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Are There Gender Differences in Arrest Trajectories among Adult Drug Abuse Treatment Participants?

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Abstract

This paper examines the arrest trajectories of adult men and women, drawn from a sample of clients admitted to substance abuse treatment. Growth-mixture modeling was used to identify distinctive trajectories in arrests for men and women between ages 18 and 45. In addition, the characteristics of men and women in each of the trajectory groups were compared by gender, arrest trajectory, and the interaction of gender and arrest trajectory. Findings indicated that while the shape of the five trajectories was similar for men and women, higher percentages of men than women were in the High trajectory group (12.5% vs. 8.5%), the Moderate group (27.9% vs. 20.9%), and Slow Increase group (25.5% vs. 20.6%), with more women than men being in the Low group (34.1% vs. 27.1%). Although arrests declined as men and women aged, there did not appear to be many individuals who had terminated their criminal career by age 45. Overall, more similarities than differences were observed in the characteristics of men and women across trajectories. Additional research should examine whether the causal factors influencing arrest trajectories differ by gender.

Introduction

Research conducted within the life course perspective suggests that there are different types of offending trajectories (Apel et al., 2007; Fergusson, Horwood, & Nagin, 2000; Kratzer & Hodgins, 1999; Moffitt, 1993; Nagin, Farrington, & Moffitt, 1995; Sampson & Laub, 2003, 2005; Thornberry, 2005; Wiesner, Kim, & Capaldi, 2005). Much of this research examines characteristics associated with criminal careers (onset, escalation, de-escalation, persistence, and desistence) and different types of offenders defined by their pattern of offending over time (Blumstein, Cohen, Roth, & Visher, 1986; Landsheer & van Dijkum, 2005; Sampson & Laub, 2003; Stouthamer-Loeber, Wei, Lober, & Masten, 2004; Wiesner & Silbereisen, 2003). This research generally suggests that criminal activity is better understood through models that allow for multiple types of offending patterns over time as opposed to models that are limited to a single pattern.

Much of the earlier research on crime patterns and trajectories was based on findings from male cohorts. Researchers have noted that findings on arrest patterns and trajectories identified for men may not necessarily apply to women, with a consequent need to identify and compare arrest trajectories by gender (Curry & Latkin, 2003; D'Unger, Land, & McCall, 2002; Kratzer, & Hodgins, 1999). Although studies of offending patterns among women can be found in earlier literature (e.g., Hindelang, 1981; Warren & Rosenbaum, 1987), the pace of research on the offending patterns of women and how they compare with those of men has increased notably in the past decade (e.g., Curry & Latkin, 2003; D'Unger, Land, & McCall, 2002; Fergusson &

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Horwood, 2002; Mazerolle, Brame, Paternoster, Piquero, & Dean, 2000; Moffitt, Caspi, Rutter, & Silva, 2001). For instance, studies have found that, compared with men, women initiate criminal activity at a later age, commit fewer offenses over their lifetime, commit fewer violent crimes, and have a shorter criminal career (Francis, Soothill, & Piquero, 2007; Hindelang, 1981; Warren & Rosenbaum, 1987). In addition, correlates of arrest differ for men and women in terms of demographic variables, roles in the drug economy, and characteristics of social networks (Curry & Latkin, 2003).

Recent work on arrest and misconduct has focused on samples of children or adolescents, following them to their late adolescence or early adulthood. Most of this literature is focused on addressing various aspects of Moffitt's developmental taxonomy of antisocial behavior, consisting of life-course persistent and adolescent-limited groups (Moffitt, 1993). The life-course persistent pathway begins in early childhood, consists of a small group of individuals with high levels of antisocial and pathological behavior that persists into adulthood, and is associated with early familial, social, and neuropsychological deficits that interfere with positive social development. The adolescent-limited pathway includes a larger number of individuals whose antisocial behavior is associated with the social influences of peers, occurs only or mainly during adolescence, is a relatively normative feature of adolescence, and ends by late adolescence or early adulthood. Analyses that test various aspects of Moffitt's theory require samples that begin at least in early adolescence, if not earlier, and are followed into adulthood. In practice, the samples included in most studies are followed into their 20s and are population based (rather than limited to offenders). The two pathways are assumed to include both males and females, but with a higher percentage of males in each group. Findings from recent studies that examine gender differences in crime trajectories, most of which are informed by Moffitt's taxonomy, are summarized below.

Mazerolle et al. (2000) compared men and women with respect to offending onset age, offending persistence, and offending diversity up to age 26, using official data on police contacts for 3,655 individuals who had been born in Philadelphia in 1958. They found that men were more criminally active than women, but for both men and women, greater diversity in types of offenses committed was associated with early onset of offending (before age 14) and with persistence of offending into early adulthood. However, among early onset groups, women exhibited more offending diversity than men, while among late onset groups, men exhibited more offending diversity than women.

Using the same Philadelphia sample as Mazerolle et al. (2000), D'Unger et al. (2002) examined gender differences in patterns of police contacts and arrests over time. Rates of offending among males were higher than among females. Although there were multiple latent classes (trajectories) of offending for men and women in the cohort, the number of classes differed by gender, with three for women and five for men. The three classes for women consisted of a class of non-offenders and two classes in which offending peaked in adolescence and then declined in the late teen years, with one of these classes exhibiting a high rate of offending and the other a low rate of offending. For men, the five classes consisted of non-offenders and low-rate chronic, high-rate chronic, low-rate adolescence peaked, and high-rate adolescence peaked offenders. The chronic pattern of offending in which arrests and police contact continued into the early 20s was clearly evident for males, but, while present, was much less distinct for females.

In a study that found considerable similarities in the criminal patterns of men and women, White and Piquero (2004) compared the criminal history of 987 African American men and women born between 1959 and 1962 in Philadelphia and followed to age 39. Early onset offending (before age 14) was equally likely among men and women. Female late onset offenders resembled male early onset offenders. Men and women who were early onset

offenders had similar criminal outcomes, and late onset offenders of both genders had similar criminal risk factors.

Piquero, Brame, and Moffitt (2005) examined the distributions of convictions occurring between ages 13 and 26 among a general population sample of 504 males and 481 females born in 1972 in New Zealand. Compared to females, males generally had more convictions and greater variation in adolescent conviction experiences, although for both males and females, few individuals experienced a conviction, and the continuity of criminal activity from adolescence into adulthood was similar.

In another study conducted in New Zealand, Fergusson and Horwood (2002) examined gender differences in trajectories of reported offenses occurring between the ages of 12 and 21 among 435 boys and 461 girls born in 1977. At all ages examined, offense trajectories by age were similar for males and females, as were the factors placing individuals at risk of offending. The offending rate among females was about half that among males, with females exhibiting a pattern of low-rate offending and an early adolescent-limited trajectory and males exhibiting a higher level of offending that was characterized by chronic offending or later adolescent-limited offending trajectories.

In an examination of criminal careers using conviction data from England and Wales for six cohorts born between 1953 and 1978 and tracked through the end of 1999, Francis and colleagues (2007) found that men and women differed in the length of their criminal careers. Women were more likely than were men to have a single conviction (short career) and were less likely to have a career exceeding more than 10 years. Overall, the mean career length was 1.82 years for women and 4.56 years for men.

Although the number of studies on gender differences in offending trajectories that extend into adulthood is relatively small and the specific questions addressed by each study vary, the findings suggest both similarities and differences between men and women in their patterns of crime as observed over time. As indicated in one or more studies, men and women seem to exhibit the following similarities: equally likely to begin offending early (before age 14); diversity in criminal activity is associated with early onset of antisocial behavior; men and women are similar in the factors that place them at risk for later offending; for men and women with early onset offending careers, their later criminal outcomes as adults are similar; and adult criminality is strongly linked to adolescent criminality for men and women. Various studies also identified differences by gender: compared with women, men are more criminally active and have more arrests and convictions; commit a greater variety of types of offenses, including more violent offenses; tend to have more types of arrest trajectories; have a higher likelihood of a pattern of chronic offending into young adulthood; and exhibit longer criminal careers.

Specifically, the purpose of this paper is to identify arrest trajectories of adult men and women from a sample of clients who were admitted to substance abuse treatment programs, and to compare the trajectory-by-gender groups on selected demographic, drug use, and criminal history characteristics. Is the number of trajectories for men and women the same? Do the trajectories for men and women have the same shape? Are the characteristics of men and women in each trajectory similar or different? The analysis presented in this paper draws its sample from a population of drug users who were in treatment, focuses on arrests in adulthood, and directly compares the arrest trajectories of men and women.

Method

Sample Description

The data for this analysis are from the California Treatment Outcome and Performance Pilot Studies (CalTOP), which was a multisite, multicounty, prospective study of substance abuse treatment outcomes in California (see Evans & Hser, 2004; Hser et al., 2003; and Hser, Evans, Huang, & Anglin, 2004, for a detailed description of the CalTOP study and overall findings). Data were collected between April 2000 and December 2002 from all adult individuals admitted to 43 publicly funded substance abuse treatment programs (24 outpatient drug-free, 11 residential, 4 methadone maintenance, and 4 mixed-modality) in 13 California counties (Alameda, El Dorado, Kern, Lassen, Orange, Riverside, Sacramento, San Benito, San Diego, San Francisco, San Joaquin, San Luis Obispo, and San Mateo). These counties were selected because they cover a wide geographic area (the northern, central, and southern regions of California), include both urban and rural locales, and serve 50% of all clients entering publicly funded treatment statewide.

All clients recruited into the study ($N = 17,770$) were assessed at intake, and a sub-sample of individuals who entered CalTOP treatment between April 1, 2000, and May 31, 2001, were assessed at 3 and 9 months following treatment admission. Applying a deterministic data matching methodology, arrest records from the Automated Criminal History System (ACHS) of the California Department of Justice (DOJ) were linked on all clients who were enrolled in CalTOP treatment programs over the 2 years of the project. Personal identifiers used for linkage included Social Security Number, name, date of birth, and other supporting information (e.g., sex, race/ethnicity) (for more information on CalTOP data linkage methodology and accuracy, see Hser & Evans, 2008). DOJ data were searched for information on events that occurred any time before clients' CalTOP admission and up to 5 years post-admission. Out of the total CalTOP sample, 13,740 clients who could be linked with DOJ records were included in this analysis. Information on incarceration was requested from the California Department of Corrections and Rehabilitation, but records were returned on only 10% of the sample, suggesting that very few of the CalTOP clients went to prison.

Self-reported information from the intake assessment indicated that the demographic and socioeconomic characteristics of the analysis sample were as follows: 41% female, 53% White, 23% Hispanic, 17% African American, and 7% of other races. Approximately 43% of the clients were not in the labor force (i.e., retired, disabled, etc.); about one third were employed; 47% were single or never married; and nearly 80% had 12 or fewer years of formal education. At treatment intake, one third (34%) of the clients reported methamphetamine as their *primary* drug; 25% reported alcohol; 15%, heroin; 12%, cocaine; and 11%, marijuana. Mean age at first use of primary drug was 19 years. Over one half (54%) were on probation or parole at the time of admission to treatment, and 87% of clients reported having been arrested at least once prior to admission to treatment. Nearly half of the CalTOP sample was under some degree of pressure from the criminal justice system to enter treatment, which may have included participation in drug court or another diversion program or a referral to treatment from a probation or parole officer.

Variables

Arrest data were obtained from the California Department of Justice through the end of 2006. We only considered arrests in adulthood, removing arrests before age 18. Age of 45 was selected as the terminal age. At that age, 34% of the total sample of men and 29% of the total sample of women were available to estimate the number of arrests, and the percentages drop off rapidly for older ages, making estimates unstable. Although age 45 is somewhat arbitrary, it is considerably higher than the maximum age used in most other analyses of arrest

trajectories. Thus, arrest trajectories were constructed from the number of arrests for each subject in each year from age 18 to either age 45 or to the clients' age as of December 2006. For clients who died during the period from age 18 to 45 (76 or 0.6% of the total sample), the number of arrests after the age of death was considered missing. Demographic, drug use history, and criminal history variables included in the analyses were based on the self-report responses from the CalTOP baseline interview.

Analytic Approach

The focus of analysis was to investigate clients' arrest history between age 18 and age 45 and to compare arrest trajectories for men and women. Analyses were conducted in two steps. The first step was to identify distinct trajectories of arrests for men and women and to test for equivalence on trajectories by gender. The second step was to compare background characteristics among the trajectory groups and by gender.

A growth mixture model with multiple groups was used to identify distinctive trajectories of individuals in the sample who exhibited similar patterns of arrests over time, for men and for women. The count of arrests was assumed to have a Poisson distribution. Men and women were considered as two known groups. Latent classes with distinctive trajectories for arrest were then identified for the two known groups. Goodness of fit was evaluated using the Bayesian Information Criterion (BIC) (D'Unger, Land, McCall, & Nagin, 1998; Schwarz, 1978), with a lower BIC value indicating a better model. The optimal model for men and for women was selected based on a combination of a reasonably low BIC value and theoretical and practical considerations. Comparison of trajectories between men and women was evaluated by examining values of log likelihood between the final model and its restricted model. Growth mixture modeling was conducted using Mplus 5.1 (Muthén & Muthén, 2007).

Next, men and women in the arrest trajectory groups were compared on select characteristics, namely, demographics, drug use history, treatment history, and crime history. For continuous variables, two-way ANOVAs using the SAS GLM procedure examined whether there were group differences due to gender, arrest trajectory, and the interaction of gender and arrest trajectory. For categorical variables, group differences were examined using chi-square and the SAS CATMOD procedure. All analyses were conducted using SAS 9.1.3.

Results

We began by fitting the growth mixture model to determine the optimal number of arrest trajectories. The BIC value decreased from BIC=565905.0 in the two-trajectory model to BIC=530984.5 in the eight-trajectory model. Because of the large sample size, the BIC value continued to decrease with increased number of trajectories. After further examination of trajectory patterns across models with varied trajectories, we chose the five-trajectory model as the most parsimonious but informative description of the study data. The five-trajectory model is also easier for interpretation and comparison of characteristics between men and women across trajectories. The identified five trajectories for the male sample (N=8,083) and five for the female sample (N=5,657) are shown in Figures 1 and 2. These trajectories can be characterized as High, Early Increase, Slow Increase, Moderate, and Low. A chi-square test on the equivalence of the identified trajectories between gender showed a significant difference between men and women ($\text{Chi-square}_{(15)} = 290.0$; $p < 0.01$). Given the large sample size, a statistically significant difference in the trajectories is not surprising. Despite this, the shapes of the trajectories for men and women were quite similar. The plot of observed number of arrests was close to that of predicted number of arrests at each age (results not shown), indicating that the Poisson model was appropriate for modeling arrest trajectories. In summarizing the results of this analysis, characteristics of the individual trajectories are

discussed first, followed by a summary of gender differences and by observations on the general findings.

For clients in the High group, arrests increase sharply from age 18 to the mid-20s, to an average of about 2.2 arrests per year, and then steadily decline to age 45, to about 1.2 arrests per year. The decline begins a few years later for women than for men and the slope is sharper. The High arrest group is made up of a larger percentage of men (12.4%) than of women (8.5%).

The trajectory for men in the Early Increase group begins to increase at about age 20 and reaches a plateau between age 35 and age 40. Even though the number of arrests somewhat decreases after age 40, the average number of arrests at the end of the period is as high as it was for men in the High trajectory group and much higher than in the other three trajectory groups. Similarly, women in the Early Increase group also exhibit a sharp increase in arrests beginning at age 20. In contrast to men, however, arrests for women peak earlier, at about age 30, and drop off earlier, after age 36. For women, this trajectory also ends at a level comparable to that of the High group, and at a much higher level than that of the other three groups. The percentage of men and women in this trajectory is nearly the same (12% and 11%, respectively).

For men and women in the Moderate trajectory group, the mean number of arrests begins at a somewhat higher level than for the Early Increase group, but reaches a much lower peak and at a much earlier age, with a gradual decline to about 0.4 arrests per year at age 45. Arrests peak at an earlier age for men than for women (age 19 vs. 23). A higher percentage of men (27.9%) than of women (20.9%) belong to this group.

The Slow Increase group starts at virtually no arrests at age 18, with arrests gradually increasing to about the same level as the High and Early Increase groups at age 45. The pattern is similar for men and women, although women show a peak at about age 43, followed by a slight decline. The Slow Increase group is made up of a somewhat larger percentage of women (25.5%) than of men (20.6%).

Finally, for both genders, the trajectory of the Low group begins at or just above 0 and exhibits a low, but steadily increasing slope until age 45, ending at a mean of about 0.2 arrests, nearly the same as for the Moderate group. Not surprisingly, women were more likely than were men to be found in the Low group (34.1% and 27.1%, respectively).

Selected characteristics of men and women for each of the trajectory groups are presented in Tables 1, 2, and 3. ANOVA or chi-square tests were used to examine whether there are differences for each characteristic by gender, by arrest trajectory, and by the interaction of gender and arrest trajectory. Given the large sample size, group differences were tested at a significance level of $p < 0.01$. Even at this more stringent level, nearly all of the comparisons were significant. The following summary highlights differences by gender and by arrest trajectory.

Irrespective of trajectory group, at admission to CalTOP treatment, women were younger than men, less educated, less likely to be married, less involved in the criminal justice system, more likely to have been recently enrolled in a residential treatment program, less likely to use alcohol and more likely to use hard drugs (heroin, cocaine, methamphetamine), and were the same age or older at first drug use and first arrest. Over the period from age 18 to 45, women were more likely to have been arrested for a drug-related crime, less likely to have been arrested for a violent offense, and less likely to have been incarcerated.

For the High trajectory group, for demographic characteristics at treatment intake, women and men were similar in age and in level of education achieved, but women were more likely than men to have been divorced, separated, or widowed and were less likely to be Hispanic. On

drug use variables, women were less likely to report alcohol and marijuana as their primary drug, but more likely to report heroin. Prior to admission to CalTOP treatment, women were nearly twice as likely to have been enrolled in residential substance abuse treatment. Women were about a year older than were men when they first used their primary drug. With regard to criminal justice characteristics, women were less likely to have been under criminal justice supervision at intake to treatment, but twice as likely to have been incarcerated (jail rather than prison) just prior to treatment admission. Age at first adult arrest was similar. Over the age span from 18 to 45 (or to current age or death), women were more likely than were men to have been arrested for drug-related crimes or for sex-related crimes (mainly prostitution), but were less likely to be arrested for a violent crime or other type of crime.

For the Early Increase group, women were much more likely than were men to have less than a high school education and were more likely to have been divorced, separated, or widowed. The two groups did not differ by age or ethnicity. As with the High trajectory group, women were more likely to report heroin as their primary drug, but were otherwise similar to men on drug use variables. Women were less likely to be under criminal justice supervision. Both groups reported their first adult arrest at about age 22. The types of arrest occurring between age 18 and age 45 were similar, although, again, women were arrested for more sex-related crimes. A slightly lower percentage of women than men were incarcerated over the observation period.

Within the Slow Increase group, women were about 3 years younger than men. As with the previous two trajectories, women were less likely to have completed high school. The marital status and ethnicity of the two groups were similar. For this trajectory group, women and men were just as likely to report heroin as their primary drug, but women were more likely to be primary methamphetamine users. Again, women were less likely to be under criminal justice supervision. The types of arrests were similar between the two groups, but women were about half as likely as were men to have been incarcerated.

For the Moderate trajectory group, women were about 2 years younger than the men and were less likely to have completed high school. The two groups were similar in marital status and ethnicity. Methamphetamine as the primary drug was considerably more common among women. Women in the Moderate group were much less likely to be under criminal justice supervision at treatment intake. Arrest for violent and other crimes was lower for women than for men.

For the Low trajectory group, the most notable difference was in age at intake; women were considerably younger than men (by four years), particularly in the age 46 and older category, where women were half as likely to be represented as men. No differences were observed for education, marital status, or ethnicity. Among the drug use variables, women were more likely to report methamphetamine as their primary drug. As with the other trajectory groups, women were less likely to be under criminal justice supervision.

Discussion

This analysis used growth mixture modeling to examine arrest trajectories of men and women who had participated in substance abuse treatment, tracing the patterns of arrests from age 18 to age 45. The analysis also looked at similarities and differences across gender and trajectory groups with respect to demographics, drug use history, treatment history, and crime history assessed at admission to treatment.

Several general observations can be made about the trajectories and gender differences across and within trajectories. First, even though the parameters of the trajectories (including the gender distribution within each group) are significantly different, it is nonetheless apparent

that the shape of each trajectory is similar between men and women. Second, three of the trajectories begin from a relatively low level in early adulthood and steadily increase, with some decline in later years. This pattern is not seen in general population or criminal samples that began tracking offending in childhood or adolescence (e.g., D'Unger et al., 2002). Third, there is a decline in arrests as individuals in this sample age, but for all trajectory groups, criminal activity continues into the 40s, although at different levels. And for the Low group, offending appears to increase in middle age. Fourth, for the High group, at any given age, the mean number of arrests for men is higher than that for women, as is typically the case, but for the other groups, the number of arrests for women is similar to that for men, or even higher. Finally, there is a marked difference in the percentage of men and women who were involved in the criminal justice system at treatment intake between the Low trajectory group and the High trajectory group.

The pattern of each of the five identified arrest trajectories can be characterized similarly for men and for women, although the proportion of men and women differs in most of the trajectories. Fewer women than men were members of the High and Moderate trajectory groups, whereas similar percentages of men and women were part of the Slow Increase and the Early Increase groups, and more women than men were in the Low group. As seen in Figures 1 and 2, across trajectory groups, women tended to first experience an adult arrest at a later age than men, their arrests were concentrated during an older age period, and arrests began to decline at an earlier age. However, within each trajectory type, the number of arrests was similar for women and men. Although it is often assumed that women are not as criminally involved as men, in this sample of drug users who had entered treatment, we found that the criminal involvement (as defined by arrests) of adult men and women within a given trajectory was quite similar. A separate issue, not addressed in this analysis, is whether, once arrested, women are incarcerated at an older age than men.

The characteristics (assessed at entry to treatment) associated with being in a particular arrest trajectory tended to be similar for men and women, especially for the extreme ends of the trajectory types (i.e., High, Low) and the Early Increase group. Across arrest trajectories, women were similar to men in their age at first drug use and first arrest, but they tended to be younger, less educated, not married, and more likely to have methamphetamine and heroin as their primary drug rather than alcohol. Women were less likely to be arrested for a violent crime, were less involved with the criminal justice system, and were more likely to have previously been in residential substance abuse treatment. Even though these differences are statistically significant, due to the large sample size, the actual magnitude of the differences for most of the characteristics is quite small and may be of limited practical significance for policy or programming purposes. At the same time, other characteristics or experiences not examined in this analysis (e.g., abuse history) could exhibit greater differences that are both statistically and practically significant.

Except for the two high trajectory groups, arrests were flat or increasing in the years leading up to age 45. Indeed, for the Slow Increase trajectory group, there was a steady rise in arrests from the early 20s for both men and women, and this trajectory comprised 20% of men in the sample and 25% of the women. At least for men with a history of offending, arrests generally began to decline in the late 20s (Sampson & Laub, 2003). The Slow Increase trajectory found in this analysis for men and women appears inconsistent with this finding. The presence of this group characterized by increasing arrests in mid life may be due to the fact that the sample consisted of drug abuse treatment clients. Hussong, Curran, Moffitt, Caspi, & Carrig (2004) found that substance abuse interfered with the normative desistance process for young adult men. The same dynamic may be occurring for women, although additional research is needed to address this question. At least for some clients in this sample, substance abuse that continued into the 30s and 40s may have “ensnared” them in criminal activity and thus increased the

likelihood that they would be arrested into middle age. The “ensnarement” effect may be less prominent in the arrest trajectories of general population or arrestee samples because they have lower levels of drug use and abuse than this treatment sample.

One of the problems of examining arrests over time is that since cases are censored at the last observation point, it remains unclear how individuals behave after that point. That is, some offenders who are tracked up to a particular age have had no arrests within the past 2 or 3 years, but their criminal career may not have ended—the arrest-free period may be a temporary pause in an as-yet unobserved longer career, or it may be accounted for by incarceration or by a period of crime but no arrests. This problem can partly be addressed by requiring a relatively long period of non-arrest before regarding a criminal career as having ended. A standard practice among criminologists is to determine that a criminal career has terminated if no further arrest (or conviction) has occurred over the 5-year period following the date of the last arrest (or conviction) (Francis et al., 2007). For the CalTOP sample, arrests in the High trajectory group did decline as men and women aged, but there did not appear to be many who had terminated their criminal career by age 45.

The question of the degree to which men and women are similar or different in their offending patterns has implications for theories about crime and for policy considerations. A stable finding of differences between men and women in crime trajectories can lead to policy decisions and programs that treat women differently from men; for example, relying more on community supervision than on incarceration for women offenders. By contrast, similarities in crime trajectories could provide support for policies that treat both groups similarly. This analysis, based on an empirical identification and description of offending patterns of men and women, found that there are more similarities than differences, suggesting that similar treatment is called for. It should be noted, however, that similar trajectories of crime and similar profiles for men and women within trajectories could still result from different causes, which would call for different approaches to addressing those causes.

The findings of this study need to be considered in the context of several limitations. Although arrests are commonly used to examine long-term offending patterns, they may have limitations when comparing men and women. For example, Stolzenberg & D'Alessio (2004), using data from the National Incident-Based Reporting System, argued that differences in the likelihood of arrest for a violent offense are influenced by the sex of the offender, with the police being less likely to arrest women, suggesting that sex-specific arrest rates do not provide a “quality indicator” of sex-specific crime rates. A better indicator might be criminal activity, that is, the number and types of crimes (collected by self-report), which is closer to actual behavior than arrest rates. It may be useful to distinguish between an offense career (which consists of the sequence of contacts with the criminal justice system as indexed by police contact, arrest, conviction, or incarceration, or some combination of such) and a criminal career (which consists of crimes committed, many of which do not come to the attention of criminal justice authorities). With appropriate data sets, future research could examine whether and to what degree offense trajectories for men and women based on crimes differ from those based on arrests.

The modeling of arrest trajectories did not take into account time incarcerated, during which individuals were not at risk of being arrested. The CalTOP did not collect data on time spent in jail, and records on prison time were available for only about 10% of the subjects used in the analysis.

The sample consisted of adult men and women admitted to drug abuse treatment in California. The findings may not generalize to a broader offender population or to treatment samples in other states. In addition, although many, but not all, clients in the CalTOP treatment sample,

had been involved in the criminal justice system (prior to study admission), the nature of their risk factors for arrest, largely related to their drug use, was different from that in studies using either general population samples or arrestee samples.

Since the clients included in this analysis were age 18 to 45, the data did not allow us to address the issue of life-course persistent and adolescent-limited offenders (Moffitt, 1993) or about the linkage between adolescent and adult offending (Piquero, Brame, & Moffitt, 2005), both of which require that individuals enter the study in childhood or early adolescence. Nevertheless, we were able to track arrest patterns to a relatively older age than has been done in many other studies and thus identify arrest trajectories stretching into middle adulthood.

Finally, because the identified arrest trajectories are sample dependent, it is possible that a similar analysis using a sample with different characteristics would result in a different number of trajectories or in different patterns in the trajectories. Nevertheless, the present study takes advantage of data collected in a multisite and multicounty prospective treatment outcome study that included existing treatment programs in diverse communities and assessment data among a large and representative sample of drug-abuse clients in California. Even though the generalizability of our findings may be limited due to the sample dependence in growth-mixture modeling, the data provide a unique opportunity for an examination of arrest trajectories within this population.

Conclusion

Much of the literature on criminal careers focuses on samples that begin in childhood and adolescence and usually extend into the early 20s. The sample used in this analysis allowed us to examine arrest trajectories into middle adulthood. Application of a growth-mixture model to the arrest data for this sample revealed that the number of arrest trajectories for men and women were the same, as was the basic shape of each of the trajectories, although the percentages of men and women in each trajectory differed somewhat. Fewer women than men maintained high or persistent arrest trajectories. In addition, it appears that a subset of drug-abusing men and women have a late onset of their criminal career and that the arrest trajectories of the population extend beyond age 45. This persistence in arrest into middle age may be related to continuing drug use, although more research to directly address this relationship is needed.

Overall, at least within a treatment-involved sample of drug abusers, the findings suggest that the longitudinal patterns of arrests are similar for men and women and that, considering the practical significance of differences in demographic, drug use, and crime characteristics, there are more similarities than differences in the characteristics examined. Despite these similarities, there may still be gender differences, not examined here, in pathways to crime. Further analyses should extend beyond the largely descriptive comparison of arrest trajectories provided here to determine whether causal factors that influence the arrest trajectories of men and women are similar or different.

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Figure 1.
Trajectories of Arrests from Age 18 to 45 among Males (N=8,083)

Figure 2.
Trajectories of Arrests from Age 18 to 45 among Females (N=5,657)

Table 1
Demographic Characteristics for Arrest Trajectory Groups by Gender, % or M (SD)

	High N=1,000	Early Increase N=968	Men	Moderate N=2,259	Low N=2,192	High N=482	Early Increase N=620	Women	Moderate N=1,181	Low N=1,930
			Slow Increase N=1,664					Slow Increase N=1,444		
Age at treatment intake G T I										
<= 25	43.4	11.8	6.9	34.1	9.1	40.7	12.7	11.4	39.4	11.0
26-35	30.9	47.7	30.2	32.7	15.7	30.0	47.9	42.0	37.3	25.4
36-45	21.0	33.6	49.6	25.6	33.9	26.4	33.7	40.4	18.7	44.3
46 +	4.7	6.9	13.3	7.6	41.3	3.1	5.7	6.2	4.6	19.3
Mean (SD)	29.4 (8.7)	34.1 (7.4)	37.6 (7.5)	31.2 (9.2)	41.9 (10.5)	29.9 (8.5)	33.8 (7.0)	34.7 (7.3)	29.6 (8.1)	37.9 (9.1)
Education G T I										
Less than high school	45.3	33.1	24.9	37.3	21.9	53.9	47.3	37.7	50.7	27.5
High school, GED	46.7	48.8	47.5	50.2	44.8	38.3	37.3	43.5	37.3	44.7
Some college	8.0	18.1	27.7	12.5	33.3	7.8	15.4	18.8	12.1	27.9
Marital status G T I										
Married	14.1	17.1	21.7	18.2	24.5	9.6	13.6	16.5	13.7	17.9
Single, never married	70.8	53.7	40.0	59.7	32.4	63.5	45.0	38.7	59.4	32.6
Divorced, separated, widowed	15.1	29.2	38.4	22.1	43.1	26.9	41.4	44.8	26.9	49.5
Ethnicity G T I										
White	38.1	49.0	55.8	48.2	58.0	44.1	44.8	58.8	51.1	62.6
Black	24.1	21.6	15.3	15.6	13.8	29.9	26.9	16.7	19.4	15.2
Hispanic	32.6	22.9	21.8	29.9	20.5	22.8	22.2	19.7	23.7	16.5
Others	5.2	6.5	7.1	6.3	7.7	3.3	6.2	4.9	5.9	5.7

Note: Significant contrasts: **G** indicates a significant effect by gender ($p < 0.01$); **T** indicates a significant effect among trajectory groups ($p < 0.01$); **I** indicates a significant interaction effect of gender and trajectory groups ($p < 0.01$).

Table 2
Drug Use History Characteristics for Arrest Trajectory Groups by Gender, % or M (SD)

	High N=1,000	Early Increase N=968	Men		Moderate N=2,259	Low N=2,192	High N=482	Early Increase N=620	Women		Moderate N=1,181	Low N=1,930
In controlled environment in the past 30 days GII												
No	46.9	50.9	62.2	61.9	68.7	42.0	46.6	59.0	59.1			66.9
Jail	41.9	37.8	25.1	27.4	15.4	39.4	33.7	24.4	23.8			13.2
Residential AOD treatment	8.4	7.4	8.6	7.9	10.9	15.0	12.6	12.3	11.8			13.8
Medical treatment	1.0	1.7	1.4	1.1	2.5	2.1	2.6	1.8	3.0			2.6
Psychiatric treatment	0.6	0.8	1.4	1.4	1.0	0.5	1.6	1.2	0.8			2.0
Others	1.1	1.5	1.3	1.1	0.8	1.0	3.0	1.3	1.4			1.6
Primary drug GII												
Alcohol	16.7	21.0	28.6	23.8	40.0	6.5	12.8	21.0	14.4			32.5
Cocaine	12.7	14.1	13.3	8.0	9.9	15.5	19.5	12.3	10.0			11.3
Heroin	21.0	17.4	11.3	13.4	12.3	36.8	27.8	12.6	16.6			10.9
Marijuana	15.1	9.9	8.8	18.4	11.8	6.2	5.1	8.3	11.2			9.0
Methamphetamine	31.4	35.9	36.0	34.8	23.9	32.4	33.3	43.2	44.8			33.8
Others	3.4	1.7	2.0	1.7	2.3	2.6	1.4	2.5	3.0			2.6
Age at first primary drug use GII	16.4 (4.6)	18.3 (6.2)	20.4 (7.9)	17.0 (5.9)	20.3 (9.3)	17.2 (4.3)	19.1 (5.8)	20.4 (7.5)	17.3 (5.3)			20.7 (8.3)

Note: Significant contrasts: **G** indicates a significant effect by gender ($p < 0.01$); **T** indicates a significant effect among trajectory groups ($p < 0.01$); **I** indicates a significant interaction effect of gender and trajectory groups ($p < 0.01$).