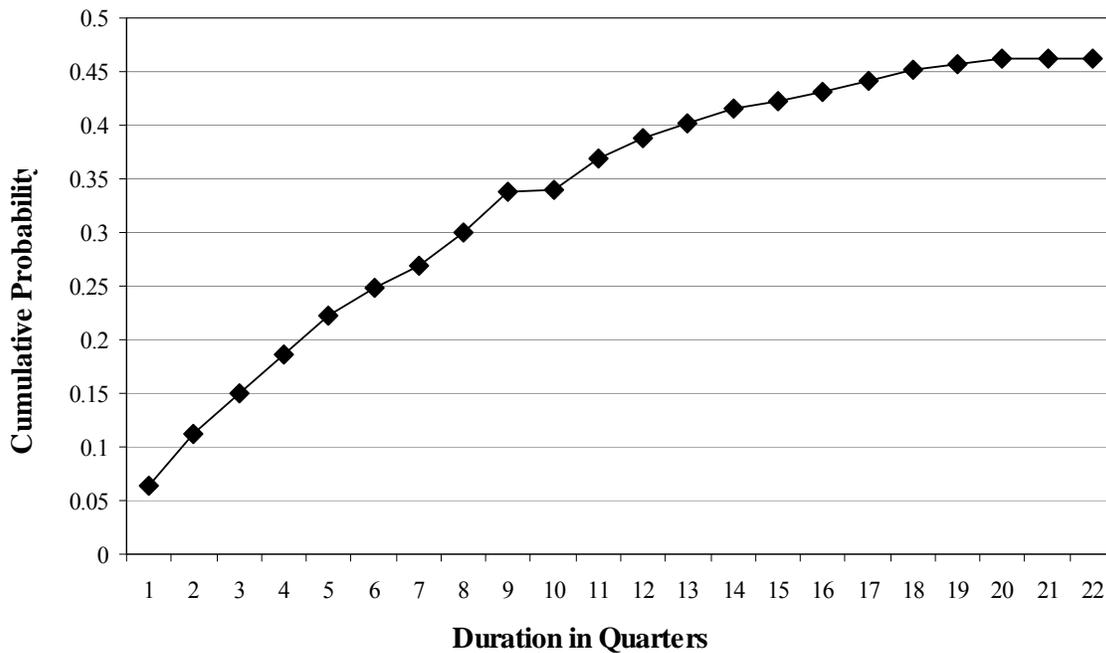
Figure 5 illustrates the conditional hazard probabilities of first arrest following the Wave 1 interview. This is expressed as the proportion of individuals at risk who are arrested during each time point, shown in 3-month, or quarterly, intervals. As shown in Figure 5 the conditional probability of experiencing an arrest generally decreases over the study period.

Figure 5. Conditional Probability of First Arrest
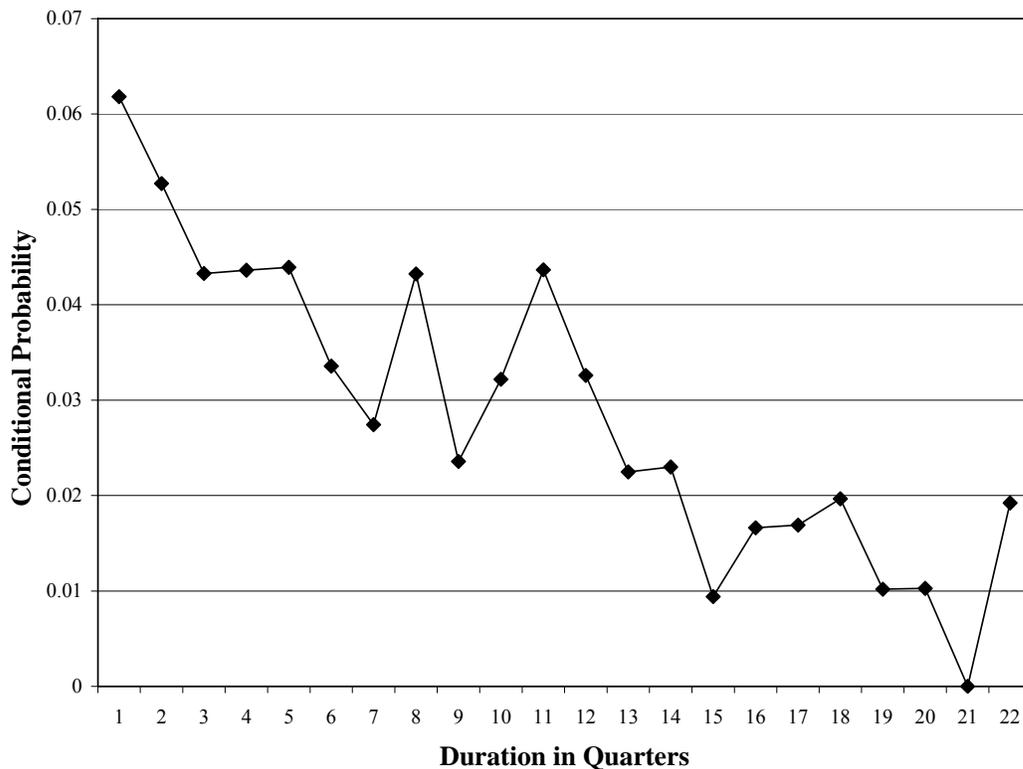
Next, we examined the relationship of covariates to the timing of first arrest. Results of the Cox proportional hazards model for the full sample are presented in Table 15. A significant coefficient indicates the covariate is predictive of the time to first arrest. Positive coefficients are associated with earlier time to first arrest (earlier failure), while negative coefficients are associated with later time to first arrest (longer survival). Hazard ratios are also provided. These hazard, or risk, ratios indicate how the risk of

arrest varies with a change in the value of a covariate relative to a reference value (for

categorical covariates) or with increasing values of a continuous covariate. Values over

one indicate an increase in the hazard rate and values less than one indicate a decrease in

the hazard rate. If one is subtracted from the hazard ratio and the remainder is multiplied

by 100, the result is equal to the percentage change in the hazard of arrest.

Table 15. Estimates from Cox Proportional Hazard Regression of Time to First Arrest on Covariates: Full Sample (n=728)			
Variables	β	SE	Hazard Ratio
Demographic and Background Risk Factors			
Age at wave 1 in years	-.053	.200	.95
Male (vs. female)	.692***	.133	2.00
African American (vs. white)	.719***	.155	2.05
Other race (vs. white)	.322	.197	1.37
Prior arrest	.814***	.135	2.26
Neglect	-.005	.035	1.00
Physical abuse	.047	.043	1.05
Sexual abuse/assault	.025	.153	1.02
Substance abuse diagnosis	.425**	.139	1.53
Mental health diagnosis	-.334*	.159	.72
Children	.055	.176	1.06
IA	-.054	.279	.95
WI	-.107	.155	.90
Out-of-Home Care Experiences			
Age at entry	.015	.016	1.01
Number of placements	.035***	.009	1.04
Type of placement at wave 1 (vs. traditional foster care)			
Kinship care	.194	.154	1.21
Group care	.458**	.168	1.58
Independent living/other	.295	.265	1.34
Number of independent living services	.002	.005	1.00
Social Bonds			
Closeness to mother	.098	.061	1.10
Missing mother indicator	.495*	.205	1.64
Closeness to father	-.017	.058	.98
Missing father indicator	-.042	.164	.96
Closeness to caregiver	.034	.079	1.03
Social support	.005	.003	1.00
In school	.036	.153	1.04
College plans	-.270*	.123	.76
Employed	-.378**	.126	.68
Likely to ask child welfare system for help	-.048	.078	.95

*p<.05, **p<.01, ***p<.001 (two-tailed tests)

We found that being male versus female and African American versus White increased the hazard rate for arrest by about 100 percent. In other words, the time to first arrest was significantly shorter for males and African American respondents. The time to first arrest was also significantly shorter among those with a prior arrest and those with a history of alcohol or drug abuse diagnosis. That young people with substance abuse problems would have a greater risk of arrest is not surprising given the association between drug use and arrests among juveniles (National Institute of Justice, 2003). These findings were independent of out-of-home care experiences. Having a history of one or more of the mental health disorders we assessed was associated with a reduced hazard of arrest. Since the most common diagnoses among the disorders we assessed were depression and PTSD, in other words, disorders not normally reflective of externalizing behavior problems, the negative association is not necessarily surprising.

The risk for arrest was significantly associated with out-of-home care placement experiences.[36] Being in group home care versus traditional foster care at the time of the Wave 1 interview led to significantly higher hazard rates, with a group care placement at the time of the Wave 1 interview resulting in a 58 percent increase in the hazard rate when compared to a traditional foster care placement. The need for a highly restrictive placement setting at the onset of the transition may represent an important marker of risk for criminal justice system involvement. Young people who experienced multiple placements also had a higher hazard rate for arrest. Results show that each additional placement after the first resulted in a 4 percent increase in the hazard rate. This finding is

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[36] As we did in the criminal behavior models, we tested for statistical interactions between race and placement experiences. None of the relationships were significant and therefore were not included in the final model presented here.

particularly salient given that over 50 percent of the respondents experienced four or more placements during foster care.

We found some support for the hypothesis that having bonds as one approaches the transition to adulthood reduces the risk of arrest. With respect to our measures of connections to family and caregivers, however, the results indicate that contrary to our expectations there appears to be little relationship with being close to one's mother, father or foster caregiver and crime. However, not having a mother was related to an increase in the hazard rate. There was a 64 percent increase in the risk for arrest among those youth coded as not having a mother.

Bonds to education and employment did predict timing to arrest in general, but again, results were mixed. Having plans to graduate from college and being employed at Wave 1 reduced the hazard rate by 24 and 32 percent respectively. Thus, those with plans to attend college and those employed before the onset of the transition to adulthood survived longer without experiencing an arrest during the transition than those unemployed or without college plans. Being enrolled in some form of school just prior to the transition, however, was not significantly related to the timing of arrest. These findings suggest that commitment to one's education may be more important than simply the status of being in school for the timing to first arrest. However, a high percentage of respondents (83 percent) were enrolled in some form of education at Wave 1. It may be that we found no relationship between education status and the timing of arrest due to the limited variation in this covariate. The likelihood of turning to the child welfare system for assistance was not related to the hazard of first arrest.

Time to Arrest by Gender

We also examined the hazard models separately by gender. The mean time to first arrest differed for males and females. For males, the mean time to first arrest, for those arrested, was 1040 days, or approximately 2.9 years. Over the observed range of data (1927 days, or about 5.3 years) the probability of being arrested is .61 for males. For females, the mean time to first arrest was longer, at 1408 days, or approximately 3.9 years. Over the observed range of data, the probability of being arrested is .32 for females.

Results of the Cox proportional hazards model by gender are presented in Table 16. To determine whether the regression coefficients significantly differed across the models, we calculated a Z-score using the formula $Z = \dfrac{b_1 - b_2}{\sqrt{SEb_1{}^2 + SEb_2{}^2}}$ (see Clogg, Petkova, and Haritou, 1995; Paternoster, Brame, Mazerolle, and Piquero, 1998), which is included in Table 16. Based on this test, we found little evidence of differences in the factors predicting time to arrest between males and females. However, we note that there may not be enough power to detect such differences. Therefore, although we discuss these gender specific models, we note that we cannot be sure that the factors examined here differentially predict the risk for arrest for males and females.

For males and females, having a prior arrest and experiencing placement instability were significantly associated with a higher hazard rate for arrest. The high rate of subsequent criminal system involvement among those with previous legal system involvement suggests the need to take a closer look at the ways in which juvenile criminal system involvement intersects with foster placement experiences in ways that may influence subsequent criminal activity.

For males, being employed at the onset of the transition was associated with a lower hazard rate of arrest; being employed resulted in a 31 percent decrease in the hazard rate of arrest for males. Having plans to enroll in college also resulted in a 31 percent decrease in the hazard rate of arrest suggesting the protective effects of planning for the future and a commitment to education. Given the uncertainty associated with being in long-term foster care, the ability to plan likely reflects an important protective factor for young males in meeting future goals. Being enrolled in school, however, was not significantly related to the time to first arrest among males or females.

With regard to bonds to parents and caregivers, we found for females that a close relationship with a biological mother resulted in a 24 percent increase in the hazard rate of arrest. For males, not having a mother resulted in a 58 percent increase in the hazard rate of arrest, suggesting that males who are without a mother experienced a shorter time to first arrest. Again, differences for these coefficients were not statistically significant suggesting the relationship between closeness to mother and arrest may be similar for males and females.

	Males			Females			
Table 16. Estimates from Cox Proportional Hazard Regression of Time to First Arrest on Covariates By Gender							
Variables	*b*	*SE*	*Hazard Ratio*	*B*	*SE*	*Hazard Ratio*	*Z-score for diff*
Demographic and Background Risk Factors							
Age at wave 1	-.199	.264	.82	.123	.327	1.13	-.76
African American	.931***	.192	2.54	.338	.292	1.40	1.69
Other race	.213	.265	1.24	.434	.321	1.54	-.53
Prior arrest	.610**	.182	1.84	1.07***	.217	2.91	-1.62
Neglect	.043	.043	1.04	-.116	.064	.89	2.06*
Physical abuse	.044	.055	1.04	.055	.072	1.06	-.12
Sexual abuse/assault	-.094	.237	0.91	.028	.224	1.03	-.37
Substance abuse diagnosis	.460**	.173	1.58	.382	.268	1.47	.24
Mental health diagnosis	-.674**	.241	.51	-.120	.234	.89	-1.64
Children	.470	.265	1.60	-.086	.246	.92	1.53
IA	-.186	.386	.83	-.000	.431	1.00	-.32
WI	-.028	.184	.97	-.308	.324	.74	.75
Out-of-Home Care Experiences							
Age at entry	.027	.021	1.03	-.025	.025	.98	1.59
Number of placements	.029*	.012	1.03	.060***	.016	1.06	-1.55
Type of placement at wave 1							
Kinship care	.166	.196	1.18	.215	.262	1.24	-.15
Group care	.443 *	.223	1.56	.441	.290	1.56	.01
Independent living/other	.106	.352	1.11	.167	.435	1.18	-.10
Number of independent living services	.009	.006	1.01	-.008	.008	.99	1.70
Social Bonds							
Closeness to mother	.036	.079	1.04	.213*	.102	1.24	-1.37
Missing mother indicator	.681**	.255	1.98	.060	.398	1.06	1.31
Closeness to father	.018	.078	1.02	-.022	.091	.98	.33
Missing father indicator	-.067	.200	.93	-.031	.295	1.03	-.10
Closeness to caregiver	-.076	.109	.93	-.024	.129	.98	-.30
Social support	.004	.003	1.00	.004	.005	1.00	.00
In school	.188	.206	1.21	.032	.258	1.03	.47
College plans	-.373*	.156	.69	.015	.221	1.02	-1.43
Employed	-.399*	.163	.67	-.390	.220	.68	-.03
Likely to ask child welfare system for help	-.078	.106	.92	.060	.133	1.06	0.81

*p<.05, **p<.01, ***p<.001 (two-tailed tests)

Limitations of the Study

In presenting our findings, we note the following limitations to the study. First, although this is the largest study of foster youth aging out of care since the Foster Care Independence Act to date, youth from only three Midwestern states are represented. While findings may not be generalizable to foster youth in other states, it is worth comparing the Midwest Study sample to the characteristics on the foster care population nationally. There are no readily available national data on older youth in foster care, however, data provided by states to the Federal government in 2001 indicate that the Midwest Study sample was comparable to the national foster care population in terms of gender, but not race and ethnicity (U.S. Department of Health and Human Services, 2003). In 2001, just over half (52%) of children and youth in foster care nationally were male, compared to 49 percent of the Midwest Study sample. African Americans made up a larger percentage of the Midwest Study population (57%) than they did of the foster care population nationally (37%), whereas Hispanics made up a smaller percentage of the Midwest Study sample (9%) than they did of the overall foster care population (17%). Because the sampling frame of the Midwest Study excluded youth under the care of the child welfare system who were in psychiatric hospitals, incarcerated, or on runaway status over the course of the study field period, the study might understate to some extent crime outcomes for the overall population of older youth in care.

Second, although our study benefits from a longitudinal design with high retention, some analyses are limited to only those youth interviewed at certain or all waves. For example, only those youth with information on criminal behavior at Wave 3 were included in analyses predicting crime at age 21. Similarly we limited our latent class analysis to only those youth present in all three waves and who answered questions

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about their criminal behavior. There is the possibility that youth not interviewed and, therefore, not included in these analyses engage in more criminal behavior than those interviewed. Statistical checks on the data (e.g. comparing data at Wave 1 and official arrest records over time) as described earlier do not suggest attrition of those most likely to offend. However, we note this as a possible limitation.

Third, the purpose of our study was to examine whether social bonds one has as he/she approaches the transition to adulthood predicts offending during the early transition period. Therefore, we used social bond measures at Wave 1 to predict subsequent behavior. It may be that the strength and type of social bonds change over time. Future research would benefit from examining changes in social bonds and those that are contemporaneous to the outcomes.

Fourth, our social bonds measures, while noteworthy for addressing attachment to a variety of caregivers and for focusing on those bonds we hypothesize to be most critical during the early transition to adulthood, have limitations. In particular, our measures of attachment to parents and caregivers use only one question regarding closeness to the specified individual. In addition, we have no measure of parental monitoring, which is a focal measure in Hirschi's theory. Again, although we hypothesized that certain social bonds, notably attachment to parents and caregivers and commitment to education and employment, would be most critical as one approaches the transition to adulthood, we recognize that other bonds may important as well. For example, although marriage was very rare among our sample, attachment to a romantic partner is a possible bond that may predict criminal behavior. Future research, particularly that addresses youth as they

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move further into the transition period, may benefit from considering the importance of romantic partners.

Finally, future research would benefit from the use of multi-methods, possibly including qualitative interviews, to gain a deeper understanding of the life course experiences of youth aging out of foster care and their associated involvement in crime.

Policy and Practice Implications

Since 1985, federal policy has long grappled with how to parent children in aging out of foster care and help them to grow up to be productive adults. There have been successive pieces of legislation which have attempted to address the needs of older children in the child welfare system, including the Independent Living Program in 1985, the Adoption and Safe Families Act of 1997, and the John Chaffee Foster Care Independence Act in 1999. More recently, the Fostering Connections to Success and Increasing Adoptions Act of 2008 (to be implemented in 2011) amended the Social Security Act to provide states who extend the age at which youth may remain in foster care past the age of 18 with federal funding.

Our findings have several implications for policy, practice, and research. First, comparison of the Midwest Study and Add Health data on self-reported crime and arrest provide reason for both optimism and concern. On the one hand, youth self reports suggest that foster youth, like their peers, engage in less crime over time as they move into adulthood. In fact, while foster youth report more criminal behavior than their peers as they approach the age of majority, at age 19 and 21 there are few differences between the groups in self-reported crime. Findings from our latent class analysis indicate that only about one-fifth of the foster youth (19 percent; latent classes 4 and 5 combined) are chronic offenders, with somewhat less than half of these being nonviolent chronic offenders (8 percent of the sample). In other words, at least according to their own reports, as a group foster youth in transition pose little threat to community safety. On

the other hand, in spite of these relatively small differences in self-reported criminal behavior, foster youth remain much more likely than their peers to be arrested as they make the transition to adulthood. These conflicting findings call for research designed to better understand the circumstances that lead to foster youth in transition to being arrested. Do their self reports mask behavior that understandably leads to arrest, or might they be under more scrutiny than their peers or receive less sympathy from law enforcement authorities?

Second, the finding that race is a significant predictor of arrest, but not self-reported crime[37], is disturbing and calls for further investigation and explanation. That race did not predict self reported non-violent *nor* violent crime in our sample when controlling for other factors suggests that the racial difference in official arrest versus self-reported outcomes may not simply be an artifact of a self reported crime measure that reflects trivial and non-serious offenses (see Elliot and Ageton, 1980). In other words, our findings are inconsistent with past work that finds significant race differences when examining more serious self reported crime measures (Elliot and Ageton, 1980). If our self-reported crime measures are not differentially valid by race (e.g. .if African Americans are not less likely to report engaging in certain offenses[38]), then our finding that African American youth experience greater arrests but do not reporting engaging in more crime suggests a possible bias in police response. Foster youth already face considerable challenges making the transition to adulthood and African American foster

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[37] We note that our bivariate analyses showed a higher proportion of African American youth to be classified using self-report data as chronic offenders as well as non-offenders. However, multivariate analyses did not reveal racial differences in self reported offending.

[38] See Hindelang, Hirschi, and Weis (1981) for a discussion on this methodological issue.

youth appear to face the added burden of heightened risk of arrest that may not reflect a heightened engagement in crime.

Third, our findings suggest that greater attention is needed to ensure that older foster youth are provided with opportunities, both before and after reaching the age of majority, to become better connected to larger structures that traditionally support the transition to adulthood, including employment and education. Presently, there are no guidelines or practice standards that ensure foster youth are provided with opportunities to gain skills to use in the work force. Yet, the limited research that has been done on young adults who "aged out" of foster care has found that their labor market outcomes are generally quite poor, which suggests that the employment-related needs of foster youth are not currently being met (Courtney, Dworsky, Ruth Cusick, Keller, Havlicek, and Perez, 2007). Similarly, educational outcomes for foster youth are generally poor (Courtney and Hughes-Heuring, 2005). While the associations identified in our study should not be regarded as causal, the fact that prior employment and plans to attend college are associated with reductions in later crime argues for greater attention to improving the education and employment experiences of foster youth. Given the lack of evidence regarding the effectiveness of independent living programs directed towards improving education and employment outcomes, resources should be devoted to rigorous evaluation of interventions targeting these outcomes for foster youth (Montgomery et al, 2006).

Fourth, our findings on the relationships between the placement experiences of foster youth and later crime have implications for child welfare practice. Our findings suggest that it is not simply the case that youth with more difficult cases experience

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multiple placements or are placed in group settings. Placement in group care near the point of transition from care and a history of placement instability are strong predictors of criminal behavior and arrest, even after controlling for prior problem behavior, suggesting that placement instability and group care placement are not merely indicators of existing problem behavior.[39] Although our analyses cannot confirm a causal relationship between placement instability or group care and crime, our findings do point to a possible opportunity for the child welfare system to act on these specific cases. The child welfare system may consider providing extra supports in an attempt to mitigate the possible detrimental impact of these particular placement experiences or those other external factors that may be associated with placement instability or placement in group care that were not examined here. Our findings suggest that efforts to prevent crime among foster youth making the transition to adulthood are well targeted at those in group care. That placement instability is associated with later crime may not be surprising, but it calls for renewed efforts to minimize the instability that all too often characterizes the lives of children and youth in care. Developing research on the effectiveness of treatment foster care and training of foster parents to better cope with externalizing behavior should help guide efforts to develop alternatives to group care and help reduce placement mobility of foster youth (Chamberlain et al, 2008; Leve and Chamberlain, 2005).

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[39] We also note that we included a measure of caregiver problems and reentry to the child welfare system after a failed attempt at reunification in previous models not shown in this report to control for the possibility that negative placement experiences were indicators of antisocial behaviors of parents and continued difficulties with home environments. Neither was significant predictors of the outcomes and the inclusion did not change our findings for number of placements or group home placement.

Fifth, although we found limited support for our hypothesis that greater receipt of independent living services is related to less crime, our findings do suggest that these services are meaningful. In particular, greater receipt of independent living services was related to a reduction in violent behavior. This finding highlights the need for further research on the nature of these services, including the quality and types of programs being offered, availability of services, and program uptake (Naccarato and DeLorenzo, 2008; Montgomery et al, 2006).

Finally, our findings suggest that more attention ought to be given to understanding the ways in which child welfare agencies assist older foster children to navigate relationships with their biological parents and extended families. Contrary to findings for vulnerable populations which have suggested that having a close and caring relationship with at least one adult is an important protective factor for youth at risk, this study suggests that greater understanding of the multiple bonds former foster youth have with individuals and their communities is needed. While we found limited support for the hypothesis that closeness of foster youth to their parents was related to crime, we found stronger evidence that the absence of a parent increased the risk of self-reported crime and arrest. Research consistently suggests that a large percentage of these young people return to their families at discharge from the child welfare system (Wulcyzn and Hislop, 2001). It may then follow that these young people will be better served by an approach that attempts to minimize the risks presented by their caregivers, even when youth are not reunified with their caregivers. A related issue has to do with the relatives caring for these young people. Although the Fostering Connections to Success and Increasing Adoptions Act will facilitate more permanent placements with relatives, there

is some evidence to suggest that helping relative caregivers to navigate relationships with biological parents may go a long way in stabilizing placements (Beeman and Boisen, 1999) and potentially decrease familial obstacles facing foster youth during the transition to adulthood.

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