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Determinants of Crack Cocaine Trial and Addiction

Abstract

This paper examines how socioeconomic factors contribute to initial use of crack cocaine and to eventual addiction. The paper focuses on two specific questions: what characteristics influence crack cocaine use initially and why do people continue to use crack cocaine? In order to answer these questions the paper utilizes basic supply and demand theory as well as general physiological theory on drug dependence. These theories, coupled with previous literature, suggest characteristics that would increase the probability of a person trying crack cocaine. However they also indicate that once a person has become addicted, these characteristics no longer matter. Ordinary Least Squares regressions as well as logistic models are utilized on crack cocaine related data from the 2006 *National Household Survey on Drug Use and Health*. In general, results are consistent with the theory. It also appears that historical associations between race and crack cocaine use seem to have changed.

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I. Introduction

Crack cocaine in the United States first became an issue of public concern during the 1980s “War on Drugs.” Crack cocaine was termed an “epidemic” that was spreading rapidly. Today, crack cocaine continues to plague its victims in many different ways. Foremost, because crack cocaine is smoked, it enters the body and releases dopamine very quickly and often leads to addiction quickly. Addiction can be physically and psychologically devastating to any individual. Also of concern are the children born to mothers who use crack cocaine regularly. Infant mortality increased for the black, crack-using community in the 1980s, as did the rate of low birth weight babies and parental abandonment, due to the influences of crack cocaine (Levitt, 2006). The effects of having a crack baby or being a crack baby are not fully understood but it is believed that these children will be a burden on society later in life. Further, the transmission of HIV among users who do not protect themselves appropriately creates a burden on society.

Crack cocaine has also commonly been associated with increased interpersonal violence and criminality, such as robbery and theft. According to Levitt (2006), in a five year period in the 1980s, homicide rates for urban blacks, a population historically associated with crack cocaine use, quadrupled. Crack cocaine charges and accompanying criminal felony and misdemeanor charges, often result in long term imprisonments for many individuals. Laws currently mandate longer prison sentences for crack cocaine offenses in comparison to powdered cocaine offenses. Debate then argues over the fairness of laws concerning crack cocaine and whether or not these laws are biased towards Hispanics and blacks, groups commonly associated with crack cocaine (Hanson, Venturelli, and Fleckenstein, 2006). These issues should concern the members of society since the issues affect society directly and indirectly.

Because crack cocaine use creates many serious problems for all of society, this paper examines the current use of crack cocaine. The study asks two questions. First, what socioeconomic factors influence or deter individuals' trial of crack cocaine? Second, what socioeconomic factors are associated with continued to use crack cocaine? There are not many studies focused on the use of crack cocaine, as most generalize to powdered cocaine and not its derivatives. This study is different in this way and thus hopes to expand on previous literature on crack cocaine.

The sections of this paper follow: Section II provides a review of literature, Section III explains a theoretical background, Section IV includes the data and empirical model, Section V examines the results of the regressions, and Section VI makes final conclusions, policy suggestions, and suggestions for future research.

II. Literature Review

Past research investigates many different socioeconomic influences.

A. Economic Variables

Income. Illegal drugs are not inexpensive goods. An income is necessary to support recreational or problematic drug use. One might be led to believe that people who use drugs get their money for drugs by selling drugs; however, this presumption is not entirely true since many different types of people with many different jobs and incomes demand illicit drugs (Bushmueller and Zuvekas, 1998).

Bushmueller and Zuvekas (1998) perform an interesting study that determines that income positively affects moderate drug use but negatively affects daily use. One important aspect of Bushmueller and Zuvekas' work is that they differentiate between young adults and what they defined as "prime age" adults (30-45 year olds). When controlling for age, the

relationship between drug use and income is not monotonic for younger people. They find that income positively affects trial for young workers, but income negatively affects drug addiction. Those with lower incomes use drugs more often than those with higher income levels. When controlling for age, prime age men display a negative relationship between problematic drug use and employment but younger men do not. In another study, Gill and Michaels (1991) conclude that drug use actually increases with wages a little for all ages of people, and thus people earning an income demand more illicit substances.

Some of the individuals who experiment with and eventually become addicted to drugs are adolescents between the ages of twelve and seventeen. This group might not have a full time job, nor is there an expectation of them to hold a full time job, since they often are in school. Consequently, understanding where they get their money from is important to understanding adolescents' demand.

Teenagers' primary income comes from allowances, wages from part time employment, and gifts. Many studies have found a positive relationship between drug use and income in younger people. Markowitz and Tauras (2006) investigate how budget constraints affect this group and they find that earned income (income from a part-time job) is positively related to the probability of use and frequency of use. Higher allowances also have a positive effect on drug experimentation but they do not predict drug addiction. Finally, parental income might be important to drug demand for youth. Markowitz and Tauras find that illicit drug trial does not necessarily decrease with an increase in family income, but higher family income does decrease the frequency and continuance, thus the potential addiction, of illicit drug use.

Employment. One issue that arises when considering drug policy is how drug use might affect productivity and, in turn, wages. Gill and Michaels (1992) find that drug use is associated

with a reduced probability of employment. According to their demand side findings, lower productivity and increased absenteeism from work may indicate drug addiction. Supply side findings indicated that drug use seems to be a leisure activity. However, if experimentation is a leisure activity then their results remain unclear because use of hard drugs has less negative effect than use of simple drugs. In a previous but comparable study, Gill and Michaels (1991) suggest that a strong association exists between occupational categories and drug use.

B. Background Variables

Education. The relationship between drug use and dropping out of high school has attracted the attention of researchers. There is little question that these issues are interrelated. Krohn, Thornberry, Collins-Hall, and Lizotte (1995) survey some of the different theories. Initially students become frustrated with school and then become less involved. These students are more likely to acquire deviant behavior and are consequently less likely to complete school. The impact of prior drug use on dropping out of school may be spurious because it plays so much on other school and family factors. Some theorists believe that dropping out of school reduces the level of frustration students feel and reduces involvement in drug use. Social control theorists, on the other hand, view dropping out of school as disengaging from society and thus increasing the rate of drug trial and potential addiction (Krohn et al., 1995).

Krohn, Thornberry, Collins-Hall, and Lizotte (1995) use several variables related to school and family dimensions, as well as dropout status, drug use and serious delinquent behavior to estimate a model. They ask two questions: (1) what are the effects of prior delinquency and drug use and (2) what is the effect of dropping out of school on subsequent delinquency and drug use? They find that it is not clear how these three forms of problematic

behavior may precede dropping out of school, but these things may all also be caused by the same predictor values.

By using a multivariate analysis, Harder and Chilcoat (2007) find that over two decades a significant inverse relationship exists between education and cocaine use. Addicted cocaine users, who become more highly educated, decrease use, whereas persistent cocaine use did not change much for those who did not complete high school.

Race/Ethnicity. In 1984 and 1985, crack cocaine began to appear in impoverished Hispanic and black neighborhoods in larger cities (Reinarman and Levine, 1997). More crack cocaine use is found in Hispanic and black communities (Hansen, Venturelli, and Fleckenstein, 2006). And in 1988 the NHSDA found that crack cocaine is more common among Hispanics and blacks than whites. Frequent crack cocaine users, however, now are more likely to be younger, unemployed males who are white and poor (Hawthorne and Henderson, 2002). Similarly, the Substance Abuse and Mental Health Services Administration, Office of Applied Studies (SAMHSA) (2007) finds between 1995 and 2005 that smoking cocaine use has increased for whites but slightly decreased for black respondents and Hispanics remained the same.

C. Demographic Variables

Urban vs. Rural. It is believed that preferences towards drugs may differ over geographic areas. Many studies use geographic location in some way as an independent control variable. Some use geographic location to mean the difference between urban and rural areas. DeSimone and Farrelly (2003) caution against interpreting results when geographic fixed effects are not included because studies have shown that the magnitude of price responsiveness is overestimated when fixed effects are not included. Lillie-Blanton, Anthony, and Schuster (1993) cluster urban groups with shared characteristics; it is found that the odds of using crack do not

differ much due to race. The reasoning for clustering involves the complexities of the economy, which might affect the drug market. For example, employment rates, crime rates, distribution of wealth and access to societal resources vary in different settings.

Age. According to Sickles and Taubman (1991) age is of marginal significance when considering who tries illegal drugs. However, Caulkins, Reuter, Iguschi, and Chiesa (2005) believe that age does matter and new drug experimenters often are in their teens or young adult years. Since crack cocaine is such a highly addictive drug, constant trial quickly leads to heavy addiction at a young age. In fact, 17% of those that are heavy cocaine users started using cocaine at an early age. Niskanen (1992) also finds addictive behavior is more likely to occur in those that are younger.

Gender. Several studies have incorporated gender in some way. For example, Lillie, Blanton, Anthony, and Schuster (1993) run multiple regressions and find that 58% of addicted crack cocaine smokers are male. Most other studies already mentioned used gender as a control variable in some way.

III. Theoretical Framework

Consumer Demand. Consumer demand theory provides much of this paper's foundation. Price elasticity of demand measures how consumers respond to changes in price. Demand for a good is elastic if quantity demanded changes substantially in relation to price and demand for a good is inelastic if the quantity demanded hardly changes in relation to price (Mankiw, 2004; Reinerman and Levine, 1997).

There are two scenarios possible: (1) trial and (2) addiction. With regard to trial, certain socioeconomic factors might effect the position of the demand curve. The demand curve should

be elastic, since trial implies that the individual is not yet addicted. If there is an increase in price, individuals might be less likely to try crack cocaine.

Once addicted though, regardless of price and income in many situations, economic, social, psychological, and physiological forces shape consumer tastes. This paper considers how the demand curve is affected due to the addiction, tolerance, and dependence that result as a part of drug use. “When drugs...are used repeatedly over time, tolerance may develop. Tolerance occurs when the person no longer responds to the drug in the way that person initially responded (NIDA, 2007).” As users increase tolerance, they demand more and more of a drug.

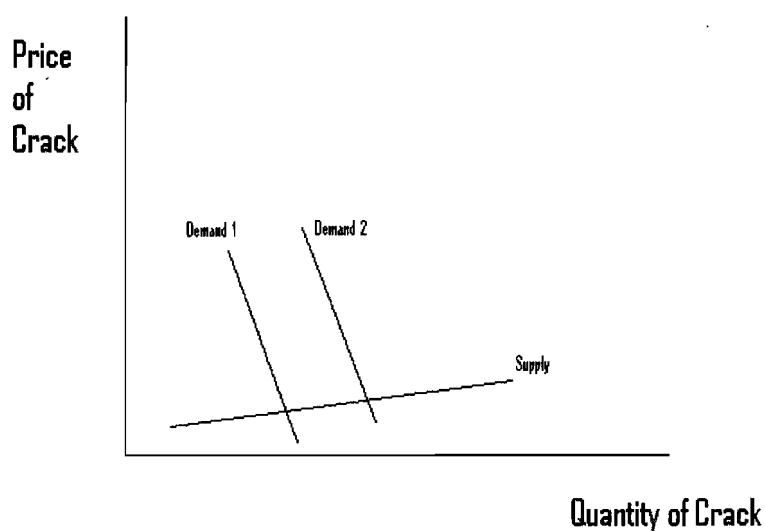
“Addiction¹ is a state in which an organism engages in a compulsive behavior, even when faced with negative consequences. This behavior is reinforcing or rewarding (NIDA, 2007).” Physically, dependence occurs when repeated exposure to drugs occurs within neurons and they only function normally when the drug is present in the system. Psychologically, a person using drugs loses all sense of control and continually uses because he or she believes that he or she must engage in drug use. Users attempt to avoid pain or sickness due to withdrawal symptoms because of their dependence and demand shifts right as addiction increases (NIDA, 2007). When crack cocaine is used, a very fast and intense release of dopamine results in a powerful high. Thus, crack cocaine carries a tremendous potential for addiction and continued supply becomes essential to daily living (Hansen, Venturelli, Fleckenstein, 2006). When a good becomes a necessity to an individual, the demand for the good becomes price inelastic and only responds slightly to changes in price (Mankiw, 2004). Figure 1 demonstrates the addictive model with an inelastic demand. The trial would have a demand curve that is more elastic or flat.

¹ The terms addiction and dependence have come to be synonymous in today’s society and are used interchangeably (Hansen, Venturelli, Frleckenstein, 2006).

Producer Supply. Because crack cocaine is relatively simple to make and also because of high costs associated with managerial control of retail, low economies of scale as well as intense competition in production and sales occurs. Crack cocaine dealing typically occurs between a customer and an independent seller because customers make more frequent purchases of smaller amounts. As a result, the price tends to be lower because the sellers must compete for customers more actively, unlike if a few major dealers run the market. Also, supply should maintain a constant low price since when one seller starts to raise his price and earn profits other producers will enter the market and drive prices down to the original price. Thus, price remains fairly constant over time (Inciardi, Lockwood, and Pottieger, 1993; Lee, 1999).

Because of the constant low price, supply is elastic in the crack cocaine market. A shift in demand moves along the supply curve. In Figure 1, this shift is demonstrated from demand curve 1 (D_1) to demand curve 2 (D_2). A shift in demand determines how much crack cocaine will be supplied and only influences price marginally. Thus, because a shift does not substantially change price, it is not necessary to include price in the demand function and it is still possible to predict outcomes of the market.

Figure 1: Demand and supply of the market



This Study's Theoretical Model. Based on previous literature and consumer demand theory, a theoretical model to explain the dependent variable of crack demand is proposed. The demand is dependent upon four categories of independent variables: addiction variables, economic variables, background variables, and demographic variables. The resulting theoretical model follows:

$$\text{Demand} = f(\text{Addiction Variables, Economic Variables, Background Variables, Demographic Variables}) \quad (\text{Eq. 1})$$

IV. Data

This study first examines the characteristics that influence the trial of crack cocaine and then this study seeks to find why people continue to use crack cocaine. The data come from the 2006 *National Survey on Drug Use and Health* (NSDUH) and the 1995 NSDUH. As an independently drawn sample, the NSDUH surveys members of United States households over the age of 12. Several groups, which have a potential influence on results, are not included in the data set. These groups include: prisoners, military personnel, homeless, and those currently in a treatment facility. Unfortunately, many of the stigmas associated with these groups suggest that a large population of drug users is not included in the data. Consequently, results should be considered an underestimate of true trial or addiction.

V. Empirical Models

Trial Model

The collected data are tested in two different models. The trial model looks at the characteristics of individuals that might contribute to their experimentation with crack cocaine. In the trial model, a binary dependent variable, EVERUSED, reports whether or not someone has

used crack cocaine. The possible answers are yes and no (1 or 0). The resulting regression coefficients can be interpreted as marginal probabilities of occurrence. The trial model follows in Eq. 2 and explanations of the independent variables follow in Table 1.

$$\text{EVER USED} = \beta_1 + \beta_2 \text{AGE} + \beta_3 \text{RACE} + \beta_4 \text{MALE} + \beta_5 \text{INCOME} + \beta_6 \text{EDUCATION} + \beta_7 \text{JOBSTATUS} + \mu \quad (\text{Eq. 2})$$

Addiction Model

The addiction model looks at what characteristics of individuals influence addiction to crack cocaine. The addiction model employs a different dependent variable than the trial model. TOTAL CRACK indicates the number of days (1-365) a user of crack cocaine consumed crack cocaine. These values are readily interpreted as the number of days utilized per year.

Since addiction has been found to cause changes in the orientation of the demand curve, this paper utilizes variables which indicate that consumption characteristics are not completely voluntary. Addiction should have a positive effect on drug demand. Two specific variables are used in the regressions to capture addiction factors. First, a dummy variable asks whether or not an individual needs more of a particular drug to get the same desired effect that a previous amount had on them (NEEDMORE). This variable is a tolerance factor, and tolerance is defined as physical changes in the body that decrease the response to a drug (Hansen, Venturelli, and Fleckenstein, 2006). A second addiction dummy variable indicates whether or not an individual spent a great deal of time in search of their drug of choice, using their drug of choice, or thinking about their drug of choice (MUCHTIME). MUCH TIME is an addiction factor that incorporates both the physical and psychological aspects of drug use (Hansen, Venturelli, and Fleckenstein, 2006). These variables provided by the NSDUH limit the model because there are many

missing values. These missing values almost inevitably lead to errors or other issues in OLS regression results, since sample size dwindles.

The addiction model follows in Eq. 3 and explanations of the remaining independent variables follow in Table 1.

$$\text{CRACK DEMAND} = \beta_1 + \beta_2 \text{AGE} + \beta_3 \text{RACE} + \beta_4 \text{MALE} + \beta_5 \text{INCOME} + \beta_6 \text{EDUCATION} + \beta_7 \text{JOBSTATUS} + \beta_8 \text{NEED MORE} + \beta_9 \text{MUCH TIME} + \mu \quad (\text{Eq. 3})$$

The economic, background, and demographic variables following are utilized for both the trial and addiction models.

A. Economic Variables

Income. Income is measured as total family income. The NSDUH reports incomes in categories. In order to assign a value to these measures, categorical dummy variables are created. The categories of income are less than \$20,000 (LOWINCOME), between \$20,000 and \$49,999 (LOWMIDINCOME), between \$50,000 and \$74,999 (MIDINCOME), and greater than \$75,000 (HIGHINCOME). LOWINCOME is not included in the regressions so that coefficients for the other categories are all compared to LOWINCOME. This study hypothesizes that greater income causes consumers to demand less, thus a negative effect is predicted for those with incomes above \$20,000.

Table 1: Variable Definitions and Expected Signs

Variable	Definition	Expectation
Dependent Variables-		
EVER USED	Have you ever, even once, used “crack”?; 1=yes; 0=no; used for trial model	
TOTAL CRACK	Total # of days used crack in the past 12 months; used for addiction model	
Addiction Variables-		
NEED MORE	Need more crack cocaine to get desired effect?; dummy variable; 0=no; 1=yes	+
MUCH TIME	Spent a lot of time getting or using crack cocaine?; dummy variable; 0=no; 1=yes	+
Economic Variables-		
INCOME	Total family income	
-LOWINCOME	Less than \$20,000; omitted to compare to	
-LOWMIDINCOME	Between \$20,000 and \$49,999; categorical variable; 1=between \$20,000 and \$49,999; 0=otherwise	-
-MIDINCOME	Between \$50,000 and \$74,999; categorical variable; 1=between \$50,000 and \$74,999; 0=otherwise	-
-HIGHINCOME	Greater than \$75,000; categorical variable; 1= greater than \$75,000; 0=otherwise	-
JOBSTATUS	Work Situation	
-UNEMPLOYED	Unemployed; omitted to compare to other employment variables	
-EMPLOYED	Employed either part time or full time; categorical variable; 1=full time or part time employed; 0=otherwise	-
-INSCHOOL-NOJOB	No job, in school or training; categorical variable; 1=no job, in school; 0=otherwise	-
Background Variables-		
EDUCATION	Highest level of education	
-LESSHS	Did not complete high school; categorical variable; omitted to compare to	
-HS	Received high school diploma or equivalent; 1= high school; 0=otherwise	-
-SOMCOLLEGE	Went to college but did not finish; categorical variable; 1=some college; 0=otherwise	-
-COLLEGE	Completed at least a bachelor’s degree; categorical variable; 1=some college; 0=otherwise	-
RACE	Race by category	
-WHITE	White; omitted to compare to	
-BLACK	Black; categorical variable; 1=African American; 0=Otherwise	+
-HISPANIC	Hispanic; categorical variable; 1=Hispanic; 0=otherwise	+
-OTHERS	All other races; categorical variable; 1=All others; 0=otherwise	Uncertain
Demographic Variables-		
AGE	Category of current age	
-AGE12TO17	Ages 12 to 17; omitted to compare to	
-AGE18TO25	Ages 18 to 25; categorical variable; 1=18 to 25; 0=otherwise	Uncertain
-AGE26TO34	Ages 26 to 34; categorical variable; 1=26 to 34; 0=otherwise	Uncertain
-AGE35PLUS	Ages 35 plus; categorical variable; 1=35 plus; 0=otherwise	Uncertain
MALE	Gender; dummy variable; 1=male;0=female	+

Employment. Employment is measured as a categorical dummy variable. The categories are not employed (UNEMPLOYED), which includes those that are disabled, retired, looking for a job, laid off, or keeping house full time, employed (EMPLOYED), which includes those working full time or part time, and no job due to school or training (INSCHOOL-NOJOB). UNEMPLOYED is left out of the regression. Based on previous research this paper hypothesizes that those who are unemployed will demand more drugs than those who are employed or those who are currently attending school.

B. Background Variables

Education. Education is measured as a categorical variable and is reported as the highest level of education completed. The categories of educational attainment are those people who dropped out of high school (LESSHS), those people that completed high school or an equivalent (i.e. GED) program (HS), those people that completed some college but did not receive a bachelors degree (SOMECOLLEGE), and those people who have completed a bachelors degree or higher (COLLEGE). Not included in the education categories are those that are still in school. This group of respondents has a high correlation to one of the job status categories, which includes those who do not currently have a job because of education or training. For the purposes of this study, job status rather than the education variable is tested. The excluded variable for education is the lowest level of educational attainment, LESSHS. Education has proven to be a large contributing factor to drug disuse, so this paper predicts that the higher the level of education completed, the less likely drug abuse will be a problem for an individual.

Race/Ethnicity. Several sources find that race has some effect on drug use and demand. Included in the models are those who identified as white or Caucasian (WHITE), those who identified as black (BLACK), those who identified as Hispanic (HISPANIC), and those who

identified in some other category (OTHERS). In 2006, the category OTHERS contains several other categories including Native Alaskan, Native American, Native Hawaiian, Pacific Islander, Asian, and multiracial. WHITE is excluded from the regression. The study anticipates that black and Hispanic should show positive influences on use.

C. Demographic Variables

A few demographic variables are included in the models in order to control for various factors that might play a role in determining drug demand. These demographics have been used in previous studies and as a whole they are a good representation of some non-addiction or socioeconomic factors, which might affect demand for illicit substances.

Urban vs. Rural. In this study the sample has been limited to individuals living in an urban area. Any person living in an area of 1 million people or more is considered an urban resident.

Age. Age is split into four categories: Ages 12 to 17, Ages 18 to 25, Ages 26 to 34, and Ages 35 plus. The category containing ages 12 to 17 is omitted from the regressions in order to have a comparison value. This study hypothesizes that as age increases crack cocaine trial decreases. Unfortunately, a potential problem might arise with the dependent variable of EVERUSED and the age category. EVERUSED does not indicate the age at which individuals tried crack cocaine. However, older individuals will have had more opportunity to try crack cocaine, and so the effect of age might turn out to be positive. Thus, age's effect on crack cocaine trial and addiction is uncertain.

Gender. In the model gender is represented by MALE. Gender should show a positive effect in my regressions.

D. Hypotheses

After analyzing the previous literature and theories related to crack experimentation and drug addiction, hypotheses of this paper include:

1. As family income increases, crack cocaine use (demand) decreases. ($\beta_5 < 0$)
2. As education level increases, crack cocaine use (demand) decreases. ($\beta_6 < 0$)
3. As job status increases, crack cocaine use (demand) decreases. ($\beta_7 < 0$)
4. As more drug is needed to obtain a high, crack cocaine use (demand) increases. ($\beta_8 > 0$)
5. As more time is spent looking for and using a drug, crack cocaine use (demand) increases. ($\beta_9 > 0$)

VI. Results

Trial Model. Initially an Ordinary Least Squares regression is performed on the trial model. These regression coefficients represent marginal probabilities of an occurrence. A marginal probability, in this case, can be interpreted as the change in the probability of trying crack cocaine if an individual falls in a specific category, such as AGE18TO25 instead of the omitted category from the regression. So for example, as found in Model 1 (see Table 2), for AGE18TO25 there is a 3.3% increase in the probability of crack cocaine trial compared to AGE12to17.

Notably, the R^2 value for the overall model is weak at .021. However, the results of Model 1 are highly statistically significant, to the 1% level, for almost all variables included in the regression. Additionally, except for the age and race variables, most of the results agree with initial predictions.

In terms of income categories, the results appear as anticipated by this paper and thus confirm the findings of Bushmueller and Zuvekas (1998) and Markowitz and Taurus (2006) and

as opposed to the work of Gill and Michaels (1991). All other things equal, for LOWMIDINCOME there is a 0.6% decrease in the probability of crack cocaine use compared to an individual who falls into the LOWINCOME category. Also in accordance to the predicted outcome, for MIDINCOME there is a 2.3% decrease in the probability of using crack cocaine compared to an individual with LOWINCOME.

Similarly, education results match the predicted outcomes and as the educational category increases the marginal probability of experimentation decreases more and more. This result aligns with Harder and Chilcoat (2007). In comparison to the omitted variable, LESSHS, HSGRAD experiences a 1.3% decrease in the probability of crack cocaine, and COLLEGE experiences a 4.4% decrease in the probability of using crack cocaine compared to LESSHS.

Job status categories also produce results that were predicted. As Gill and Michaels (1992) find, drug use is associated with lower probability of employment. It thus makes sense that in comparison to someone who is unemployed, the employed have a lower marginal probability of trial of crack cocaine. It also makes sense that those without a job because they are currently attending school have a negative marginal probability.

The age categories controlled for are of notable interest. In Model 1, AGE26TO34 (.060) has a greater marginal probability than AGE18TO25 (.033), the age category which should seemingly have the highest marginal probability of use. Even though Caulkins, Reuter, Iguschi, and Chiesa (2005) and Niskanen (1992) find that most drug users are in their teens, that situation does not appear to be the case in the results of this study. Perhaps this oddity can be attributed to the question of the dependent variable that was asked of the respondent. As already mentioned, the NSDUH asks individuals if they have ever used crack cocaine. Hence, individuals who are 35 might have answered this question positively even if they may have not tried crack cocaine

since age 19. When they tried crack cocaine they fell into the earlier age category, even though they no longer do.

Table 2: Trial Model Regression Results

VARIABLE	MODEL 1	MODEL 1.A	MODEL 1.B
(Constant)	.032*** (6.487)	.032*** (21.830)	.024*** (17.105)
AGE18TO25	.033*** (6.676)	----	----
AGE26TO34	.060*** (10.124)	----	----
AGE35PLUS	.058*** (11.093)	----	----
MALE	.018*** (6.901)	----	----
LOWMIDINCOME	-.006* (-1.741)	----	----
MIDINCOME	-.023*** (-5.308)	----	----
HIGHINCOME	-.025*** (-6.298)	----	----
HSGRAD	-.013*** (-3.011)	----	----
SOMECOLLEGE	-.015*** (-3.352)	----	----
COLLEGE	-.044*** (-9.080)	----	----
EMPLOYED	-.009*** (-2.889)	----	----
INSCHOOL-NOJOB	-.015*** (-3.161)	----	----
BLACK	-.017*** (-4.714)	-.008** (-2.591)	.008*** (.789)
HISPANIC	-.024*** (-7.034)	-.010*** (-3.815)	----
OTHER	-.012** (-2.338)	-.011*** (-2.591)	.430 (2.843)
R ²	.021	.001	.000
N	19544	23332	17743

*Significant at the .1 level; **Significant at the .05 level; ***Significant at the .01 level; (t-statistics in parentheses)

Two other variables in Model 1 that do not fit predictions are BLACK and HISPANIC. This study anticipated that these variables would be positive, in accordance previous literature (Reinarman and Levine, 1997; Hansen, Venturelli, Fleckenstein, 2006). However, the results, which are both statistically significant at the 1% level, indicate a negative change in marginal probability of 1.7% and 2.4%, respectively.

Model 1's results for race do not necessarily indicate that minorities try crack cocaine less; rather, they mean that minorities try crack cocaine less than Caucasians of equal income and educational levels. In order to see if minorities actually try less, Model 1.A was estimated controlling for race categories only. Model 1.A's coefficients, while smaller, are still significant and negative. From Model 1 and Model 1.A, apparently, minorities in this sample really are less likely to have tried crack cocaine.

This result is so at odds with stereotypes and previous research that Model 1.B is estimated utilizing earlier data from the 1995 NSDUH. Model 1.B indicates that BLACK has a positive marginal probability on crack cocaine trial. These results confirm that minorities used to be more likely to have tried crack cocaine, and thus it appears that there has been a change in trial patterns. These results are more aligned with the Hawthorne and Henderson (2002) study as well as the findings from SAMHSA (2007), which indicated a probable change in trial. Several reasons for this shift come to mind. For example, perhaps younger generations of these minorities see the devastating effects that crack cocaine has had on their family and their community, so they stay clear of trying crack cocaine and experiment with a different drug instead or just avoid drugs all together.

Because the trial model requires a binary dependent variable, a binary logistic regression might be better than an OLS regression. Thus, this study runs such a test. The results of Model 1.C are found in Table 3.

Coefficients from Model 1.C cannot be interpreted in the same way as Model 1's coefficients. The key thing to note is that all coefficients continue to be significant, with the same signs. Model 1.C supports all the conclusions in Model 1.

Table 3: Trial Logistic Regression Model

VARIABLE	MODEL 1.C
(Constant)	-4.122***
AGE18TO25	1.437***
AGE26TO34	2.126***
AGE35PLUS	2.057***
MALE	.598***
LOWMIDINCOME	-.182*
MIDINCOME	-.726***
HIGHINCOME	-.787***
HSGRAD	-.277**
SOMECOLLEGE	-.300**
COLLEGE	-1.321***
EMPLOYED	-.252***
INSCHOOL-NOJOB	-.816***
BLACK	-.506***
HISPANIC	-.772***
OTHER	-.369**
COX & SNELL R ²	.022
N	19545

*Significant at the .1 level; **Significant at the .05 level; ***Significant at the .01 level

Addiction Model. The addiction model employs the total number of days a crack cocaine addict used crack in the past year. The coefficients for these models are interpreted as the additional days per year crack is demanded. The addiction model utilizes an OLS regression since the dependent variable is not binary.

As foreseen and as indicated in Model 2 in Table 4, addiction characteristics created so much of an effect on the number of days crack cocaine was demanded that all of the socioeconomic factors, with the exception of one, became insignificant. The results of Model 2 match the prediction of physiological theory as explained by Hansen, Venturelli, and Fleckenstein (2006). BLACK appeared to be statistically significant at the 10% level, however, it appears in opposite the hypothesized direction. Model 2's results do find the negative race results that Hawthorne and Henderson (2002) and SAMHSA (2007) suggest, as well as the results from Models 1.A and 1.B. One might notice there appears to be some sign errors with the

addiction model; however, since the results are not statically different from zero, they do not merit much consideration.

Table 4: Addiction Regression Results

VARIABLE	MODEL 2	MODEL 2.A	MODEL 2.B
(Constant)	21.021 (.697)	22.768 (.764)	32.703 (.998)
AGE18TO25	7.450 (.247)	6.778 (.226)	23.863 (.730)
AGE26TO34	31.375 (.892)	30.733 (.877)	51.667 (1.357)
AGE35PLUS	41.859 (1.169)	40.003 (1.129)	59.180 (1.524)
MALE	-19.421 (-1.149)	-19.260 (-1.144)	-15.743 (-.856)
LOWMIDINCOME	-4.870 (-.271)	-4.837 (-.270)	-3.600 (-.184)
MIDINCOME	6.463 (.234)	6.710 (.244)	7.873 (.262)
HIGHINCOME	-25.525 (-.933)	-25.760 (-.9450)	-20.417 (-.685)
HSGRAD	18.712 (.092)	18.496 (.850)	13.124 (.552)
SOMECOLLEGE	7.847 (.358)	8.562 (.393)	-.280 (-.012)
COLLEGE	-13.309 (-.024)	-15.272 (-.315)	-26.108 (-.492)
EMPLOYED	12.335 (.752)	11.952 (.732)	12.978 (.726)
INSCHOOL-NOJOB	-23.490 (-.657)	-22.770 (-.640)	-39.251 (-1.012)
BLACK	-45.434* (-1.903)	-44.633* (-1.881)	-32.835 (1.269)
HISPANIC	1.474 (.068)	1.809 (.084)	.421 (.018)
OTHER	-20.577 (-.634)	-21.046 (-.651)	-43.664 (-1.248)
NEEDMORE	8.172 (.443)	-----	52.410*** (3.002)
MUCH TIME	87.012*** (4.818)	90.987*** (5.827)	-----
ADJUSTED R ²	.302	.301	.164
N	134	134	134

*Significant at the .1 level; **Significant at the .05 level; ***Significant at the .01 level; (t-statistics in parentheses)

Model 2.A looks at the same regression, only controlling for one of the addiction characteristics, MUCH TIME, and removing NEEDMORE. When this manipulation occurs, MUCH TIME appears to be a very robust variable, which lends support to the initial results. The rest of the results continue to maintain their lack of statistical significance, with the exception of

BLACK. Model 2.B controls for just NEEDMORE, and here it is discovered that NEEDMORE is not a very robust variable, increasing to 52.410 days and becoming significant at the 1% level.

VII. Conclusions

This paper set out to investigate the determinants of crack cocaine trial and addiction. Whereas most of the results, affirm previous studies, theory, and the hypotheses of this study, not all of the results of this project match the original predictions. According to the results of the trial model, it appears that trial for crack cocaine has shifted away from the groups that have historically used it, in the recent past. As mentioned earlier, perhaps this shift can be accounted for due to social factors not controlled for in this model. For instance, children seeing their dad become really messed up on crack might then deter them from crack trial later in life. The addiction model shows that addiction plays a vital role in determining crack cocaine demand after the initial choice is made to use. Once an addictive pattern has been established, no socioeconomic factor controlled for here compares to the influence of an addiction.

The results suggest that crack cocaine seems to be shifting in consumers. The results also indicate that perhaps the debate on the crack cocaine versus powdered cocaine laws is becoming less merited as a racist issue because of the shift in demand. In terms of trial, this study indicates crack cocaine use needs to be prevented before it starts, as after addiction there is no socioeconomic factor that contributes as much. Addiction to crack cocaine is possible for anyone, no matter their socioeconomic status. Treatment and assistance seems to be the best choice for those who find themselves addicted, especially in protecting themselves and others from health risks, such as HIV or drug addicted babies. Future research topics that stem from this paper might include investigation of crack cocaine in a longitudinal analysis and study on how additional socioeconomic factors contribute to crack cocaine experimentation.

VIII. References

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