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The Impact of Adolescent Deviance on Marital Trajectories

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Abstract

Marriage is a key life event that has numerous benefits. Recent research extends these benefits to include desistance from crime and drug use yet there has been little investigation regarding whether deviant behavior in adolescence impacts long-term marital patterns. Since rates of marriage are low among African Americans and rates of adolescent deviance and crime are high, we investigate the long-term relationship between the two drawing on longitudinal data from the Woodlawn cohort of urban African Americans. This article investigates whether serious adolescent delinquency and marijuana use predict marital trajectories, controlling for known correlates. Multivariate findings indicate that within this African-American population, deviance predicts the probability of marriage, stability of marriage, and timing of marriage for men yet deviance relates solely to the probability of marriage for women.

Over the past century, evidence has shown that marriage is a key life event that produces benefits across a variety of domains of life. For instance, research supports the view that married men and women have lower rates of mortality, better psychological well-being, lower levels of alcohol-related problems and risk-taking behaviors, and better financial well-being than unmarried persons (Gove et al. 1983; Umberson 1987; Coombs 1991; Waite 1995; Horwitz et al. 1996; Waite and Gallagher 2000). More recently, the positive impact of marriage has included a reduction in crime at the individual level. In fact, the theoretical and empirical research on the effect of marriage on criminal desistance has become prevalent in criminology (Sampson and Laub 1993; Laub and Sampson 2003; Duncan et al. 2006; Sampson et al. 2006; King et al. 2007; Bersani et al. 2009). This body of research finds that marriage can redirect someone from a deviant pathway, whether it be crime or drug use, to one of nondeviance. Thus, marriage remains a key topic of interest because of its wide range of potential benefits.

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A prominent theoretical perspective that underpins this body of research is Sampson and Laub's age-graded theory of informal social control (Sampson and Laub 1993; Laub and Sampson 2003). Sampson and Laub draw on the life-course framework (see Elder 1985) and hypothesize that among offenders strong social bonds stemming from marriage will predict desistance from criminal offending in adulthood. There has been a growing amount of supporting evidence regarding the notion of marriage as an independent variable predicting a reduction in criminal offending in adulthood. For instance, Horney and colleagues (1995) found that among serious male offenders, living with a wife reduced the probability of committing an assault. Farrington and West (1995) studied the Cambridge Study of Delinquent Development men and found that a strong marriage was negatively associated with offending. With respect to drug use, marriage has been found to be related to a lower likelihood of marijuana use and reductions in binge drinking (Maume et al. 2005; Duncan et al. 2006). Recently, more rigorous methodology has been used to investigate the causal influence of marriage on desistance from crime. For instance, Sampson and colleagues (2006) used a counterfactual approach and conclude that being in a state of marriage is causally associated with a reduction in crime. King and colleagues (2007) used propensity score matching to control for confounding and similarly find that marriage leads to a reduction in offending for males.

Comparatively there has been little attention placed upon the investigation of marriage as the outcome and crime and drug use as the predictors, yet research shows that early deviance plays a key role in shaping life trajectories. While the family literature provides an abundance of research predicting marital status and marital stability based on mate selection, structural background factors, family influences, personality and temperament, contextual factors, attitudes toward marriage, and the interactions among the couple (e.g., Axinn and Thornton 1992; Larson and Holman 1994; Amato 1996; South 2001), there is a relative paucity of research investigating the impact of deviant behaviors such as early crime and drug use on marriage and marital patterns. Thus, the question remains, does a deviant past predict future marital trajectories? Specifically, we ask, does adolescent delinquency and marijuana use impact the dynamic longitudinal marital patterns of urban African-American males and females?

IMPACT OF DEVIANCE ON MARRIAGE

Life-course criminology is a dynamic perspective that looks at the unfolding of human lives and focuses on the stability and change in offending over time. One argument of stability in offending is the idea that beyond early childhood propensity, delinquents will be antisocial in a variety of life domains further facilitating deviance. These pathways of continuity in behavior are a result of cumulative disadvantage (Sampson and Laub 1997). For instance, a pathway from deviance to poor marital outcomes to continued deviance could occur, theoretically, for numerous reasons. For instance, deviants engage in behavior that may make them less "marriageable" to potential partners, such as drinking heavily and being less likely to hold down a steady job (Sampson and Laub 1993). Similarly, deviant juveniles may be more likely to be antisocial in their interpersonal relationships, which may lead to less success in dating behavior or the maintenance of long term relationships. Dating violence may also result from the antisocial behavior of deviant adolescents (Lewis and Fremouw

2001). In general, we suggest that deviant adolescents will be less proficient in negotiating relationships to maintain healthy, stable partnerships (Wingood et al. 2001). A further explanation of why deviant individuals would be less likely to marry comes from their lower bonds to society and thus their lower attachment to marriage norms. This all may lead to a continuation of deviance into adulthood and a continuation of social maladaptation, such as being unable to establish a healthy marital relationship.

Indeed, the empirical evidence has begun to find that adolescent deviance is related to various aspects of marriage regardless of the numerous possible pathways. With respect to the probability of marriage, Fu and Goldman (1996) investigated how a variety of behaviors, including crime and drug use, impacted first marriage rates on an all-white sample from the National Longitudinal Study of Youth (NLSY) data. These researchers found evidence that alcohol and drug use were associated with lower rates of marriage, yet the evidence regarding delinquency was inconsistent. In a study of the Woodlawn cohort, Green and Ensminger (2006) used propensity score analysis, which statistically controlled for the differences that may exist between drug users and non drug users that also may relate to the “selection” into marriage. They found that heavy adolescent marijuana use predicted a lower likelihood of marriage in young adulthood (age 32) even when controlling on earlier potential selection factors. This relationship was mediated by high school dropout. Similarly, Huebner studied a male subsample from the NLSY and found that incarceration was negatively associated with the likelihood of becoming married and that this finding was consistent for all races (Huebner 2005, 2007). Thus, the current, although sparse, literature indicates that deviant adolescent behaviors have an impact on the likelihood of marriage, one dimension of the marital trajectory.

Deviance has also been found to relate to marital stability. In a study of 640 adolescents followed for four years, Newcomb and Bentler (1983) found that high levels of high school drug use predicted greater difficulties in marital relationships as indicated by higher levels of divorce and lower satisfaction in the marriage among those who married. They conclude that adolescent drug use is associated with precocious marriage that the individual is not mature enough to handle resulting in less successful marital outcomes. Similarly, Kandel and colleagues (1986) followed over 1,000 adolescents to age 25 and found higher rates of divorce among those who used marijuana and illicit drugs during adolescence, but again, the longer-term impact is unclear. In a study on marital dissolution, Fu and Goldman (2000) found that drug use was associated with higher rates of divorce among males while having a criminal record was significantly related to the divorce rate among women. Finally, in a review of 20 studies investigating the adult outcomes of antisocial girls, Pajer (1998) found that antisocial girls were less happy in their marriages, more likely to divorce, and more likely to be in abusive or violent marriages than their non-delinquent counterparts.

Another dimension of the marital trajectory is the timing of marriage. The idea that the timing of certain transitions can affect future success in several life domains (including crime and deviance) is not a new one (Hogan 1978; Rindfuss et al. 1987). In fact, the idea that the timing of life events affects the influence of certain events is one of the four main principles of the life-course perspective (Elder 1998). Drawing on this life-course perspective, Krohn and colleagues (1997) investigated the role of substance use in

influencing precocious adult transitions, including school dropout, teen pregnancy, teen parenthood, and early independent living before high school graduation among the Rochester Youth Development Study sample followed from ages 13 to 20. Although this study did not include marriage due to low numbers, these researchers find evidence that substance use among males is significantly related to all of the precocious transitions in the study, controlling for peer and parent substance use, race, social class, and commitment to school. Substance use among the females was significantly related to parenthood and independent living. Martino and colleagues (2004) found that cigarette use, but not alcohol or marijuana use, in adolescence was associated with early marriage, and this association was mediated by poor educational attainment and unwed pregnancies. What was unclear from this work was the impact beyond early transitions into adult roles, such as the stability and success within these roles.

Thus, while there is some evidence that deviance predicts the probability of marriage, marital problems, *and* precocious transitions to marriage based on separate studies, the gaps in the literature highlight the need for an investigation of long-term marital patterns to tease out whether deviance in adolescence predicts these dimensions within the same study.

DEVIANCE AND MARRIAGE AMONG AFRICAN AMERICANS

This article focuses on the role of deviance and marriage among African Americans, a neglected population in the literature. Much of the existing research on deviance predicting marital outcomes focuses on population-based samples (e.g., NLSY), all-white samples, or all male-samples. However, the marital experience of African Americans is potentially quite different than their white counterparts. African Americans are less likely to marry and more likely to divorce than whites, a difference that has been increasing steadily over the past 50 years (Waite 1995; Pinderhughes 2002; Dixon 2009). In general, marriage rates are lower among African Americans (Schoen 1995) and marriage tends to occur later in the life course for those African Americans that do marry. According to the U.S. Census Bureau (2004), 17% of white males and 30% of white females had married by age 24 compared to 10% of African-American males and 12% of African-American females. These trends are especially salient among urban African Americans (Anderson 1999) and among those of low socioeconomic status (Edin and Kefalas 2005). Thus, as African Americans transition to adulthood, fewer are entering this normative adult social role.

African Americans are also distinct from whites with regard to deviance. While self-report studies of delinquency show few differences by race for overall delinquency, as the self-report items become more serious African Americans begin to show more serious and more frequent delinquency (Hindelang et al. 1981). This fact results in a disproportionate representation in the criminal justice system with African Americans being significantly overrepresented in all stages of criminal justice intervention. Similarly, although substance use among African Americans during adolescence is comparable to or even less than among whites, African Americans are more likely to develop problem use and are less likely to terminate their drug use as they enter adulthood (French et al. 2002). Thus, serious delinquency and substance use as an adolescent may begin the pathway to marital failure through continued use and problem use that may be different than whites.

Finally, in addition to often being considered “high risk” and thus the target of drug and delinquency prevention programs, urban African Americans are likely to be the target of the latest policies promoting marriage as well. Thus, a better understanding of the impact of delinquency and drug use on long-term marital patterning seems especially relevant for this population.

METHODS

The current study tests several marital outcomes to begin to unpack the impact of deviance on long-term marital trajectories among urban African Americans. We employ the Woodlawn data, which contains prospective data on serious adolescent delinquency and marijuana use as well as marital history among a disadvantaged, urban cohort of African-American men and women. We first test whether delinquent or drug-using adolescents are more likely to remain unmarried well into adulthood. Second, we test whether these deviant individuals are more likely to display unstable marital patterns if they do marry. Third, we test if delinquent or drug-using adolescents are more likely to marry earlier than their non-deviant counterparts, as others have found precocious transitions among deviant adolescents to be common.

Sample

The Woodlawn cohort is an epidemiologically defined community cohort of 1,242 African-American males and females (51.2% males). The cohort began as first graders (age 6) in the 1966–1967 school year and has been followed longitudinally at three additional time points through mid-adulthood (age 16, 32, and 42). All first graders in the nine public and three parochial schools in Woodlawn, a community on the Southside of Chicago, were asked to participate in the study resulting in little selection bias based on nonparticipation (only 13 families declined participation) (Kellam et al. 1975). Virtually all of the participants are African American (99%).

At the time of the initial study (1966), Woodlawn was a socially disadvantaged, predominantly African American, inner-city community in Chicago with 32% of families living below the Federal poverty line. In the 1970s and 1980s unemployment among African Americans worsened, which set disadvantaged African Americans farther from mainstream society (Massey and Sampson 2009). Chicago was no different with a peak in unemployment in 1982, when the cohort members were in their early years of the job market (22 years old).

Crime and drug use were also prevalent both within the cohort and within the community. During the period from 1966 to 1972, Woodlawn had the highest rate of male juvenile delinquents of the 76 community areas of Chicago (33.5 per 100 males between the ages of 12 and 16) (Council for Community Services 1975). The cohort members themselves also reported high rates of criminal activity; 98.0% of males and 94.8% of females interviewed in adolescence ($n=343$ and 362, respectively) self-reported at least one delinquent act or status offense between the ages of 13 and 16. Moreover, 83.8% of the males and 62.0% of the females self-reported at least one violent offense in adolescence (see Appendix A for list of offenses). The 1970s, when the cohort was around ages 10 to 20, was a time of increased

gang activity in the Woodlawn area with the neighborhood gang, the Blackstone Rangers, who developed into a young adult gang, the El Rukins.

The year the cohort was due to graduate from high school at age 18 (1978) was the year of the highest rates of student drug use nationally (Johnston et al. 2009). Drug use in adolescence among the Woodlawn population was also high with 63% reporting some illegal drug use at the adolescent interview. While the majority of drug use was for marijuana (53.2%), 7.5% of the cohort reported cocaine use and 1% reported heroin use in adolescence.

All four waves of data are used in the current study (first grade, adolescence, young adulthood, and mid-adulthood). During first grade (1966–1967), teachers were asked about each child's classroom behavior; the child's home life and family background was provided by in-person interviews with the mother or mother surrogate. Close to ten years later when the children were adolescents (age 16), 75% of the mothers or mother surrogates ($n=939$) and 56% of the children ($n=705$) were re-interviewed through group administered questionnaires. The primary information drawn from the adolescent interview for this study includes marijuana use and delinquent behaviors in adolescence (see Kellam et al. 1980; Ensminger et al. 1983). When the participants were age 32 (1992), 80% ($n=952$) of the original living cohort were located and interviewed in person or via phone interview. In 2002, 72% ($n=833$) of the living participants were interviewed at age 42. The participants of the adult interviews were asked questions regarding a variety of social (e.g., marital and employment history), psychological and physical health, and behavioral domains (e.g., criminal activity, legal and illegal substance use) (see Doherty et al. 2008a; Green et al. 2010; Green and Ensminger 2006). Taking the two adult interviews together results in 1,053 individuals with adult information, which is 85% of the original cohort (48% male).

Measures

Marital Trajectories—The outcome of interest is long-term marital patterns, which are assessed through creating marital trajectories. In order to estimate these trajectories, we draw on the self-report interview data from the young adult and mid-life interviews to compile annualized information of whether someone was married or not at each age (ages 14 to 42). At the young adult interview, each person was asked about his or her current marital status, the number of times he or she had been married, and the age of marriage for his or her current marriage. If the person was married more than once, the respondent was also asked the age his or her first marriage began, the age his or her first marriage ended, and how that marriage ended. At the mid-life interview, each person was asked about any changes in his or her marital status since the young adult interview and the details of any and all changes.

From this information, annualized data on marriage was obtained by coding whether someone was married or not married at each age (ages 14 to 42). Although not all cases were interviewed at both adult interviews, 1,049 cases provided information on their marital history (48% male and 52% female) which was used to construct the marital trajectories. A person was coded as not married in any given year if he or she were divorced, separated, or widowed. A person is also coded as not married if he or she were living with a partner.

Although it would have been interesting to investigate cohabitation separately, the Woodlawn data lacks annualized data on cohabitation as retrospective ages of change in marital status are only reported for *marital* changes (i.e., marriage and separation/divorce).

Based on the marital trajectories of the 1,049 cases, 42% were never married by age 42, 49% were married once, and the remaining 9% were married two or more times (8.5% were married twice), with relatively similar patterns for males and females. Of those who were married at least once, the average age of first marriage is 26.1 with males being first married at a slightly older age than females (26.5 years vs. 25.8 years) but this difference was not statistically significant.

Delinquency and Marijuana Use—Since delinquency is quite common in the Woodlawn cohort, we measure *serious adolescent delinquency* from self-reports administered in adolescence and in young adulthood (see Doherty et al. 2008a). From the adolescent interview, cohort members were asked how often in the past 3 years they had engaged in any of 18 non-drug related self-report items (0 = never to 5 = 5 + times). These responses were summed into an index of delinquency where higher scores indicate more frequent and a wider variety of offenses (range = 0 to 69; Mean = 12.95; *SD* = 10.14). From the young adult interview, cohort members were asked whether they had engaged in any of nine non drug-related delinquent activities before age 15 (0 = no, 1 = yes). These responses were combined into an index of delinquency seriousness where higher values indicate a wider variety of offenses (range = 0 to 9; Mean = 0.52; *SD* = 1.08). Illegal drug use is not included in the measure of serious delinquent behavior in order to assess delinquency and drug use separately. Appendix A outlines the items and descriptive statistics for the 27 individual items used to create these adolescent delinquency indices.

To determine a group of serious delinquents, we cut both delinquency indices at one standard deviation above the mean to distinguish those who were serious delinquents at each assessment. A person is labeled as a serious delinquent in adolescence if he or she is considered to be a serious delinquent according to the adolescent scale, the young adulthood scale, or both. Although this dichotomization strategy creates a loss in variability, that loss is offset by the gain in sample size with delinquency information. Using both the prospective information from adolescence and the retrospective information from young adulthood increases the sample size from 60.2% who also had marital information to 93.5% with marital information. A comparison of those with information at both assessments ($n = 594$) reveals a significant correlation between those labeled as seriously delinquent based on the adolescent measure and on the young adult measure ($\chi^2 = 11.45, p = .002$).

The result is two groups of adolescents—one group comprises serious and frequent offenders as adolescents, labeled serious delinquents (18% of the sample), and the other group comprises non-serious, experimental, or non-offenders as adolescents, labeled non-serious delinquents (82% of the sample). We chose to define two groups (serious and non-serious) as opposed to three (serious, nonserious, and nonoffenders) since only 23 adolescents (3.3%) committed no offenses (4 males and 19 females). Those who are labeled serious delinquents were significantly more likely to be males (72.6%) while non-serious delinquents tended to be female (57.0%) ($\chi^2 = 54.789, p < .001$). Based on the adolescent

interview data ($n = 705$), serious delinquents tended to be violent offenders with 97.4% committing at least one violent act ($\chi^2 = 60.641, p < .001$) and they tended to commit a wider variety of acts (9.5 out of 18, on average compared to 4.7 out of 18 for non-serious offenders) ($t = -15.5, p < .001$).

Adolescent marijuana use is measured using frequency of lifetime marijuana use from adolescent self-reports and retrospective age of onset information from the young adult and mid-adult interviews. A person is labeled an adolescent marijuana user if he or she reported marijuana use at the adolescent interview or, for those missing an adolescent interview, if their reported age of onset from the adult interviews was before age 18. This coding procedure resulted in 42.9% being coded as an adolescent marijuana user (57.7% male). Using both the prospective information from adolescence and the retrospective information from both adult interviews increased the sample size from the 60.3% who also had marital information to the 99.7% with marital information.

Of the 979 cohort members who had information on both adolescent delinquency and marijuana use, there is considerable overlap between the two deviant behaviors with 63% of serious delinquents being marijuana users and 26% of marijuana users being serious delinquents. A substantial percentage of the cohort were neither serious delinquents nor marijuana users (49.7%) with 32.5% labeled as marijuana users only, 6.5% labeled serious adolescent delinquents only, and 11.2% labeled a serious delinquent *and* marijuana user ($\chi^2 = 32.70, p < .001$). The face validity of the delinquency and marijuana use measures seem good in that those who were labeled serious delinquents were significantly more likely to be arrested in adulthood (ages 17 to 32) ($\chi^2 = 29.55, p < .001$) and marijuana users were significantly more likely to report ever using cocaine in adulthood ($\chi^2 = 137.38, p < .001$).

Individual and Structural Covariates—There are several individual and structural variables included as confounders described in Table 1. The individual level covariates include aggressive and shy behavior (Kellam et al. 1975). Each of these variables is measured by the Teacher's Observation of Classroom Adaptation (TOCA) scale administered in first grade, which ranges from 0 to 3, adapting to severely maladapting. We recoded these variables into dichotomous variables: shy and aggressive where 0 equals adapting and 1 equals maladapting to severely maladapting. Past research using the Woodlawn data has found that the combination of shyness and aggression is predictive of a variety of outcomes (e.g., Kellam et al. 1982; Ensminger et al. 2002). Therefore, we include the interaction of shyness and aggression by including a four-category variable of (1) neither shy nor aggressive, (2) shy only, (3) aggressive only, and (4) both shy and aggressive.

For structural variables, we measure several family resources and family context that have been found to not only predict adolescent delinquency and drug use (e.g., Hawkins et al. 1992, 1998) but also the decision to marry and marital stability (Larson and Holman 1994; Axinn and Thornton 1992; Amato 1996; South 2001). Mother's education is a self-reported continuous measure of the number of years of school the mother had completed at the time of the initial interview. Maternal psychological distress is operationalized as mother's depressed feelings assessed during the initial interview. Each mother reported her frequency of feeling sad or blue on a scale of 0 to 3, ranging from hardly ever to very often. The

reliability and validity of this measure has been reported in Brown et al. (1982). Maternal marital stability is determined using the initial interview and the interview with the mother during adolescence with mothers' self reports of marital status. Thirty-nine percent of mothers were not married at either time point, 27% were married at only one time point, and 33% were married at both time points. We do not include poverty, defined as living below the poverty line at the initial interview. Although poverty is certainly related to both deviance and marital patterns, we exclude this covariate due to its high and significant correlations with mother's education and mother's marital stability ($r = -.267$ and $-.492$, $p < .001$).

The life-course perspective emphasizes proximal factors as particularly salient in influencing trajectory patterns. There are two key influences that are potentially related to delinquency, drug use, and marriage that occur in late adolescence and early adulthood that may impact marital trajectories. The first is education, which has been found to be a key mediator of drug use and marriage (Martino et al. 2004; Green and Ensminger 2006). Educational attainment is assessed by self-reports from the adult interviews, from mothers reports in adulthood, and from Chicago School Board records. This measure is a dichotomous measure of high school diploma=GED (0) or high school dropout (1) with 23.7% identified as high school dropouts.

Substance use has also been linked to teen parenthood (Krohn et al. 1997), which might also drive marital patterns, especially for women. Jacobsen (1998) found in the Woodlawn data that women with no children were more likely to score high on measures of success than women who had children, especially if the women were younger than age 22 when they had their children. We define teen parenthood as having had a child between the ages of 13 and 19, based on the adult interviews. Teen parenthood was fairly common among this cohort with 19.5% of males and 37.7% of females defined as teen parents.

Analytic Strategy

While the majority of research regarding marriage has modeled marriage in a static fashion (e.g., marital status at a certain age or time to first marriage), marriage is dynamic in nature with, potentially, multiple transitions embedded in a longitudinal trajectory (Karney and Bradbury 1995; Dupre and Meadows 2007). Thus, the current study conceptualizes marriage developmentally by modeling marital trajectories over time using longitudinal data as opposed to marital status at one point in time. This approach provides a better representation of the complexities of marriage over the life course. For instance, marital trajectories are capable of incorporating timing of first marriage as well as marital dissolutions and remarriages into one analysis. Thus, trajectory analysis improves on traditionally separate analyses of age of marriage, length of marriage, and divorce by encapsulating all of these elements allowing a more complete depiction of the whole marital experience. Given the fact that African Americans are less likely to marry, stay married, and have shorter marriages than white Americans (Dixon 2009), a more dynamic approach may be necessary to capture the developmental unfolding and complexities of marital patterning among this population.

In this study we use a longitudinal latent-class growth model that assumes a multinomial distribution of trajectories to estimate marital trajectories (Nagin 2005). A latent class growth model was chosen based on the assumption that marital trajectories are grouped in nature as opposed to being continuously distributed around an average trajectory (see Raudenbush 2005).

Marital Trajectories—Our primary research question is: Do serious delinquency and marijuana use in adolescence predict marital trajectories, above and beyond individual and structural predictors of marital patterns for men and women? To answer this question we model marriage separately for males and females (Goldscheider and Waite 1986). Using a semiparametric mixed logit model, marital trajectories from ages 14 to 42 are estimated to identify the long-term trajectory groups of marital patterning. Specifically, the semiparametric mixed logit model is a longitudinal latent class model that estimates the predicted probability of being married at each age for each trajectory group. Each developmental trajectory assumes a cubic relationship that links age and marriage as illustrated by the equation,

$$P(y=1) = \frac{e^{\beta_0^j + \beta_1^j age_{it} + \beta_2^j age_{it}^2 + \beta_3^j age_{it}^3}}{1 + e^{\beta_0^j + \beta_1^j age_{it} + \beta_2^j age_{it}^2 + \beta_3^j age_{it}^3}}$$

where $P(y=1)$ is the predicted probability of being married, age_{it} , age_{it}^2 , and age_{it}^3 are the age, squared age, and cubed age of person i for time period t . The coefficients β_0 , β_1 , β_2 , and β_3 structure the shape of the trajectory for each group j (see Nagin 2005 for more details).

Although every individual in each group is constrained to the same slope and intercept of that trajectory, these parameters are free to vary by group. Each individual is assigned to the trajectory group that he or she is most likely to belong based on his or her posterior probability of membership. To begin the estimation process, an incrementally larger number of groups are estimated and the optimal model is assessed using the Bayesian Information Criterion (BIC) along with other model diagnostics such as population estimates for each group, posterior probabilities of assignment, and odds of correct classification (see Nagin 2005). The final result is a number of different groups comprised of individuals who demonstrate similar marital patterns.

Multivariate Analysis with Multiple Imputation—To assess the independent impact of serious adolescent delinquency and marijuana use on the marital patterns, we estimate a full model using a multinomial logistic framework, controlling for the structural and individual predictors described above. However, like all prospective studies, the Woodlawn Study has experienced attrition which may bias the results since those who are located and re-interviewed are often those who lead more conventional lives, thus potentially underestimating the effect of early deviance. In order to address the potential biases due to attrition, we conducted several analyses to assess whether there are systematic reasons for missing cases. First, the marriage trajectory information was gleaned from the adult interviews where 85% of the study population was assessed at one or both time-points. We tested for attrition biases by comparing those who had at least one adult interview ($n=1,054$)

with those who did not ($n=188$) and found no differences on key variables such as demographic or early childhood behavior variables or adolescent drug use and problem behaviors. Interestingly, cohort members with a criminal record for a violent or drug-related crime were statistically significantly *more* likely to have an adult interview than not. Those interviewed in adulthood were also more likely to have graduated from high school and less likely to be in poverty in first grade or adolescence.

Our serious adolescent delinquency and marijuana use measures include information from the adolescent interview. Thus, to assess whether there are systematic reasons for missing cases at this interview period, we compared those who were missing in adolescence with those who had an adolescent interview. Again, those interviewed in adolescence did not differ by key demographic and early childhood variables. In terms of adulthood variables, there were no significant differences with respect to having an official adult arrest record, using drugs, or having a substance use disorder. Individuals not assessed in adolescence were more likely to have dropped out of high school and to have low first grade math scores. Although there are some differences between those who were and were not followed, these analyses indicate very few areas of concern.

However, the number of missing cases becomes problematic when using listwise deletion techniques, which reduces the sample size by almost 40%. Therefore, we employ multiple imputation for missing covariates allowing us to retain all those with marital information ($n=1,049$). Multiple imputation has been shown to result in a less biased sample than listwise deletion (Schafer and Graham 2002). Using Stata10 (Royston 2004, 2005a, 2005b) under the assumption of missing at random, we imputed values for missing data on covariates by creating 10 imputed datasets. Missing values in the Woodlawn Study for this analysis arise from not answering specific questions or missing the adolescent wave of the interview. Overall, the Woodlawn Study suffers little from nonresponse, and thus there were few missing values that needed to be imputed. Specifically, 75% of the sample had missing data on two variables or less. Comparing the results of analyses using listwise deletion ($n=654$) and multiple imputation ($n=1,049$), we found no differences in the substantive conclusions. We present the multiple imputed analysis results here.

RESULTS

Marital Trajectories

Although the BIC statistic continued to decrease past six groups for both males and females, the six-group model was selected on the basis of parsimony and evaluation of the model diagnostics (i.e., similarity of the group population and sample proportion, evaluation of the average posterior probabilities, which were high (.94 to .99), and evaluation of the odds of correct classification, which were above the recommended number five (19.1 to 657.5)) (see Nagin 2005 for more details on these diagnostics). The marital trajectories and their corresponding percentages in the population are displayed in Figure 1 for males and Figure 2 for females.

For the males, there emerged a large “Unmarried” group (46.3%). There also emerged three groups who spent much of their time married—either being married earlier in the life course

(“20 s married” (13.1%) and “30 s married” (14.5%)) or later in the life course (“40 s married” (11.1%))—and staying married through age 42. Finally, there were two “unstably married” groups—those who were married in their 20 s but separated or divorced by age 30 and remained unmarried through age 42 (“20 s married–unmarried” (5.4%)) or those who separated or divorced by their late 30 s and remained unmarried through age 42 (“30 s married–unmarried” (9.5%)).

Although 43.2% of the males were in fact never married, the trajectory model assigned 46.3% of the population to the “unmarried” group. This discrepancy is due to the dynamic nature of the trajectory modeling, which is made clear when we investigate the marital “status” of men in each group. For instance, while 91.7% of the “unmarried” group was in fact never married, 7.9% were married once ($n=18$) and 0.4% were married twice ($n=1$). Among men who did marry in this group, those marriages ranged from 1 to 2 years in length (73.7% one year in length, 26.3% two years in length). Therefore, these men were unmarried the vast majority of their adult life. A more static approach would categorize the men who were married only one or two years as “married” when in fact they show a more similar pattern to those who had never married and likely did not reap any benefits of marriage. If marriage provides health and behavioral benefits, then someone who spends only one year in a married state would be dissimilar to someone who is married for multiple years and thus the trajectory approach better captures this overall marital pattern. This argument demands a more dynamic approach and a focus on marital patterns as opposed to marital status.

In the female marital trajectory model depicted in Figure 2 similar patterns emerge. The females also have a sizable “Unmarried” group (50.0%), three continuously married groups (“20 s married” (11.7%), “30 s married” (10.4%), and “40 s married” (11.5%)) and two unstably married groups (“20 s married–unmarried” (11.4%), and “30 s married–unmarried” (4.9%)).

Multivariate Analysis

Based on the patterns of the marital trajectories, three key analyses are conducted. First, the role of deviant adolescent behavior on the probability of marriage is assessed. That is, whether someone follows (1) the unmarried pathway or (2) any of the five married or unstably married pathways. Second, the stability of marriage is assessed by comparing three groupings: (1) the unmarried group, (2) the three continuously married groups, and (3) the two unstably married groups. Third, the impact of deviance on the timing of marriage is assessed by comparing two groupings: (1) those who were married “early” (i.e., the 20 s married and 20 s married–unmarried groups) compared with those who were married “later” in life (i.e., the 30 s married, 40 s married, and 30 s married–unmarried groups); and 2) those married “late” (i.e., the 40 s married group) compared with those who were married “earlier” in life (i.e., the 20 s and 30 s groups), regardless of whether they stayed married.

Probability of Marriage—The first part of the analysis focuses on comparing those who belong to the unmarried group compared with those in any of the five married or unstably married pathways. For the males, 46.3% are labeled unmarried and the remaining 53.7% are labeled married, since they spent at least some significant portion of their adult life married.

For the females, 50.0% are considered unmarried and the remaining half are considered married for this part of the analysis. As Table 2, Model 1 shows, female marijuana users are just over one and a half times more likely to follow an unmarried pathway than any of the married or unstably married pathways after adjusting for covariates. Delinquency appears somewhat influential for the males with serious adolescent delinquents being close to one and a half times more likely to follow an unmarried pathway, although this is not statistically significant at $p < .05$ ($p = .085$).

Stability of Marriage—In order to assess whether delinquency and marijuana use in adolescence predicts the stability of marital patterns for the males—that is, whether someone remained on a marriage pathway or ended on an unmarried pathway regardless of the timing of marriage—we combined the three continuously married groups (20 s, 30 s, and 40 s married groups) and the two unstable groups (20 s and 30 s married–unmarried). For the males, this results in an unmarried group (46.3%), a continuously married group (38.7%), and an unstably married group (14.9%). For the females, 50.0% are in the unmarried group, 33.6% are in the continuously married group, and 16.3% are in the unstably married group.

Table 2 Model 2 shows that serious delinquent males are over one and a half times more likely to be in the unmarried group as opposed to a continuously married group, controlling for the individual and structural correlates of marriage and marital patterning ($p < .05$). Model 2 also shows that adolescent marijuana use is significantly related to marital instability for males with adolescent marijuana users being twice as likely to be in an unstably married group compared to a continuously married group. For females, serious adolescent delinquency does not predict marital stability in patterning for the females; however, adolescent marijuana-using females are close to two times more likely to be in the unmarried group when compared to the unstably married groups. Similar to the males, although not statistically significant at $p < .05$, adolescent marijuana using females are almost one and a half times more likely to be in the unmarried group when compared to the continuously married group ($p = .075$).

Timing of Marriage—According to the life-course perspective, timing of life events is important (Elder 1998). In order to assess whether serious delinquency and marijuana use in adolescence predict the timing of first marriage, we combine (1) those who were first married early in the life course (i.e., in their 20 s; 18.5% for males, 23.1% for females) and compare them to those who were first married later (in their 30 s or 40 s; 35.1% for males, 26.8% for females), regardless of whether they end on a married pathway or an unmarried pathway; and (2) those who were first married late in the life course (in their 40 s; 11.1% for males, 11.5% for females) and compare them to those who were first married in their 20 s or 30 s (42.5% for males, 38.4% for females). As shown in Table 2 Model 3, for the males, after adjusting for controls, adolescent marijuana users are close to two times more likely to marry in their 20 s than later in life ($OR = 1.75$, $p < .05$) while serious delinquency does not relate to the timing of first marriage. For the females, neither being a serious adolescent delinquent nor an adolescent marijuana user relates to the timing of first marriage.

DISCUSSION

Research indicates that marriage is related to beneficial health and financial outcomes, as well as facilitating desistance from crime, yet few studies have focused on delinquency and drug use as a predictor of long-term marital patterns, especially among African Americans. This study attempts to fill that gap by addressing this relationship among a cohort of urban African-American males and females followed from age 6 to age 42.

One noteworthy finding from our analysis is the large proportion of both males and females that are in the unmarried trajectory. The Woodlawn cohort was born around 1960 and lived through decades rife with crime and drug use in the inner cities such as gang activity and the cocaine/crack crack epidemic. In 1992, when the cohort was 32, 39% were living below the poverty level and 26% were living in poverty by 2002. The finding that so few of this cohort married by age 42 is consistent with research that has found low rates of marriage among urban African Americans (Anderson 1999; Dixon 2009) and among those of low socioeconomic status, especially women (e.g., Edin and Kefalas 2005). Thus, African-American adults who started their schooling within an inner city area in the 1960s, at least in this population, are less likely than other populations to have the protective characteristic of marriage, which suggests more research is needed on the impact of racial differences in marriage rates and the potential benefits of marriage.

With respect to the impact of deviance on marriage, the findings suggest a complex relationship that may be gender-specific. First, deviant males and females are less likely to marry with an increased odds of being unmarried in all models. This finding is consistent with the life-course notion of cumulative disadvantage in that deviant individuals tend to “fail” in a variety of domains, including the lack of the adult social role of marriage. Those who engage in a lifestyle of delinquency or drug use may avoid participation in marriage due to role incompatibility (Yamaguchi and Kandel 1985). Thus, instead of being a result of cumulative disadvantage, an alternative explanation is that deviants may actively avoid the conventional institution of marriage since it is incompatible with their unconventional attitudes and values (Kandel et al. 1986).

Although role incompatibility was originally developed to explain delays in the acquisition of adult roles for drug users, we find significant relationships between delinquency and the probability of marriage for males and between drug use and marriage for females. Some postulations for the gender differences are that the male serious delinquents may be more “deviant,” including acts of violence, than the male early drug users which make them less desirable marital partners or less likely to maintain an intimate relationship. For the females, who tend to be non-violent, early marijuana use was more salient in precluding marriage. The lack of association between delinquency and marital trajectories among the females may also be due to the fact that our measure of delinquency is more relevant to male offending types rather than female delinquency. This discrepancy could lead to an underestimation of serious delinquency among females and thus affect the results.

Interestingly, once a female marries, deviance does not significantly predict timing or stability of marriage. Yet, once a male marries, adolescent marijuana use becomes more

predictive of marital patterns with adolescent marijuana using males marrying younger and being more likely to be divorced, separated, or widowed by age 42 than nonusers. Again, drawing on the concept of cumulative disadvantage, this finding is consistent with Newcomb and Bentler's (1983) suggestion that deviant adolescents spend their time in delinquent and drug activities that hinders prosocial development and creates a sense of pseudomaturity. This pseudomaturity may then result in an early yet unstable marriage pattern because the deviant does not have the social skills or developmental maturity to manage marriage successfully (Newcomb and Bentler 1983). These gender differences in the findings continue to highlight the qualitative differences regarding the effects of deviant behavior for males and females.

Findings should be considered in light of the study limitations. First, although the sophistication of the group-based trajectories allowed us to tease out how adolescent deviance impacts numerous marital outcomes within this African-American cohort, one primary limitation stems from the fact that in order to be included in the analyses the predictor variables needed to predate the marital trajectories to establish temporal ordering. Thus, we were unable to study several potentially important mediators for which we did not have indicators of the timing. For instance, researchers have found that African-American men who do not have stable employment are less likely to be married than those with stable employment (Pinderhughes 2002). In previous research with the Woodlawn cohort, Green and Ensminger (2006) found that, indeed, heavy marijuana use in adolescence predicts employment. Thus, it could be that those who are serious adolescent delinquents or adolescent marijuana users are less likely to be stably employed and thus, less likely to get married or stay married, suggesting a mediating relationship. Future research could directly investigate these, as well as other possible mechanisms to better understand the relationship between adolescent deviance and marital patterns.

Second, although we adopted a life-course framework drawing on the notion of cumulative disadvantage to investigate the relationship between deviance and marital outcomes, this relationship, instead, could be due to a selection effect. It could be that those who are deviant simply are also less likely to marry and less likely to have stable marriages due to an inclination towards impulsivity and risky behaviors (i.e., low self-control) (Gottfredson and Hirschi 1990). In fact, Gottfredson and Hirschi would argue that adolescent deviance, as well as events in adulthood such as marriage failure and early or delayed timing of marriage, is the mere by-product of a person's low self-control (Hirschi and Gottfredson 1995). Moreover, given that self-control is stable over time (i.e., the relative rankings of self-control are stable over time) longitudinal methodology would be unnecessary to investigate the relationship between marriage and deviance. We attempted to statistically control for selection into deviance and marriage using growth models and including confounding variables such as early aggressive behavior and early family patterns. However, we were unable to address this debate directly, which is an area for future research.

Third, we rely on self-reports of delinquency, drug use, and marital history. Self-reports are subject to questions about accuracy and for retrospective self-reports, they are subject to potential recall bias. A related limitation is the fact that we used both a prospective measure and retrospective measure of adolescent delinquency to establish our group of serious

adolescent delinquents. While the sole use of prospective data would have been ideal that would have limited our sample size potentially biasing the results. However, the inclusion of retrospective data for those with an interview in young adulthood but no adolescent interview introduces potential bias due to the retrospective nature, which is unknown and should be considered when interpreting the results. Similarly, as mentioned previously, our measure of delinquency may have better captured male delinquency than female delinquency, and therefore, the lack of association of female delinquency with the marital patterns may be a result of the limited measure.

Fourth, we were unable to assess marital quality, which has been repeatedly found to be a key element in predicting consequences of marriage such as health benefits (Gove et al. 1983) and desistance from crime (Sampson and Laub 1993; Laub et al. 1998). Although we were able to capture some variation in the combination of marital timing, stability, and length—potential indicators of quality—by modeling marriage in a dynamic fashion, additional research is needed. In addition to considering potential mediators and marital characteristics in future work, this study suggests a need for investigations of other types of crimes (e.g., violent vs. property) and drug use (e.g., non-marijuana drug use, serious alcohol use) to fully understand the influence of delinquency and drug use in adolescence on marital patterns.

Finally, additional studies of more contemporary, racially and ethnically diverse samples would also improve our understanding of the relationship between deviance and marital patterns and provide evidence of generalizability. This cohort comprises African Americans from an urban upbringing that is now close to 50 years old. Although prior studies have found this sample to be comparable to national and other community samples of urban African Americans of their cohort with respect to deviant behaviors (see Ensminger et al. 1997; Doherty et al. 2008b), it is not known how relevant these findings are to today's marrying youth (and indeed we will not know the long-term impact for today's youth until they enter their 30 s and 40 s). However, a great strength of the study is that it is a longitudinal community study of men and women followed prospectively. In addition, we were able to establish temporal order and examine marital patterning in a dynamic fashion up to age 42 for a highly relevant and understudied population. While there is the perception among life-course researchers that marriage is the norm among adult populations, we found here that as many as half of those who reached the age of 42 had never married. The impact of this lower rate of marriage on later outcomes such as health, economic well being, and deviance is only now being examined. For this reason it is crucial to better understand the relationship of earlier deviance on marriage among this population.

Marriage promotion as a government policy has been gaining attention over the past 10 years, and because of their lower marriage rates urban African Americans are often the target of these policies. It is hoped that such policies may not only impact marriage but also improve the chances for a stable income and independence from welfare. The results of this study provide some evidence that serious delinquency and marijuana use in adolescence may impact marital patterns over the life course. Thus, while the family and criminal desistance literatures suggest promotion of marriage and marital stability, it may be that in order to promote marital stability, limited financial resources would be better spent earlier in

the life course than during the transition to adulthood. One place to start is with delinquency and drug use prevention programs in childhood and adolescence. These prevention programs may have a broader impact on adult outcomes than merely preventing future deviance by indirectly promoting marriage and marital stability as well. In fact, successful early prevention and intervention programs may not only have an impact on school success, delinquency and drug use but may also have a long-term indirect effect on key adult social indicators (Leonhardt 2010). Thus, in estimating the effectiveness and cost effectiveness of these programs, it is critical to measure marriage and marital stability as outcomes. From a policy perspective, programs promoting marriage should take into account that many of the individuals that are the targets of these programs may have a history of delinquency, drug use, and other indicators of cumulative disadvantage, which should be directly addressed by these programs.

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Appendix

APPENDIX A

Delinquency Classification Items

<i>From adolescent interview</i>						
<i>In the last 3 years, how many times did you:</i>	<i>N of cases</i>	<i>Never (%)</i>	<i>Once (%)</i>	<i>Twice (%)</i>	<i>3–4 times (%)</i>	<i>5+ times (%)</i>
Stay out later than your parents said you could?	702	16.1	9.8	15.8	19.4	38.9
Get into a serious fight with a student at school?	702	58.4	19.8	9.8	5.8	6.1
Run away from home?	700	86.9	6.3	2.9	2.3	1.7
Trespass?	702	71.8	13.0	7.1	4.1	4.0
Get something by threatening?	698	75.5	10.0	6.6	3.7	4.2
Argue or fight with your parents?	697	61.5	15.8	9.6	5.2	7.9
Hurt someone to the point they needed bandages and/or a doctor?	701	72.2	14.7	6.4	3.0	3.7
Damage school property on purpose?	698	77.8	12.2	3.7	2.4	3.9
Steal or shoplift from a store?	699	45.6	23.5	11.6	8.7	10.6
Hit a teacher?	699	76.0	12.2	6.4	2.3	3.1
Carry a weapon?	702	59.5	13.1	9.1	6.1	12.1
Take a non-family car without permission?	700	91.4	4.4	2.1	.4	1.6
Take part of a car without permission?	697	90.8	5.2	1.7	1.0	1.3
Participate in a gang fight?	701	70.2	13.1	7.1	4.1	5.4
Skip school with no real excuse?	702	39.6	19.8	13.0	12.1	15.5
Take something that did not belong to you?	701	50.2	25.0	9.4	7.7	7.7
Hit your father?	700	91.4	4.4	1.6	.6	2.0
Hit your mother?	701	91.6	4.0	2.4	.3	1.7

From young adult interview

<i>Before the age of 15, did you:</i>	<i>N of cases</i>	<i>No (%)</i>	<i>Yes (%)</i>
More than once, steal things from someone you knew?	949	80.4	19.6
Deliberately set a fire?	949	96.5	3.5
Deliberately destroy something by other than fire?	947	96.0	4.0
Physically hurt animals on a number of occasions?	951	97.0	3.0
Often start physical fights?	950	90.5	9.5
Use a weapon in a fight more than once?	950	95.1	4.9
Physically hurt other people a number of times?	950	94.6	5.4
Rob or mug someone?	951	98.4	1.6
Force someone to have sex?	949	99.7	.3

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FIGURE 1.
Marriage trajectories: Males, ages 14–42 (N = 503).

FIGURE 2.
Marriage trajectories: Females, ages 14–42 (N = 546).

TABLE 1

Summary Statistics for Deviance Measures and Covariates

	<i>Total</i>	<i>Males</i>	<i>Females</i>
<i>Deviance Measures</i>			
Serious Adolescent Delinquency	17.7% (<i>n</i> = 981)	26.4% (<i>n</i> = 470)	9.8% (<i>n</i> = 511)
Adolescent Marijuana Use	42.3% (<i>n</i> = 1,046)	49.6% (<i>n</i> = 502)	35.5% (<i>n</i> = 544)
<i>Covariates</i>			
Shy/Aggressive			
Neither shy nor aggressive	52.5%	44.9%	59.5%
Shy only	16.1%	16.3%	15.9%
Aggressive only	16.7%	19.7%	13.9%
Both shy and aggressive	14.7% (<i>n</i> = 1,049)	19.1% (<i>n</i> = 503)	10.6% (<i>n</i> = 546)
Mother's Education (0 to 18)	10.62 (<i>n</i> = 1,028)	10.52 (<i>n</i> = 490)	10.71 (<i>n</i> = 538)
Mother's Depressed Feelings (0 to 3)	0.85 (<i>n</i> = 983)	0.85 (<i>n</i> = 468)	0.85 (<i>n</i> = 515)
Mother's Marital Stability			
Not married at T1 or T2	39.4%	40.5%	38.3%
Married at either T1 or T2	27.4%	29.3%	25.5%
Married at both T1 and T2	33.2% (<i>n</i> = 767)	30.1% (<i>n</i> = 375)	36.2% (<i>n</i> = 392)
High School Dropout	23.7% (<i>n</i> = 987)	26.2% (<i>n</i> = 474)	21.4% (<i>n</i> = 513)
Teen Parenthood	28.9% (<i>n</i> = 1,041)	19.5% (<i>n</i> = 502)	37.7% (<i>n</i> = 539)

TABLE 2 Multinomial Logistic Odds Ratios of Serious Adolescent Delinquency and Marijuana Use on Marital Outcomes: Separate Multivariate^a Models by Gender^b

<i>MODEL 1—Probability of marriage</i>	
<i>Unmarried versus married</i>	
<i>MALES</i>	
Serious Delinquent	1.495 [^]
Marijuana User	1.187
<i>FEMALES</i>	
Serious Delinquent	1.555
Marijuana User	1.550 [*]

<i>MODEL 2—Stability of marriage</i>			
	<i>Unstably married vs. continuously married</i>	<i>Unmarried vs. unstably married</i>	<i>Unmarried vs. continuously married</i>
<i>MALES</i>			
Serious Delinquent	1.593	1.048	1.669 [*]
Marijuana User	1.820 [*]	.769	1.400 [^]
<i>FEMALES</i>			
Serious Delinquent	.917	1.657	1.520
Marijuana User	.790	1.823 [*]	1.440 [^]

<i>MODEL 3—Timing of marriage</i>		
	<i>Early vs. later 20 s vs. 30 s or 40 s</i>	<i>Late vs. earlier 40 s vs. 20 s or 30 s</i>
<i>MALES</i>		
Serious Delinquent	.748	.936
Marijuana User	1.754 [*]	.631
<i>FEMALES</i>		
Serious Delinquent	.707	.990
Marijuana User	.841	.856

* $p < .05$,

[^] $p < .10$.

^a All analyses control for first grade shy and aggressive behavior, mother's education, mother's marital stability, mother's depression, teen parenthood, and high-school dropout.

^b Males: $n = 503$; Females: $n = 546$.