

NBER WORKING PAPER SERIES

DRUG USE AND AFDC PARTICIPATION:  
IS THERE A CONNECTION?

Robert Kaestner

Working Paper 5555

NATIONAL BUREAU OF ECONOMIC RESEARCH  
1050 Massachusetts Avenue  
Cambridge, MA 02138  
April 1996

The author thanks Florence Kwan for her excellent research assistance. This paper is part of NBER's research program in Health Economics. Any opinions expressed are those of the author and not those of the National Bureau of Economic Research.

© 1996 by Robert Kaestner. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

DRUG USE AND AFDC PARTICIPATION:  
IS THERE A CONNECTION?

**ABSTRACT**

Drug use and welfare are two serious social problems that have received widespread public attention. Recently, it has been suggested that illicit drug use is a major cause of welfare, although there is only anecdotal evidence to support such a claim. This paper provides the first systematic analysis of the issue by examining the relationship between illicit drug use and welfare participation among a nationally representative sample of young adults. The results indicate that past year drug use, predominantly marijuana use, is positively related to future welfare participation for both non-black and black women. The magnitude of the drug effect, however, is modest: if drug use among welfare participants was reduced to the levels of non-participants, welfare participation would decline by approximately one percent.

Robert Kaestner  
National Bureau of Economic Research  
50 East 42nd Street  
17th Floor  
New York, NY 10017-5405

## I. Introduction

Drugs and welfare are serious social problems that have received significant public attention over the past twenty years. Not only are these two issues considered problems in their own right, but they have been cited as the cause of many of our nation's other ills. Drug use has frequently been cited as a major cause of crime and as a contributor to declining workplace productivity. Similarly, welfare is often mentioned as being responsible for the breakdown of the traditional family and as a deterrent to work. To many, drug use and welfare participation are behaviors that stem from the same underlying fundamental problems. Conservatives tend to view these behaviors as individual failures and as symbolic of the breakdown of the moral fabric of the country. Their solution to drugs and welfare focuses on greater individual responsibility and the strengthening of private institutions that impart good values such as the family and church. Liberals, on the other hand, view these behaviors as failings not of the individual, but of the economic and social order. Liberals want to correct these problems with more jobs and better schools and, most importantly, are willing to rely on the government to bring about improvements in these areas.

Recently, Joseph A. Califano, the former Secretary of Health, Education and Welfare, has linked drugs and welfare in a fundamentally different way. In discussing the transition from welfare to work, Califano notes that "... all the financial lures and prods and all the job training in the world will do precious little to make employable the hundreds of thousands of welfare recipients who are addicts and abusers." (Califano 1995). Thus, in Califano's view, drug use is not simply a reflection of the same underlying personal or societal defects as welfare, but is a major cause of welfare. A recent government study provides some limited evidence consistent with Califano's claim. Using figures derived from the 1991 and 1992 National Household Surveys on Drug Abuse, the authors of this study report that 530,000 or 15.5 percent of all female AFDC recipients were impaired by alcohol and/or drugs, a rate twice that observed among non-AFDC women (National Institute on Drug Abuse 1994). While these figures do not establish the causal link posited by Califano, they are suggestive, and provide a rationale for further investigation. In addition,

previous research has demonstrated that drug use is positively correlated with out-of-wedlock birth, delayed marriage and shorter marital durations, all of which are significant determinants of welfare participation.<sup>1</sup>

The purpose of this paper is to investigate the relationship between drug use and welfare participation. Toward this end, I examine the effect of current drug use on future welfare participation using data from the National Longitudinal Survey of Youth (NLSY). The goal of the empirical analysis is to provide descriptive evidence of the magnitude of the correlation between drug use and welfare participation, and to provide information as to the role that drug use plays in causing welfare participation. I find that past year drug use, predominantly marijuana use, is positively related to future welfare participation for both non-black and black women. Furthermore, I present evidence that suggests that drug use may be a significant cause of welfare participation. The magnitude of the drug effect, however, is modest: if drug use among welfare participants was reduced to the levels of non-participants, welfare participation would decline by approximately one percent.

## II. Background

Explanations of AFDC (welfare) participation can be divided into two groups: incentive-based explanations and culture-based explanations. Public policies addressing the issue have been primarily influenced by incentive based explanations, while popular opinion is dominated by cultural (i.e., preferences) considerations (Wilson 1994, Mincy 1994). It is not surprising that most of the past research by economists examining the determinants of AFDC participation has focused on the incentive effects of the welfare system, or on economic opportunities available to women. Little research has been put into examining the effect of what may be called cultural factors. For example, attitudes toward work, marriage and premarital sex have changed dramatically over the last two decades, but there is little hard evidence of how this fundamental change in values has affected AFDC participation.<sup>2</sup> Similarly, drug use increased

---

<sup>1</sup> For evidence of the effect of drug use on sexual behavior, fertility and marriage, see the work of Yamaguchi and Kandel (1987), Rosenbaum and Kandel (1990), Mensch and Kandel (1992), Elliot and Morse (1989), and Kaestner (1995a, 1995b).

<sup>2</sup> See Yankelovich (1994) for an analysis of changing values. Research on “welfare dependency” as this term is used to describe the statistical concept of “state dependence” is the closest economists have come to

during the 1970s and throughout most of the 1980s, but there has been no study of the effects of drug use on welfare participation.

In contrast to the limited amount of research on the effect of cultural factors on AFDC participation, there are an abundant number of studies that have examined the effects of program generosity and economic opportunities on AFDC participation. As reviewed by Moffitt (1992) and Bane and Ellwood (1994), results of virtually all past studies show significant, but relatively small effects of program generosity on AFDC participation. Similarly, most previous studies report that variables measuring a woman's economic opportunities such as education and prior work experience are negatively correlated with welfare participation.

Economic and program factors are capable of explaining a portion of the variation in welfare participation, but there remains a significant amount of participation that is unexplained. The purpose of this paper is to test whether drug use can explain some of the remaining variation in welfare participation. The next section discusses some of the reasons why drug use may affect welfare participation.

### III. Theoretical Considerations

An important aspect of welfare is that many women who are eligible for the program do not participate. For example, Blank and Ruggles (1996) report a participation rate of approximately 65 percent among women eligible for AFDC. Recognizing this fact, Moffitt (1983) developed a model of welfare participation that depends on a woman's taste for welfare, or what Moffitt (1983) referred to as welfare stigma. One prediction of this model is that not all eligible women participate in the program: some women will find the idea of participating too distasteful to take advantage of the monetary benefits.

Drug use may play an important role in determining welfare participation because it may lessen the stigma associated with participation. Drug use has been shown to be correlated with certain values and

---

examining the effect of values or tastes on welfare participation. See Blank (1986, 1989) for evidence of state dependence in AFDC spells.

behaviors that intuition suggests would decrease the stigma attached to welfare participation. For example, adolescent and young adult drug users

- have greater peer than parental influences,
- are less likely to attend religious services,
- have greater attitudinal tolerance for deviance,
- are more likely to participate in illegal activities,
- and are more likely to have low self esteem.<sup>3</sup>

Furthermore, the rise of drug use coincided with significant changes in many of society's values that may reduce welfare stigma, including social conformity, the concept of duty, and social morality (Yankelovich 1994). In summary, there is substantial evidence suggesting that drug use may be correlated with reduced welfare stigma and increased welfare participation, although it is unclear whether drug use is the cause of the values and behavior that reduce stigma, or the result of these things.

Besides potentially altering tastes for welfare participation, drug use may also be correlated with a stronger taste for leisure. This point can be demonstrated with reference to a model of household production in which there is a home produced good referred to, as in Stigler and Becker (1977), as euphoria. Euphoria is produced using time and drugs. If drugs and time are strong complements in the production of euphoria, as physiological effects of drug use suggest may be the case, then women who use drugs will have a strong demand for non-market time and be more likely to participate in welfare programs than women who do not use drugs. This point may be important because it raises the possibility that public policies aimed at drug use may affect welfare participation. For example, lax enforcement of drug laws lowers the full price of drugs and increases the demand for both drugs and leisure if these goods are complements. As a consequence of this drug policy, welfare participation rates are higher in areas with lax enforcement of drug laws.

---

<sup>3</sup> See Kandel (1980, 1982), Jessor and Jessor (1977), and Rosenbaum and Kandel (1990) for a discussion of the psychological and behavioral correlates of drug use.

Drug use may also affect welfare participation by altering economic opportunities. Drug use may adversely affect a woman's physical and mental capabilities, reducing her earnings capacity, and making it more likely that she will benefit from welfare.<sup>4</sup> In addition, involvement in drugs may improve non-market opportunities (e.g., drug selling) and allow a woman to earn income while simultaneously receiving public assistance.

Finally, drug use may affect family structure and fertility, two primary determinants of welfare participation. Kaestner (1995a) argues that drug use may influence family formation because drug use affects market and non-market opportunities and consequently the gains from marriage, and because drug use increases the uncertainty of marital outcomes. Kaestner (1995a) reports that drug use is significantly correlated with delayed marriage and shorter marital durations. This evidence suggests that AFDC participants who use drugs may be less likely to exit welfare because of marriage and more likely to enter welfare because of divorce. In addition, several researchers have reported that drug users are more likely to have an out-of-wedlock birth than non-users.<sup>5</sup> Thus, drug users would be more likely to participate in the AFDC program because of the financial and time constraints that children entail.

In summary, there are several conceptual reasons why drug use may influence welfare participation. Thus, former Secretary Califano's suggestion that drugs cause welfare participation has some theoretical grounding. There is no existing empirical evidence, however, to support such a claim, and this is the first paper to empirically test whether drug use affects welfare participation.

#### IV. Econometric Specification and Data

##### A. Empirical Model

---

<sup>4</sup> While there is considerable anecdotal information that drug use adversely affects market opportunities, there is little formal evidence of this phenomena. Kaestner (1991, 1994a, 1994b) found little effect of drug use on wages or labor supply. Similar findings are presented by Gill and Michaels (1992) and Register and Williams (1992).

<sup>5</sup> For evidence on the relationship between drug use and out-of-wedlock birth, see Kaestner (1995b) , Yamaguchi and Kandel (1987) and Mensch and Kandel (1992).

The econometric specification is based on a simple random utility model. The decision to participate in the AFDC program depends on a comparison of the level of utility when a woman is on welfare to the level of utility when she does not participate in the AFDC program. Let the utility of a woman who is on welfare be denoted by  $V^A$ , and her utility if not on welfare be denoted by  $V^N$ . Note that  $V^A$  includes the disutility, or stigma, associated with welfare participation. Since the components of utility in each state are unobservable, I specify a reduced form model by replacing the unobservable components of utility with their observable determinants. Thus, a reduced form specification of utility for a woman on welfare is given by

$$(1) V^A = Z\beta_A + e_A,$$

where  $Z$  is a vector of characteristics associated with the individual, including illicit drug use,  $\beta_A$  is a parameter vector specific to the participation state, and  $e$  is an error term that is assumed to be a random variable with a normal distribution. The welfare participation decision is based on a comparison of utility in each state of the world, and a person participates in the AFDC program if :

$$(2) \text{Prob}(V^A > V^N) = \text{Prob}[Z\beta_A + e_A > Z\beta_N + e_N].$$

Rearranging terms and normalizing  $\beta_N$  to be equal to zero, yields the following:

$$(3) \text{Prob}[e_A - e_N > -Z\beta_A].$$

Equation (3) is estimated by maximum likelihood methods under the assumption that the combined error,  $e_A - e_N$ , has a normal distribution (i.e., probit model). In a regression framework, the model may be written as

$$(4) \text{AFDC}^* = Z\beta_A + u$$

$$\text{AFDC} = 1 \quad \text{if} \quad \text{AFDC}^* > 0$$

$$\text{AFDC} = 0 \quad \text{if} \quad \text{AFDC}^* \leq 0.$$

$\text{AFDC}^*$  is an unobserved index of the benefit from participating in the AFDC program. This benefit depends on the net utility of participating which is a function of observable characteristics (i.e.,  $Z$ ). While the benefit of participation is unobservable, the woman's choice is observable:  $\text{AFDC} = 1$  if she participates, and  $\text{AFDC} = 0$  if she doesn't participate. The necessary data to estimate the model are information about AFDC participation and data on personal characteristics including drug use.



## B. Data

The data used in this analysis are drawn from the National Longitudinal Survey of Youth (NLSY). The NLSY is a nationally representative sample of youths who were 14 to 21 years of age in 1979. Each year, beginning in 1979 and continuing through the present time, these individuals have been interviewed about a variety of subjects including their employment experiences, marital and fertility decisions and educational attainment. In addition to this information, a variety of family background data was obtained about each respondent, and several psychological and cognitive achievement tests were administered. The retention rate is extremely high for surveys of this type, and was approximately 90 percent as of 1993 (Center for Human Resource Research 1994).

Most important to the current study is the information contained in the NLSY about drug use and AFDC participation. In 1984, 1988 and 1992, the NLSY gathered information about a respondent's lifetime and current use of marijuana and cocaine.<sup>6</sup> The NLSY also contains detailed information about a person's participation in the AFDC program. Thus, the NLSY is an ideal data set with which to examine the relationship between drug use and welfare participation.

The illicit drug use information contained in the NLSY is limited in three respects. First, as Mensch and Kandel (1988) and Hoyt and Chaloupka (1994) suggest, there may be some underreporting of illicit drug use; however, neither study provides conclusive evidence for this claim since there is no standard by which to evaluate the extent of underreporting. Mensch and Kandel (1988) suggested that for the 1984 NLSY data there is underreporting of cocaine use, particularly among light users and women and minorities. Hoyt and Chaloupka (1994) found that reported drug use in both the 1984 and 1988 waves of the NLSY survey was correlated with the method of survey administration and the conditions under which the survey was conducted. In particular, they found that self-reported drug use was lower when the survey was administered by telephone or when a respondent's parent was present, and higher when a respondent's friends were present. The seriousness of the Hoyt and Chaloupka (1994) criticism is undermined by the fact

---

<sup>6</sup> The 1984 survey contained the most extensive set of questions related to drug use, including questions about the use of a variety of illicit drugs. In 1988 and 1992, the drug use section of the survey was restricted to marijuana and cocaine use.

that only a small percentage of the respondents were interviewed by telephone or had a parent present at the time of interview. For example, in 1988, only 6.6 percent of **all** respondents were interviewed by telephone and only 2.7 percent had a parent present.

Contrary to the claims of underreporting of Mensch and Kandel (1992) and Hoyt and Chaloupka (1994), the levels of reported drug use in the 1988 NLSY survey are comparable to those reported in the 1988 National Household Survey (NHS) on Drug Abuse (National Institute on Drug Abuse 1988). The NHS reports a lifetime prevalence of cocaine use of 32.6% among males, and 21.2% among females, for a sample of respondents between the ages of 26 and 34. In comparison, respondents in the NLSY who were between the ages of 26 and 32 in 1988, report an unweighted lifetime prevalence of cocaine use of 33.4% among males, and 22.3% among females. The NHS figures would be expected to be higher, since the comparison group from those data are somewhat older, and therefore have a greater chance of initiating use. For marijuana use, males in the NLSY sample reported a lifetime prevalence of use of 70.0% , compared to 68.1% for males in the NHS sample. The women in the NLSY also reported a greater prevalence of marijuana use, 59.3% compared to the 56.2% figure reported in the NHS. These findings raise questions about the extent of underreporting in the NLSY, and particularly, whether there was in fact substantial underreporting as suggested by either Mensch and Kandel (1988) or Hoyt and Chaloupka (1994). Furthermore, studies by Frank (1985) and Johnston et al. (1989) indicate that self- reported drug use, whether obtained by telephone or personal interview, are valid indicators of true drug use.

A second limitation of the drug use data in the NLSY is the absence of measures of the quantity of use. The NLSY obtained information about the frequency of lifetime and current drug use at the time of the 1984, 1988 and 1992 interviews. Information about the quantity of use was not obtained. Although the frequency and quantity of drug use are expected to be highly correlated, Stein et al. (1988) presented evidence suggesting that the quantity of illicit drug use is a more significant predictor of social problems than the frequency of drug use.

Finally, the drug use information contained in the NLSY is not detailed enough to construct a complete longitudinal record because retrospective information about drug use is quite limited. Given this

limitation, the empirical analysis will not be able to fully exploit the longitudinal nature of the data. I address this problem by examining the effect of current (i.e., past year) drug use on the probability of future welfare participation. This strategy has the advantage that drug use is measured prior to the outcome of interest, but has the disadvantage that actual use during the decision period is unknown. In addition, I examine transitions into AFDC for women who are current non-participants, and transitions off AFDC for women who are current participants.

## 1. The Sample

The primary sample used in the analysis are all female respondents in the NLSY with enough information to calculate AFDC participation for the year following the 1984 and 1988 interviews. Any respondent with missing information was deleted, and these selection criteria resulted in a sample size of approximately 4600 in 1984 and 4300 in 1988. Although information about drug use was also collected at the time of the 1992 survey, these later years of data were not used because of possible underreporting of AFDC participation. Prior to the 1993 interview, information on AFDC participation was gathered on a calendar year basis: a respondent was asked whether she participated in the AFDC program in each month of the prior calendar year. Thus, in order to examine whether a woman participated in the AFDC program in 1989, the woman had to be in the NLSY sample through 1990. Starting in 1993, however, the NLSY switched to an event history interview methodology that asked for the start and stop dates of all welfare spells between interview dates.<sup>7</sup> This change in methodology led to significant differences in annual participation rates between 1991 and 1992. For example, the proportion of non-black women who received AFDC in the year following the 1991 interview was 7.7 percent, but for 1992 the same figure was 6.4 percent. This represents a significant drop in participation that cannot be easily explained by sample

---

<sup>7</sup> The methodology was more complicated than the description provided in the text implies since the last information on AFDC participation was as of December 1991, not at the time of the 1992 interview. Thus, at the 1993 survey, information had to be gathered for the period from January 1992 to the date of the 1993 interview. The skip pattern of the questions used to collect this information was very complex and it appears, given the discrepancy between participation rates in 1991 and 1992, that there was some underreporting of welfare spells.

attrition or general economic factors. In light of this finding, I did not use the later years of data in the NLSY.<sup>8</sup>

## 2. Variables

The dependent variable used in most of the analyses is a dummy variable indicator of whether a woman participated in the AFDC program at any time in the 12 month period following the 1984 or 1988 interviews. In these analyses, I do not control for current welfare status and therefore, I am not examining actual transitions. For example, some women will have received welfare in the year prior to 1984 and again in the year after 1984. I also explicitly examine transitions and for these analyses I separate the sample into current welfare participants and non-participants. I examine whether current participants leave welfare at some point in the year following the 1984 or 1988 interview, and whether current non-participants enter welfare during a four year period following each interview.

The independent variables include respondent characteristics, family background measures, county level data, measures of program generosity and drug and alcohol use. Most of the independent variables were measured at the time of the 1984 and 1988 interviews, although the family background variables and some respondent characteristics were measured at the time of the 1979 and 1980 interviews. In 1979 and 1980 interviews, each respondent in the NLSY responded to a series of questions designed to measure their self-esteem, locus of control (Rotter Scale), cognitive ability and attitudes toward work and family. I include several of these measures in the analysis, the most important of which is the Armed Forces Qualifications Test (AFQT) score.

Table 1 presents descriptive data for a select number of variables. The sample is divided according to whether a woman received AFDC at any time prior to the 1984 and 1988 interviews. By 1988, approximately 17 percent of non-black women, and 44 percent of the black women had been AFDC participants at some point in the past.<sup>9</sup> The figures in Table 1 show that there are significant differences

---

<sup>8</sup> The 1992 data may not be that useful for another reason. By 1992, the average age of the sample is 31, and by this age there are relatively few transitions on and off welfare than at younger ages.

<sup>9</sup> An appendix contains a complete list of variable names, descriptions and means.

between women who have received welfare in the past and those that have not. Past welfare participants tend to report greater levels of current and lifetime use of marijuana, are less educated, have lower AFQT scores, have more children, lower self-esteem and are less career oriented than women who have not received AFDC in the past. In addition, women who have received AFDC in the past live in areas that have more generous program benefits. The generosity of program benefits is a relative measure, and is the ratio of the state maximum AFDC and food stamp benefit for a family of three to the median family income in the respondent's county of residence.<sup>10</sup> The descriptive data in Table 1 provides casual evidence that drug use and welfare participation are significantly related. Also evident, however, is that welfare participants differ from non-participants in a variety ways. Since drug use may be correlated with both welfare participation and other variables, a multivariate analysis is warranted.

### C. Econometric Issues

One way in which drug use may affect welfare participation is by lessening the stigma associated with participation. As noted above, drug use is correlated with many attitudes and behaviors that intuition suggests may decrease the disutility of welfare participation. An important public policy question, however, is whether drug use is the cause of these attitudes and behaviors or the result of them. While it is not possible to definitively answer this question, I address this issue by including several variables in the model besides drug use that are expected to be correlated with the degree of welfare stigma. These variables include family background measures such as mother's education and family structure at age 14; personal characteristics measured six to ten years earlier such as an index of self-esteem, the Rotter locus of control index, religiosity and involvement in illegal activities; and county level data such as the crime rate and proportion of families in poverty. Intuition suggests that all of these variables may be correlated with the degree of welfare stigma and consequently, welfare participation. Including these variables in the analysis helps identify whether drug use has an independent effect on welfare participation, holding constant other

---

<sup>10</sup> The AFDC and food stamp data are for the years 1984 and 1988 and are taken from the House of Representatives Committee on Ways and Means Green Book. The median family income is from the 1980

proxy measures for the degree of welfare stigma. This independent effect may arise for several reasons: because drug use is a better measure of welfare stigma than these other variables, because drug use affects welfare participation through its effect on economic opportunities, or because drug use affects marriage and fertility. The upshot is that a significant drug effect is strong evidence that drug use is a serious risk factor predicting welfare participation.

A different type of econometric problem arises from the underlying behavioral relationship between drug use and welfare. As previously noted, drug use may influence welfare participation, but participation in welfare may also affect drug use. For example, AFDC program regulations reduce the price of leisure by imposing a high marginal tax rate on market work. This encourages the consumption of goods that are complements with leisure in home production. If leisure and drugs are complements in the production of euphoria, then drug use will tend to be higher for women on welfare. In light of this and similar possibilities, I examine the effect of **current** drug use on **future** welfare participation. This strategy eliminates the structural endogeneity problem because the timing of drug use and welfare participation is known. A drawback of this approach, however, is that drug use during the decision period is unknown. Thus, some women who had used drugs in the prior year may have ceased using drugs the following year.

## V. Estimation and Results

### A. All Women

Several specifications of the basic model (i.e., equation 4) were estimated. The specifications differ in two ways: by the number of explanatory variables included in the model, and by which women are included in the sample. The first set of models examines the determinants of welfare participation following the 1984 and 1988 interviews using all women in the sample. As previously noted, most of the independent variables used in these analyses are measured at the time of the 1984 and 1988 interviews, or in the case of several personal and family background measures, at the time of the 1979 and 1980 interviews. The dependent variables are dummy variable indicators of welfare participation in the year following the 1984

---

and 1983 County and City Data Book and is divided by 12 to make it a monthly figure comparable to the

and 1988 interviews. All models are estimated separately for black and non-black women, as preliminary tests indicated that pooling the data was inappropriate. Separate estimates for Hispanic women were not obtained because of their relatively small numbers. These women have been included in the non-black sample.

Tables 2 and 3 list the estimates of the effect of drug use, alcohol use and program generosity on AFDC participation. Drug use is specified in two ways. The estimates in the top panel of Tables 2 and 3 are from a specification that includes measures of past year marijuana and cocaine use that are interacted with dummy variables indicating moderate or heavy lifetime use of these drugs. Thus, for each drug, there are two dummy variables with the omitted category being no past year use of that substance. Estimates in the middle panel of Tables 2 and 3, are from a model in which drug use is measured by two dummy variables indicating use of cocaine or marijuana in the past year, and use of cocaine and marijuana in the past year. The omitted category is no use of cocaine or marijuana in the past year. The bottom panel of Tables 2 and 3 list the estimates for alcohol use and AFDC program generosity. These estimates come from the same model as the middle panel estimates of drug use. In addition, the bottom panel indicates whether education and the number of past months of AFDC participation are being held constant.

The estimates in Tables 2 and 3 indicate that past year drug use is significantly correlated with future welfare participation for both black and non-black women, although the results for the non-black women tend to be more robust than those for the black women. Even when the estimates are not statistically significant they are almost always positive and larger than their standard error. In addition, the drug effects appear to be quite robust to model specification. In most cases, the inclusion of both education and prior welfare participation history does not eliminate the drug effect. The fact that drug use remains significant even when the months of prior receipt of AFDC is included in the model is strong evidence that drug use significantly affects welfare participation. This latter result suggests that drug use is significantly correlated with transitions into and out of AFDC.

On closer examination, several estimates in Tables 2 and 3 merit further discussion. For example, estimates in both tables indicate that past year marijuana use has a greater effect on welfare participation than does cocaine, a drug usually considered more addictive and socially destructive than marijuana. Similarly, use of either cocaine or marijuana in the past year has a more significant effect than use of both cocaine and marijuana in the past year. These findings may be explained by noting that initiation of cocaine use frequently occurs at a much later age than marijuana, and thus many of the women in the NLSY who have an average age of 23 in 1984 and 27 in 1988, may have been only experimenting with cocaine. This period was also a time when cocaine was the so called drug of choice, particularly among college educated individuals. Therefore, many economically successful women who report past year cocaine use have little real involvement in drugs and are not likely to participate in welfare: they will experiment with the drug and subsequently cease consumption.

Also surprising are the estimates in Table 2 suggesting that respondent with both past year use and heavy lifetime use of marijuana are not more likely than non-users to be future welfare participants. This apparently odd finding, however, may be due to the crudeness of the drug use measures. Heavy marijuana use is defined as having reportedly used marijuana 100 or more prior times. Given that the average age of the sample is 23 in 1984 and initiation of marijuana use usually occurs by age 18 or 19, someone who is defined as a heavy user may have used marijuana less than twice a month, even less if they are older than 23. In contrast, a person who initiated use in the past two years and is currently using marijuana may be using marijuana four times a month, but be classified as a moderate user. In addition, a person who is a current but moderate lifetime marijuana user is most likely to have initiated use recently, at a relatively mature age for this to occur, suggesting a significantly different type of involvement in drugs than may be indicated.

There are two final points to note about Tables 2 and 3. First, the generosity of program benefits is almost always positive and significant. Women who live in areas where the state determined benefit is relatively large compared to median family incomes are more likely to be on welfare. This result is consistent with the findings of many other previous studies (Moffitt 1992). Second, alcohol use is rarely



significantly related to welfare participation. Alcohol is a much more widely used substance than illicit drugs and its use may not be reflective of the same non-mainstream values as is the use of illicit drugs. The estimates suggest that alcohol use is not correlated with the degree of welfare stigma or economic opportunities, and consequently is unrelated to welfare participation.

## B. Never Married Women

Program rules make AFDC participation strongly contingent upon marriage and drug use may affect marriage. Indeed, Kaestner (1995a) finds that drug use is significantly correlated with delayed marriage and shorter marital durations. Thus, drug use may affect AFDC participation primarily through marital status. In order to disentangle the direct effect of drug use on AFDC participation from the indirect effect that works through marriage, I re-estimated the models of Tables 2 and 3 using only women who had never been married by the time of the 1984 and 1988 interviews. The estimates from these models measure the direct effect of drug use on AFDC participation.

Tables 4 and 5 list the estimates of drug use, alcohol use and program generosity. Estimates in Table 4 are similar to those in Table 2. The estimates indicate that past year use of marijuana or cocaine increases the probability of welfare participation the following year, and that past year marijuana use among women who have moderate lifetime use also increases the probability of future welfare participation. The estimates in Table 4 tend to be less significant than those in Table 2 because of the smaller sample size and larger standard errors. Note, however, that the magnitude of the estimates are similar to those in Table 2. For example, among non-black women, past year use of marijuana or cocaine is associated with between a 2.6 and 3.8 percentage point increase in the probability of future welfare participation. In relative terms, these figures represent between a 15 and 22 percent increase in the probability of welfare participation. Similar estimates from Table 2 indicate a 1.8 to 2.2 percentage point increase, or a 15 to 18 percent increase, in the probability of future welfare participation.

In contrast to the estimates of Table 3, the estimates in Table 5 suggest that drug use and program generosity have little effect on future welfare participation. One possible explanation of these results is

based on the characteristics of the women in the sample. The estimates in Table 5 were obtained using a sample of never married women with an average age of 28. It may be the case that, among this group of women, there are few individuals at the margin of welfare participation. At age 28, many never married women are committed to a career and are economically successful. These women are unlikely to be welfare participants regardless of their drug use or the generosity of program benefits. For example, among non-black women in this sample, 30 percent have 16 or more years of college. Alternatively, there is a significant number of never married women who have had a child out-of-wedlock by age 28, and these women are very likely to be welfare participants. For example, among non-black women in this sample, 22 percent have at least one child, and among the black women, 61 percent have at least one child.

In summary, it appears that marijuana use is correlated with welfare participation even after holding marital status constant, although the estimates in Table 5 are insignificant. Thus, even among women who have never been married, those that used marijuana in the past year are more likely to be future welfare participants. Drug use appears to have a direct effect on welfare participation that is independent of marital choices and an indirect effect that works through the marriage market.

### C. Welfare Transitions

The analyses contained in Tables 2 through 5 examined the effect of current drug use on future welfare participation without controlling for current welfare status, although in some specifications the number of months of prior AFDC receipt was held constant. The results suggested that current drug use tends to be significantly correlated with future welfare participation. This result may be due to the fact that current drug users are both current and future welfare participants. Current drug use may in fact be the result of current welfare participation which also causes future welfare participation. The upshot is that the prior empirical strategy was not a complete solution to the structural endogeneity problem. To address this problem, I separate the sample into those currently on welfare and those not currently on welfare, and examine transitions off of and into welfare. In this way, the timing of drug use and welfare participation is clear and the structural endogeneity problem eliminated.

## 1. Welfare Entry

I first examine the determinants of welfare entry using a sample of women who had not participated in welfare in the past year at the time of the 1984 or 1988 interview. I define welfare entry as at least one month of AFDC participation in a four year period following the 1984 and 1988 interviews. A four year period was used to increase the number of observed transitions into AFDC which are relatively few: only 6 percent of the non-black sample and 13.5 percent of the black sample are observed to begin participation during the four year period. For this analysis, the two cross sections are pooled and a dummy variable indicating the year is included in the model. The specification of the model is exactly the same as that in Tables 2 through 5. The estimates of the effect of drug use and program participation are listed in Table 6.

The estimates listed in Table 6 confirm the earlier findings. Past year marijuana use increases the likelihood of future welfare participation for both black and non-black women. In contrast to earlier findings, however, past year marijuana users who are also heavy lifetime users are the most likely to enter welfare, other things being equal. In the case of cocaine, past year use affects only the welfare participation of black women. Finally, note that alcohol use does not have a significant effect on future welfare participation, and that larger program benefits increase likelihood of participation for non-black women.

## 2. Welfare Exit

In order to examine the transition off of welfare, I limit the sample to women who were currently participating in welfare at the time of the 1984 or 1988 interview. A woman is defined as having left welfare if she receives no benefit in at least one month in the year following the 1984 or 1988 interview. This definition of an exit results in an average exit probability of 35 percent for non-black women and 29 for black women. In order to increase the sample size, the two cross sections are pooled and a dummy variable indicating the year is included in the model. Estimates of the effect of drug use and program participation are listed in Table 7.

There are few significant estimates in Table 7. In fact, the estimates associated with cocaine use indicate that among non-black women, cocaine use in the past year increases the probability of leaving welfare. This is a surprising result which is inconsistent with previous findings. The result may be due to the way welfare exits were defined since drug users may be more likely to miss a monthly payment because of failing to comply with program rules and not because they are permanent exits. To test this hypothesis, the analysis was redone using a two month criteria to define a welfare exit. The results from this analysis, however, were similar to those reported in the text. Thus, the positive and significant effect of past year cocaine use on welfare exits is anomalous. Since the effect is limited to those with moderate lifetime use, it may be the case that those women who are initiating use of cocaine are also experiencing other changes that lead them off of welfare. Estimates of the effect of other variables in the model are for the most part insignificant (results not shown). In general, the specification of the model does not do a good job explaining the variation in welfare exit. This last result suggests that the significant cocaine effect may be spurious and sample specific.

## VI. Discussion

The findings of this paper clearly show that marijuana use is positively correlated with welfare participation. Women who used marijuana in the past year were more likely to participate in welfare in the following year than women who did not use marijuana. This significant relationship persisted even when the influence of many other potentially confounding variables was considered, including education, past welfare participation and marital status. Furthermore, among a sample of women who had not participated in welfare in the past year, those that used marijuana were more likely than non-users to enter welfare over the next four years, all else being equal. This last finding suggests that marijuana use is a significant cause of welfare participation. The causal inference is warranted because in this analysis, the timing of drug use and welfare participation is known and a large number of explanatory variables are included in the model. The timing issue is important if there is a possibility that welfare participation causes drug use. The analysis of welfare transitions eliminates this potential source of bias because it is known whether drug use preceded

welfare participation. The presence of a large number of covariates in the model is also important because it accounts for a significant amount of variation and interdependence among the regressors. Therefore, it is less likely that the significant drug effect is due to an omitted variable.

A somewhat surprising finding from the study is that past year cocaine use was not significantly related to future welfare participation. This finding is surprising because cocaine is usually considered a much more addictive and socially destructive drug than marijuana. Thus, a reasonable expectation would have been that cocaine, not marijuana, would be the drug significantly related to welfare participation. There are a few reasons, however, why this may not be the case. First, cocaine use is much less prevalent than marijuana use and the absolute level of use is low among females. For example, in the NLSY approximately eight percent of the sample of women reported past year cocaine use as of the 1988 interview date. Even smaller past year cocaine prevalence figures are reported by the National Institute on Drug Abuse (1994) study that uses the National Household Survey on Drug Abuse. Thus, given the relatively small amount of variation in past year cocaine use, it is more difficult to detect an empirically significant effect. A second reason for not finding an effect is that there may be more heterogeneity among past year cocaine users than past year marijuana users. Initiation of marijuana use occurs at a relatively early age and past year use at age 23 or 27 indicates on-going and serious use. In contrast, initiation of cocaine use typically occurs relatively late, in the early and mid-twenties, and past year users at age 23 and 27 are more likely to be a mixture of first time or experimental users and more serious users. Thus, estimates of the average effect of past year cocaine use are more likely to be insignificant.

The findings from this study tend to support the notion that drug use is a significant cause of welfare participation, although the magnitude of the problem may not be as great as former Secretary Califano suggested. For example, the estimates in Tables 2 and 4 indicated that past year marijuana use increased the probability of welfare participation by between 15 and 20 percent for the non-black sample. In addition, figures in Table 1 indicate that the prevalence of marijuana use for this group is approximately 21 percent among past recipients of AFDC, and 12 percent among non-recipients of welfare. Thus, if marijuana use among welfare participants was reduced to the level of non-participants, approximately 9 percent, welfare

participation would decline by one or two percent. This seems like a modest effect that tends to undermine the credibility of claims that suggest that illicit drug and alcohol use are major causes of welfare. Given limited resources, the results of this analysis suggest that public programs whose purpose is to reduce welfare should focus on other areas besides drug and alcohol use.

## References

- Bane, Mary Jo and Ellwood, David T.. 1994. Welfare Realities : From Rhetoric to Reform. Cambridge, MA:Harvard University Press.
- Blank, Rebecca M.. 1986. "How Important is Welfare Dependence?" NBER Working Paper Series No.2026. Cambridge, MA:National Bureau of Economic Research.
- Blank, Rebecca M. 1989. "Analyzing the Length of Welfare Spells." Journal of Public Economics 39(3):245-273.
- Blank, Rebecca and Ruggles, Patricia. 1996. "When Do Women Use Aid to Families with Dependent Children and Food Stamps?" Journal of Human Resources 31(1):57-89.
- Califano, Joseph A.. 1995. "Its Drugs Stupid?" New York Times Sunday Magazine January 29:40-41.
- Center for Human Resource Research. 1994. NLS Handbook, Columbus, Ohio:Ohio State University Center for Human Resources.
- Elliott, Delbert S. and Morse, Barbara J.. 1989. "Delinquency and Drug Use as Risk Factors in Teenage Sexual Activity." Youth and Society 21:32-60.
- Frank, Blanche. 1985. "Telephone Surveying for Drug Abuse: Methodological Issues and an Application." In Self-Report Methods of Estimating Drug Use: Meeting Current Challenges to Validity. NIDA Research Monograph 57, Beatrice A. Rouse, Nicholas J. Kozel, and Louise G. Richards, eds., Rockville, IL: National Institute on Drug Abuse, p.71-83.
- Gill, Andrew M. and Michaels, Robert J. 1992. "Does Drug Use Lower Wages?" Industrial and Labor Relations Review 45(3):417-34.
- Hoyt, Gail Mitchell and Chaloupka, Frank J.. 1994. "Effect of Survey Conditions on Self-Reported Substance Use." Contemporary Economic Policy 12(3):109-21.
- Jessor, Richard and Jessor, S.L.. 1977. Problem Behavior and Psychosocial Development: A Longitudinal Study of Youth. New York: Academic Press.
- Johnston, Neil et al. 1989. Illicit Drug Use, Smoking, and Drinking by America's High School Students, College Students, and Young Adults, 1975-1988. DHHS Publication No. (ADM) 89-1638. Washington, D.C.:U.S. Government Printing Office.
- Kaestner, Robert. 1991. "The Effect of Illicit Drug Use on the Wages of Young Adults." Journal of Labor Economics 9(4):381-412.
- Kaestner, Robert. 1994. "New Estimates of the Effect of Marijuana and Cocaine Use on Wages." Industrial and Labor Relations Review 47(3):454-70.
- Kaestner, Robert. 1994. "The Effect of Illicit Drug Use on the Labor Supply of Young Adults." Journal of Human Resources 29(1):126-55.

- Kaestner, Robert. 1995a. "The Effects of Cocaine and Marijuana Use on Marriage and Marital Stability." NBER Working Paper Series No.5038. Cambridge, MA: National Bureau of Economic Research.
- Kaestner, Robert. 1995b. "Drug Use, Culture, and Welfare Incentives: Correlates of Family Structure and Out-of-Wedlock Birth." Unpublished Manuscript, Baruch College.
- Kandel, Denise B.. 1980. "Drug and Drinking Behavior Among Youth." in J. Coleman, A. Indeles, and N. Smelser (eds), Annual Review of Sociology, Vol.6. Palo Alto, CA: Annual Reviews Inc., P.235-285.
- Kandel, Denise B.. 1982. "Epidemiological and Psycho-social Perspectives on Adolescent Drug Use." Journal of the American Academy of Child Psychiatry 21:328-347.
- Mensch, Barbara and Kandel, Denise B.. 1988. "Underreporting of Substance Use in a National Longitudinal Youth Cohort." Public Opinion Quarterly 52(1):100-124.
- Mensch, Barbara and Kandel, Denise B.. 1992. "Drug Use as a Risk Factor for Premarital Teen Pregnancy and Abortion in a National Sample of Young White Women." Demography 29(3):409-29.
- Mincy, Ronald B.. 1994. "The Underclass: Concept, Controversy, and Evidence." In Confronting Poverty: Prescription for Change, Danziger, Sheldon H., Sandefur, Gary D., and Weinberg, Daniel H.. Cambridge, MA: Harvard University Press, p.109-146.
- Moffitt, Robert. 1983. "An Economic Model of Welfare Stigma." American Economic Review 73(5):1023-1035.
- Moffitt, Robert. 1992. "Incentive Effects of the U.S. Welfare System: A Review." Journal of Economic Literature 30:1-61.
- National Institute on Drug Abuse. 1994. "Patterns of Substance Use and Substance-Related Impairment Among Participants in the Aid to Families with Dependent Children Program (AFDC)." National Institute on Drug Abuse Report December. Rockville, MD.: U.S. Department of Health and Human Services.
- National Institute on Drug Abuse. 1988. National Household Survey on Drug Abuse. Rockville, MD.: U.S. Department of Health and Human Services.
- Register, Charles A. and Williams, Donald R. 1992. "Labor Market Effects of Marijuana and Cocaine Use among Young Men." Industrial and Labor Relations Review 45(3):435-48.
- Rosenbaum, Emily and Kandel, Denise B.. 1990. "Early Onset of Adolescent Sexual Behavior and Drug Involvement." Journal of Marriage and the Family 52:783-98.
- Stein et al.. 1988. "Structure of Drug Use Behaviors and Consequences Among young Adults: Multitrait-Multimethod Assessment of Frequency, Quantity, Work Site, and Problem Substance Use." Journal of Applied Psychology 73(4):595-605.
- Stigler, George J. and Becker, Gary S. 1977. "De Gustibus Non Est Disputandum." American Economic Review 67(2):76-90.



Wilson, James Q.. 1994. "Culture, Incentives, and the Underclass" in Values and Public Policy, Aaron, Henry J., Mann, Thomas E., Taylor, Timothy (eds). Washington, D.C.: The Brookings Institutions, p.54-80.

Yamaguchi, Kazuo and Kandel, Denise B. 1987. "Drug Use and Other Determinants of Premarital Pregnancy and Its Outcome: A Dynamic Analysis of competing Life Events." Journal of Marriage and the Family 49:257-70.

Yankelovich, Daniel. 1994. "How Changes in the Economy Are Reshaping American Values" in Values and Public Policy. Aaron, Henry J., Mann, Thomas E., Taylor, Timothy (eds). Washington, D.C.: The Brookings Institutions, p.16-53.

**Table 1**  
**Descriptive Statistics by AFDC Participation Status- 1984 and 1988**

<b>Black</b>	1984		1988	
	No Past AFDC	Past AFDC	No Past AFDC	Past AFDC
Past Year Use of Cocaine (Yes=1, No=0)	0.0313	0.0429	0.0416	0.0640
Heavy Lifetime Use of Cocaine (Yes=1, No=0)	0.0052	0.0101	0.0133+	0.0287
Past Year Use of Marijuana (Yes=1, No=0)	0.1802**	0.2980	0.1082**	0.2141
Heavy Lifetime Use of Marijuana (Yes=1, No=0)	0.0653*	0.1111	0.0566*	0.0993
Past Month Alcohol Use (Number of Drinks)	5.6097+	7.4596	6.7804	8.8035
Years of Education Completed	12.8159**	11.6338	13.3511**	11.8808
AFQT Percentile Score	26.1749**	16.9697	27.5424**	17.3245
Career-oriented Attitude (Yes=1, No=0)	0.4595**	0.3333	0.4709**	0.3422
Number of Children	0.4791**	1.7854	0.8087**	2.2296
Mother's Education	10.3655**	9.1717	10.4293**	9.3400
Self-Esteem Index	32.6057**	31.6515	32.7637**	31.6313
AFDC-Food Stamp Benefit Ratio	0.2879+	0.2957	0.3341**	0.3519
Number of Observations	766	396	601	453
<b>Non-Black</b>				
Past Year Use of Cocaine (Yes=1, No=0)	0.0860	0.0697	0.0739	0.0821
Heavy Lifetime Use of Cocaine (Yes=1, No=0)	0.0284	0.0433	0.0326+	0.0515
Past Year Use of Marijuana (Yes=1, No=0)	0.2584	0.2668	0.1597*	0.2061
Heavy Lifetime Use of Marijuana (Yes=1, No=0)	0.1038**	0.1563	0.0973**	0.1584
Past Month Alcohol Use (Number of Drinks)	10.8903	10.9736	9.3012	10.8855
Years of Education Completed	12.7851**	10.8341	13.3075**	11.2462
AFQT Percentile Score	48.7053**	28.4928	50.5876**	28.7672
Career-oriented Attitude (Yes=1, No=0)	0.4027*	0.3389	0.4041**	0.3435
Number of Children	0.4740**	1.7308	0.9166**	2.1947
Mother's Education	10.7114**	8.7957	10.8010**	8.9485
Self-Esteem Index	32.2622**	30.3870	32.3230**	30.6164
AFDC-Food Stamp Benefit Ratio	0.3073**	0.3308	0.3550**	0.3889
Number of Observations	2918	416	2517	524

Note: The total number of observations for each year and race is less than that from the probit regressions (full model in Tables 2 and 3) because some of the variables included in Table 1 have missing values and are not used in the regression model. Means are significantly different at 0.10 (+), 0.05 (\*), and 0.01 (\*\*) level. See Appendix for complete list of variable definitions and means.

Table 2  
 Probit Estimates of the Effect of Drug Use, Alcohol and Welfare Benefits  
 on AFDC Participation 1984

Variable	Non-Black			Black		
	Past Year Cocaine Use with Moderate Lifetime Use	-0.1835 (0.1841)	-0.1629 (0.1928)	-0.2016 (0.2423)	-0.1425 (0.2782)	-0.1606 (0.2883)
Past Year Cocaine Use with Heavy Lifetime Use	0.4243+ (0.2194)	0.5113* (0.2235)	0.3770 (0.2672)	0.6976 (0.4352)	0.7616+ (0.4620)	1.1509+ (0.6162)
Past Year Marijuana Use with Moderate Lifetime Use	0.2356* (0.0995)	0.2212* (0.1032)	0.1855 (0.1217)	0.5037** (0.1168)	0.4610** (0.1196)	0.3496* (0.1413)
Past Year Marijuana Use with Heavy Lifetime Use	0.2468+ (0.1350)	0.1991 (0.1373)	0.1903 (0.1615)	0.2760 (0.1951)	0.2103 (0.1979)	-0.0245 (0.2470)
Past Year Use of Cocaine or Marijuana	0.2652** (0.0891)	0.2476** (0.0915)	0.2295* (0.1066)	0.4619** (0.1094)	0.4055** (0.1117)	0.2636* (0.1328)
Past Year Use of Cocaine and Marijuana	0.2193 (0.1568)	0.2327 (0.1620)	0.1314 (0.2016)	0.3931 (0.2553)	0.3541 (0.2668)	0.3717 (0.3428)
Alcohol	-0.0022 (0.0019)	-0.0031 (0.0020)	-0.0041 (0.0026)	-0.0000 (0.0029)	-0.0026 (0.0029)	-0.0046 (0.0040)
AFDC Benefit	2.2422** (0.7301)	2.4258** (0.7539)	1.5252+ (0.8708)	3.4276** (1.1206)	2.7847* (1.1544)	1.4142 (1.3367)
Education	No	Yes	Yes	No	Yes	Yes
Months of Prior Receipt of AFDC	No	No	Yes	No	No	Yes
Number of Observations	3396	3396	3352	1183	1183	1171

Note: + p<.10, \* p<.05, \*\* p<.01. The coefficient estimates of past year drug use with moderate or heavy lifetime use (first 4 rows) and the estimates of past year use of cocaine and/or marijuana (5<sup>th</sup> and 6<sup>th</sup> row) are generated from two separate models. Coefficient estimates of alcohol and AFDC benefit are from the second model, i.e., the model including past year use of cocaine and/or marijuana variables. All models include the following variables: geographic measures, age, family background, personal characteristics, and AFQT score. See Appendix for description of variables in full model.

Table 3  
 Probit Estimates of the Effect of Drug Use, Alcohol and Welfare Benefits  
 on AFDC Participation 1988

Variable	Non-Black			Black		
Past Year Cocaine Use with Moderate Lifetime Use	-0.2285 (0.1705)	-0.2029 (0.1730)	-0.1887 (0.2097)	0.3671 (0.2415)	0.3053 (0.2525)	0.5614* (0.2813)
Past Year Cocaine Use with Heavy Lifetime Use	-0.0187 (0.2481)	-0.0935 (0.2522)	0.0307 (0.3002)	0.3510 (0.3690)	0.2881 (0.3745)	0.4029 (0.4183)
Past Year Marijuana Use with Moderate Lifetime Use	0.4448** (0.1172)	0.4741** (0.1196)	0.4341** (0.1410)	0.1198 (0.1603)	0.0985 (0.1621)	0.0231 (0.1860)
Past Year Marijuana Use with Heavy Lifetime Use	0.5839** (0.1438)	0.5682** (0.1454)	0.5704** (0.1782)	0.3844+ (0.2062)	0.3386 (0.2085)	0.0354 (0.2425)
Past Year Use of Cocaine <u>or</u> Marijuana	0.5082** (0.1006)	0.5031** (0.1027)	0.4782** (0.1229)	0.2621+ (0.1383)	0.2164 (0.1403)	0.0861 (0.1620)
Past Year Use of Cocaine <u>and</u> Marijuana	0.2632+ (0.1582)	0.2852+ (0.1614)	0.3158 (0.1968)	0.5340+ (0.2319)	0.4555+ (0.2349)	0.5325* (0.2653)
Alcohol	0.0006 (0.0014)	0.0006 (0.0015)	-0.0011 (0.0018)	0.0033+ (0.0019)	0.0030 (0.0020)	0.0019 (0.0025)
AFDC Benefit	1.5130* (0.6488)	1.5931* (0.6627)	1.3510+ (0.8133)	1.2286 (0.9921)	0.8412 (1.0155)	-0.7495 (1.1749)
Education	No	Yes	Yes	No	Yes	Yes
Months of Prior Receipt of AFDC	No	No	Yes	No	No	Yes
Number of Observations	3210	3210	3088	1106	1106	1065

Note: +  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ . The coefficient estimates of past year drug use with moderate or heavy lifetime use (first 4 rows) and the estimates of past year use of cocaine and/or marijuana (5<sup>th</sup> and 6<sup>th</sup> row) are generated from two separate models. Coefficient estimates of alcohol and AFDC benefit are from the second model, i.e., the model including past year use of cocaine and/or marijuana variables. All models include the following variables: geographic measures, age, family background, personal characteristics, and AFQT score. See Appendix for description of variables in full model.

Table 4  
 Probit Estimates of the Effect of Drug Use, Alcohol and Welfare Benefits  
 on AFDC Participation (For Never Married Women) 1984

Variable	Non-Black			Black		
Past Year Cocaine Use with Moderate Lifetime Use	-0.2482 (0.2731)	-0.2541 (0.2944)	-0.1338 (0.3832)	-0.2632 (0.3193)	-0.2482 (0.3275)	0.0416 (0.4267)
Past Year Cocaine Use with Heavy Lifetime Use	0.3904 (0.3527)	0.4094 (0.3712)	0.2796 (0.4672)	0.6003 (0.5068)	0.7116 (0.5482)	1.0263 (0.7438)
Past Year Marijuana Use with Moderate Lifetime Use	0.2719+ (0.1577)	0.1796 (0.1702)	0.1688 (0.2185)	0.4177** (0.1324)	0.3475* (0.1363)	0.1594 (0.1675)
Past Year Marijuana Use with Heavy Lifetime Use	0.3744+ (0.2182)	0.2824 (0.2253)	0.2154 (0.2823)	0.3186 (0.2291)	0.1605 (0.2334)	0.0330 (0.3039)
Past Year Use of Cocaine <u>or</u> Marijuana	0.3271* (0.1426)	0.2558+ (0.1506)	0.3755* (0.1879)	0.4001** (0.1246)	0.3084* (0.1281)	0.1157 (0.1588)
Past Year Use of Cocaine <u>and</u> Marijuana	0.2124 (0.2441)	0.1125 (0.2651)	-0.1278 (0.3799)	0.3068 (0.2751)	0.2243 (0.2873)	0.4168 (0.3842)
Alcohol	-0.0052 (0.0035)	-0.0071+ (0.0037)	-0.0059 (0.0053)	-0.0025 (0.0033)	-0.0056 (0.0034)	-0.0079 (0.0049)
AFDC Benefit	2.5160+ (1.3325)	2.0901 (1.4141)	0.8468 (1.9088)	3.9442** (1.3385)	3.5108* (1.3876)	1.3167 (1.6436)
Education	No	Yes	Yes	No	Yes	Yes
Months of Prior Receipt of AFDC	No	No	Yes	No	No	Yes
Number of Observations	1612	1612	1593	853	853	848

Note: + p<.10, \* p<.05, \*\* p<.01. The coefficient estimates of past year drug use with moderate or heavy lifetime use (first 4 rows) and the estimates of past year use of cocaine and/or marijuana (5<sup>th</sup> and 6<sup>th</sup> row) are generated from two separate models. Coefficient estimates of alcohol and AFDC benefit are from the second model, i.e., the model including past year use of cocaine and/or marijuana variables. All models include the following variables: geographic measures, age, family background, personal characteristics, and AFQT score. See Appendix for description of variables in full model.

Table 5  
 Probit Estimates of the Effect of Drug Use, Alcohol and Welfare Benefits  
 on AFDC Participation (For Never Married Women) 1988

Variable	Non-Black			Black		
Past Year Cocaine Use with Moderate Lifetime Use	0.0753 (0.3369)	0.1084 (0.3511)	0.3115 (0.6305)	0.2413 (0.2794)	0.1598 (0.2793)	0.6806* (0.3385)
Past Year Cocaine Use with Heavy Lifetime Use	0.1718 (0.4232)	0.1053 (0.4304)	-0.3171 (0.7448)	0.0583 (0.4672)	-0.0488 (0.4790)	-0.1853 (0.5729)
Past Year Marijuana Use with Moderate Lifetime Use	0.0566 (0.2507)	0.0400 (0.2697)	0.0161 (0.4444)	0.0519 (0.2106)	0.0175 (0.2142)	-0.1098 (0.2596)
Past Year Marijuana Use with Heavy Lifetime Use	0.0361 (0.3475)	0.1731 (0.3552)	-1.1172 (0.7501)	0.4053 (0.2577)	0.3102 (0.2608)	0.1137 (0.3198)
Past Year Use of Cocaine <u>or</u> Marijuana	0.1586 (0.2310)	0.1349 (0.2485)	-0.6210 (0.4906)	0.1943 (0.1784)	0.1055 (0.1826)	0.0485 (0.2213)
Past Year Use of Cocaine <u>and</u> Marijuana	0.0924 (0.2974)	0.1855 (0.3137)	0.1578 (0.5445)	0.3895 (0.2771)	0.2706 (0.2803)	0.4615 (0.3277)
Alcohol	-0.0045 (0.0036)	-0.0060 (0.0040)	-0.0088 (0.0077)	0.0033 (0.0022)	0.0032 (0.0023)	0.0028 (0.0030)
AFDC Benefit	1.9700 (1.4531)	1.4814 (1.5449)	-0.4275 (3.0022)	-0.1748 (1.4450)	-0.7125 (1.5008)	-3.7172* (1.8455)
Education	No	Yes	Yes	No	Yes	Yes
Months of Prior Receipt of AFDC	No	No	Yes	No	No	Yes
Number of Observations	822	822	792	585	585	564

Note: + p<.10, \* p<.05, \*\* p<.01. The coefficient estimates of past year drug use with moderate or heavy lifetime use (first 4 rows) and the estimates of past year use of cocaine and/or marijuana (5<sup>th</sup> and 6<sup>th</sup> row) are generated from two separate models. Coefficient estimates of alcohol and AFDC benefit are from the second model, i.e., the model including past year use of cocaine and/or marijuana variables. All models include the following variables: geographic measures, age, family background, personal characteristics, and AFQT score. See Appendix for description of variables in full model.

Table 6  
 Probit Estimates of the Effect of Drug Use, Alcohol and Welfare Benefits  
 on the Transition into AFDC Participation

Variable	Non-Black			Black		
Past Year Cocaine Use with Moderate Lifetime Use	-0.1463 (0.1479)	-0.1261 (0.1511)	-0.1685 (0.1585)	-0.1821 (0.2609)	-0.1827 (0.2604)	-0.1037 (0.2709)
Past Year Cocaine Use with Heavy Lifetime Use	-0.3105 (0.2442)	-0.3250 (0.2494)	-0.2877 (0.2563)	0.4672 (0.3872)	0.5058 (0.3951)	0.7296+ (0.4335)
Past Year Marijuana Use with Moderate Lifetime Use	0.1970* (0.0928)	0.2126* (0.0952)	0.2282* (0.0969)	0.3903** (0.1235)	0.3523** (0.1252)	0.3778** (0.1293)
Past Year Marijuana Use with Heavy Lifetime Use	0.3462** (0.1213)	0.3205** (0.1224)	0.3419** (0.1255)	0.4525* (0.1945)	0.3890* (0.1980)	0.4561* (0.2095)
Past Year Use of Cocaine or Marijuana	0.2736** (0.0813)	0.2778** (0.0830)	0.2754** (0.0849)	0.3759** (0.1140)	0.3198** (0.1162)	0.3449** (0.1199)
Past Year Use of Cocaine and Marijuana	0.0088 (0.1445)	0.0106 (0.1484)	0.0349 (0.1510)	0.4453* (0.2254)	0.4260+ (0.2268)	0.6013* (0.2335)
Alcohol	0.0010 (0.0013)	0.0010 (0.0013)	0.0003 (0.0014)	-0.0010 (0.0021)	-0.0021 (0.0021)	-0.0089** (0.0033)
AFDC Benefit	1.8777** (0.5866)	2.1077** (0.6029)	1.9763** (0.6199)	0.1582 (0.9713)	-0.3251 (0.9996)	-0.2627 (1.0219)
Education	No	Yes	Yes	No	Yes	Yes
Months of Prior Receipt of AFDC	No	No	Yes	No	No	Yes
Number of Observations	5242			1622		

Note: + p<.10, \* p<.05, \*\* p<.01. The coefficient estimates of past year drug use with moderate or heavy lifetime use (for non-blacks) or past year drug use (for blacks) and the estimates of past year use of cocaine and/or marijuana are generated from two separate models. Coefficient estimates of alcohol and AFDC benefit are from the second model, i.e., the model including past year use of cocaine and/or marijuana variables. All models include the following variables: geographic measures, age, family background, personal characteristics, and AFQT score. See Appendix for description of variables in full model.

**Table 7**  
**Probit Estimates of the Effect of Drug Use, Alcohol and Welfare Benefits on**  
**the Transition off AFDC in 1984 and 1988**

Variable	Non-Black			Black		
Past Year Cocaine Use with Moderate Lifetime Use	0.9365** (0.3580)	0.9243* (0.3621)	0.8687* (0.4117)	-0.1764 (0.3408)	-0.1699 (0.3426)	-0.1652 (0.3541)
Past Year Cocaine Use with Heavy Lifetime Use	0.4618 (0.3955)	0.4814 (0.3955)	0.6811 (0.4243)	0.1702 (0.5525)	0.2459 (0.5570)	0.3001 (0.5546)
Past Year Marijuana Use with Moderate Lifetime Use	0.1973 (0.2091)	0.2093 (0.2101)	0.2079 (0.2254)	0.3492+ (0.1859)	0.3551+ (0.1872)	0.3087 (0.1899)
Past Year Marijuana Use with Heavy Lifetime Use	0.2060 (0.2465)	0.2257 (0.2474)	0.2666 (0.2633)	-0.0963 (0.2604)	-0.0645 (0.2624)	-0.0480 (0.2699)
Past Year Use of Cocaine <u>or</u> Marijuana	0.2116 (0.1767)	0.2309 (0.1776)	0.2552 (0.1888)	0.2115 (0.1710)	0.2314 (0.1723)	0.2033 (0.1750)
Past Year Use of Cocaine <u>and</u> Marijuana	0.9627** (0.3142)	0.9664** (0.3158)	1.0084** (0.3480)	0.0843 (0.3452)	0.1129 (0.3485)	0.1267 (0.3559)
Alcohol	-0.0040 (0.0030)	-0.0041 (0.0031)	-0.0036 (0.0031)	-0.0024 (0.0030)	-0.0024 (0.0030)	-0.0036 (0.0032)
AFDC Benefit	-2.1812 (1.3863)	-2.2143 (1.3915)	-2.3911 (1.4965)	0.2043 (0.1651)	-1.9243 (1.6811)	-1.8371 (1.7070)
Education	No	Yes	Yes	No	Yes	Yes
Months of Prior Receipt of AFDC	No	No	Yes	No	No	Yes
Number of Observations	403			448		

Note: + p<.10, \* p<.05, \*\* p<.01. The coefficient estimates of past year drug use with moderate or heavy lifetime use (for non-blacks) or past year drug use (for blacks) and the estimates of past year use of cocaine and/or marijuana are generated from two separate models. Coefficient estimates of alcohol, AFDC benefit are from the second model, i.e., the model including past year use of cocaine and/or marijuana variables. All models include the following variables: geographic measures, age, family background, personal characteristics, and AFQT score. See Appendix for description of variables in full model.



**Appendix A**  
**Description of Variables Used in the Analysis of the Effect of**  
**Drug Use, Alcohol, and Welfare Benefits**  
**on AFDC Participation**

Variable	Means 1984 Sample		Description
	Black	Non-Black	
<b>Demographic Variables</b>			
Hispanic	-	0.2091	A dummy variable indicating that respondent is Hispanic.
Age	23.0106	23.1617	Specified as set of dummy variables representing year of age from 19 to 31.
Region			
Northeast	0.1443	0.1865	A set of dummies representing region of residence: Northeast, South, and North Central. West is reference group.
South	0.5995	0.3288	
North Central	0.1887	0.2581	
Density	6.3250	5.7351	Population density of county of residence (population/land area in square miles).
Crime Rate	6.5443	5.5516	Crime Rate of county of residence known to police per 100,000 population.
Poverty Level	12.7024	9.8832	Percentage of families with income below poverty line in county of residence.
<b>Family Characteristics</b>			
Mother's Education	9.9641	10.4708	Mother's education measured in years. Mean includes zero when missing.
Mother's Education Missing	0.0666	0.0400	A dummy variable indicating that mother's education is missing.
Parental Marital Status at Age 14	0.5773	0.8231	A dummy variable indicating that respondent lived with both parents at age 14.
<b>Personal Characteristics</b>			
Frequency of Religious Attendance	3.7421	3.3126	Measure of how often respondent attended religious services. Increasing scale of frequency ranging from 1, not at all, to 6, more than once a week. Measured in 1979.
Number of Illegal Acts	0.0479	0.0406	Illegal acts include shoplifting, assault, sale, trespassing, theft, fraud, etc.. Measured in 1980.
AFQT Percentile Score	23.0085	46.0791	AFQT, Armed Forces Qualification Test score measured in 1981.
Self-Esteem Index	32.2784	32.0149	Index derived from 11 questions regarding self-esteem. The higher the index, the higher the self-esteem of the respondent. Measured in 1980.
ROTTER Scale	9.1315	8.6578	Measure of whether respondent feels in control of his/her life. Feeling in control means that respondent do not attribute the occurrence of events to good/bad luck, but rather a result of planning and his/her own actions. The higher the ROTTER scale, the more "in control" is the respondent. Measured in 1979.
Career-Oriented Attitude or Family-Oriented Attitude	0.4142 0.0487	0.3932 0.0391	Two dummy variables derived from a negative scale of the career-oriented attitude ranging from 1 to 4. Career-Oriented dummy takes on the value of one if respondent scores 1 on the scale, and Family-Oriented dummy takes on the value of one if respondent scores 4 on the scale. Measured in 1979.
Desired Number of Children	2.3032	2.5901	Number of desired children. Measured in 1979.
Education			A set of dummy variables indicating level of education.
High School	0.4594	0.4430	High School - Year of education =12.
Some College	0.3057	0.2625	Some College - Year of education between 13 and 15.
More than College	0.0598	0.1232	College or More - Year of education ≥ 16.
<b>Benefit Variables</b>			
AFDC and Food Stamp Benefit	0.2908	0.3103	Ratio of the Maximum AFDC plus Food Stamp benefits for family of three to median family income in county of residence.
Months of Prior Receipt of AFDC	9.1033	2.8303	Number of months of prior receipt of AFDC measured at time of interview.
<b>Drug and Alcohol Variables</b>			
Past Year Use of Cocaine	0.0359	0.0841	A dummy variable indicating past year use of cocaine.
Heavy Lifetime Use of Cocaine	0.0077	0.0304	A dummy variable indicating heavy lifetime use of cocaine (used cocaine more than 39 times).
Past Year Use of Marijuana	0.2212	0.2604	A dummy variable indicating past year use of marijuana.
Heavy Lifetime Use of Marijuana	0.0811	0.1116	A dummy variable indicating heavy lifetime use of marijuana (used marijuana more than 99 times).
Past Month Alcohol Use	6.2067	10.9174	Measured as number of drinks.
Number of Observations	1171	3352	

**Appendix B**  
**Estimates from Regressions on the Effect of Drug Use, Alcohol, and Welfare Benefits**  
**on AFDC Participation -Model 1 Regression 2 from Tables 2 and 3**

Variables	1984				1988			
	Black		Non-Black		Black		Non-Black	
	b	t-stat.	b	t-stat.	B	t-stat.	b	t-stat.
Constant	-3.234	1.171	-0.406	0.631	-0.593	1.338	-1.963	0.720
Hispanic	-	-	0.014	0.102	-	-	-0.108	0.108
Age20/Age24	0.132	0.189	0.096	0.150	0.470	0.346	0.340	0.289
Age21/Age25	0.161	0.190	0.139	0.153	0.399	0.342	0.484+	0.288
Age22/Age26	-0.078	0.195	0.187	0.151	0.128	0.347	0.522+	0.289
Age23/Age27	0.212	0.188	0.132	0.156	0.246	0.345	0.556+	0.290
Age24/Age28	-0.024	0.198	0.093	0.158	0.411	0.347	0.525+	0.291
Age25/Age29	0.297	0.203	0.261	0.159	0.318	0.351	0.544+	0.297
Age26/Age30	0.236	0.206	0.175	0.158	0.294	0.354	0.562+	0.296
Age27/Age31	0.056	0.375	0.140	0.312	0.257	0.375	0.599*	0.303
AFQT Percentile Score	-0.013**	0.003	-0.018**	0.002	-0.025**	0.004	-0.019**	0.002
Mother's Education	-0.062**	0.019	-0.049**	0.013	-0.039+	0.020	-0.025+	0.014
Mother's Education Missing	-0.558*	0.252	-0.379+	0.196	0.282	0.269	-0.080	0.204
Parental Marital Status at Age 14	-0.261**	0.090	-0.255**	0.082	-0.146	0.096	-0.294**	0.087
Frequency of Religious Attendance	-0.082**	0.029	-0.110**	0.022	-0.119**	0.031	-0.035	0.023
Number of Illegal Acts	0.297	0.232	0.022	0.261	0.418	0.271	0.390+	0.220
Self-Esteem Index	-0.019	0.012	-0.016+	0.010	-0.023+	0.013	-0.010	0.010
ROTTER Scale	-0.015	0.020	0.014	0.016	-0.041+	0.022	0.041*	0.017
Career-Oriented Attitude	-0.040	0.098	-0.006	0.080	-0.034	0.108	0.035	0.083
Family-Oriented Attitude	0.131	0.189	0.037	0.158	0.082	0.201	0.292+	0.154
Desired Number of Children	0.011	0.029	0.015	0.024	-0.018	0.032	0.025	0.025
Northeast	0.834	0.991	0.495	0.506	0.860	1.237	-0.035	0.567
North Central	1.713*	0.855	0.468	0.324	1.605	0.998	0.698+	0.370
South	1.682*	0.806	-0.133	0.435	0.681	0.916	-0.356	0.474
Density	0.493**	0.137	-0.014	0.069	0.210	0.157	0.096	0.076
Density x Northeast	-0.153	0.142	-0.073	0.075	-0.176	0.170	-0.056	0.084
Density x North Central	-0.153	0.129	-0.015	0.055	-0.165	0.145	-0.083	0.061
Density x South	-0.287*	0.126	-0.030	0.075	-0.183	0.138	-0.022	0.082
Crime Rate	0.166*	0.066	0.086+	0.044	0.059	0.082	0.065	0.054
Density x Crime Rate	-0.015+	0.009	-0.007	0.006	-0.003	0.011	-0.010	0.008
Poverty Level	0.095**	0.030	-0.014	0.020	0.051+	0.031	0.019	0.023
Density x Poverty Level	-0.019**	0.005	0.001	0.004	-0.006	0.006	-0.003	0.004
AFDC and Food Stamp Benefit	3.428**	1.121	2.242**	0.731	1.229	0.992	1.513*	0.649
Past Year Use of Cocaine or Marijuana	0.462**	0.109	0.265**	0.089	0.262+	0.138	0.508**	0.101
Past Year Use of Cocaine and Marijuana	0.393	0.255	0.219	0.157	0.534*	0.232	0.263+	0.158
Past Month Alcohol Use	-0.000	0.003	-0.002	0.002	0.003+	0.002	0.001	0.001
Number of Observations	1183		3396		1106		3210	

Notes: + p<.10, \* p<.05, \*\* p<.01. Estimates are from the regression with past year use of cocaine and/or marijuana of the first model from Tables 2 and 3. Age20/Age24 represents Age 20 for 1984 regressions and Age 24 for the 1988 regressions. The 1984 regressions include dummies for each age from 20 to 27, whereas the 1988 regressions include dummies for each age from 24 to 31.