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ASSESSING THE TEMPORAL RELATIONSHIP BETWEEN RACE AND ECSTASY USE AMONG HIGH SCHOOL SENIORS*

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ABSTRACT

Previous research has suggested that the use of ecstasy is primarily a white phenomenon. To date, however, these studies have all been conducted at single points in time. No research has examined the temporal relationship between race and the use of ecstasy. In the current study, data collected from 10,088 high school seniors surveyed through the Monitoring the Future (MTF) study between 1996 and 1999 are analyzed. Chi-square statistics are used to explore the temporal relationship between race and the use of ecstasy during this time frame. Statistically significant relationships between race and ecstasy use are discerned. Policy implications are assessed in light of the findings.

INTRODUCTION

A patent was issued in 1914 to the E. Merck Pharmaceutical Company in Darmstadt, Germany to produce 3,4-methylenedioxymethamphetamine (MDMA or "ecstasy") as an appetite suppressant for soldiers in the First World War [1-3]. With the exception of several isolated animal studies during the 1950s, the compound was ignored until the late 1970s and early 1980s, at which point it gained popularity as both an adjunct to psychotherapy [4-6] and as a recreational drug [7]. For psychotherapy, MDMA produced increased self-esteem and self-insight and enhanced empathy, communication, and interpersonal relations [4-6]. MDMA became popular recreationally because it increased self-confidence, lowered defenses and inhibitions, and induced feelings of empathy and love [I].

Preceding MDMA on the streets was a drug virtually identical in chemical composition-3,4-methylenedioxyamphetamine (MDA). MDA emerged in California's drug subculture during the 1960s and quickly gained a reputation for producing a sensual euphoria [1]. These qualities were particularly appealing to therapists and recreational users, who were

* The opinions in this article reflect those of the author and do not necessarily reflect those of McFarland and Associates, Inc.

also attracted to its legal status. Beginning in 1976, therapists began using MDMA for purposes similar to those for MDA. They found Adam (the therapists' nickname for MDMA) to be even more beneficial than MDA as a therapeutic agent, particularly in facilitating communication, acceptance, and reduction of fear. Despite this therapeutic success, therapists were reluctant to publish their findings for fear they would lead to MDMA's criminalization. It was not until the late 1970s that Shulgin and Nichols published the first pharmacological study of MDMA in humans [8]. They noted that MDMA led to an ". . . easily controlled state of consciousness, with emotional and sensual overtones.... and that these properties established the unique character of MDMA" [8, p. 34].

The therapeutic value of MDMA remained unknown to the public until the early 1980s when distribution patterns changed and its popularity as a recreational drug expanded. The recreational market for MDMA underwent a slow expansion in the early 1980s. The increasing financial stake of some distributors was reflected in the renaming of MDMA as "ecstasy." By the mid-1980s, MDMA was no longer used exclusively in therapeutic circles. It was this transformation that started MDMA on its path toward criminalization.

The first administrative acknowledgment of MDMA was a request from the World Health Organization (WHO) to the Food and Drug Administration (FDA) for specific information about MDMA [9]. Immediately thereafter, the Drug Enforcement Administration (DEA) filed a request for specific comments about MDMA, with the hope that it would eventually be classified as Schedule I under the Controlled Substances Act [101. Although the DEA first learned of MDMA in the early 1970s, it was ignored for close to a decade. In July 1985, however, reports of potential neurotoxicity in laboratory animals led the DEA to propose MDMA's criminalization [11]. This proposal was met with strong opposition from therapists who continued to assert that MDMA's ability to enhance communication, increase empathy, and reduce fear made it extremely valuable for therapy [6].

Federal hearings were held during the summer and fall of 1985 to determine the final scheduling of MDMA [121. The DEA had several options. Schedule I substances are reserved for drugs that are deemed to have high abuse potential, no accepted medical value, and no accepted safety for use under medical supervision [13]. Schedules 11-V are used for drugs that have some accepted medical uses and safety and have varying potential for abuse. During the course of these hearings, excessive marketing and distribution of ecstasy in bars and nightclubs, in addition to the findings of Ricaurte et al. [11], led the DEA to invoke emergency scheduling powers granted by the Comprehensive Control Act (CCA) of 1984. The CCA allowed the attorney general to place any substance posing "an imminent hazard to public safety" into Schedule I for a period of one year (plus an additional six months if necessary) while the final scheduling process was underway [13]. On July 1, 1985, MDMA was temporarily placed in Schedule 1 [13].

During the one-year suspension, hearings were convened to decide what permanent measures should be taken against MDMA. The DEA and the FDA believed that it

belonged in Schedule I. The case received much publicity and was accompanied by press reports advancing the kind of scare stories now current in Europe. Defenders of MDMA's medical use testified on behalf of its therapeutic value at the federal hearings. Researchers feared that a Schedule I classification would destroy any hope of evaluating MDMA's therapeutic potential. Psychiatrists also sought to distance MDMA from psychedelic drugs like lysergic acid diethylamide (LSD). Grinspoon noted, for example, that "MDMA appears to have some of the advantages of LSD-like drugs without most of the corresponding disadvantages" [14, p. 3).

From the beginning of the hearings, the administrative judge expressed serious doubt regarding the lawful placement of MDMA into any of the available schedules [12]. Ultimately, the judge recommended that MDMA be placed into the less restrictive Schedule III. He concluded that MDMA did not appear to possess a high potential for abuse and that it did have a currently accepted medical use, as well as accepted safety of use under medical supervision [15]. The DEA rejected the court's ruling and permanently placed MDMA in Schedule I on March 23, 1988 [15]. A final appeal to the DEA was rejected during the spring of 1988.

In July 1992, federal government meetings reopened the door for investigating MDMA's potential as a therapeutic adjunct. In October 1992, the FDA approved the first human study of MDMA. While today MDMA remains a Schedule I substance in the United States-illegal to manufacture, use, buy, and sell-clinical studies exploring the potential neurotoxic effects of MDMA have been undertaken in the United States [16, 17].

To summarize, MDMA emerged during the mid- I 970s as a therapeutic agent used by psychologists and psychiatrists. During this period of legal distribution, the recreational use of MDMA increased. Although the use of MDMA was relatively controlled through the early 1980s, increased production and concern over its potential neurotoxic effects ultimately led to its classification by the DEA as a Schedule I substance in 1985. While its proponents still insist that it has therapeutic value, recent studies have begun to identify negative long-term neurotoxic effects.

Relationship between Race and Ecstasy Use

Previous research has identified drug-using preferences within certain ethnic groups [18-24]. Kandel et al. [21], for example, identified that white students were more likely than black and Hispanic students to report lifetime use of alcohol, marijuana, LSD, and tranquilizers, while black and Hispanic students were more likely to report lifetime use of cocaine and heroin. Chilcoat et al. [19], using data from the National Household Survey on Drug Abuse (NHSDA), found that blacks aged 30-34 had higher odds of lifetime crack cocaine use than a comparable group of white respondents. Amey et al. [18] found that Latino household members were significantly more likely than their black and white counterparts to report lifetime use of marijuana. Finally, Oetting et al. [22] identified that American Indians and Hispanics were more likely than whites, blacks, and Asians to report 30-day methamphetamine use.

While anecdotal reports have suggested that the use of ecstasy is primarily a white phenomenon, the relationship between race and ecstasy use is noticeably absent in scholarly social science literature. To date, only three peer-reviewed studies have identified a statistically significant relationship between race and the use of ecstasy [25-27]. Yacoubian et al. [26] surveyed 209 juvenile offenders through Maryland's Offender Population Urinalysis Screening (OPUS) Program between July and August 2000 and determined that 12-month ecstasy users were significantly more likely to be white (82 percent vs. 22 percent, $p < 0.001$) than their non-using counterparts. Most recently, Yacoubian [25] analyzed data collected from 3,376 10th graders surveyed through the 1999 MTF project and determined that past-year ecstasy users were significantly more likely to be white (97 percent vs. 84 percent, $p < 0.001$) than respondents who reported no lifetime ecstasy use.

While these studies suggest that the use of ecstasy is a white phenomenon, no studies have explored the temporal relationship between race and the use of ecstasy. Such research is essential to the exploration of ecstasy diffusion among minority populations. If the use of ecstasy is primarily a white phenomenon, urban schools may not necessarily need to develop and sustain ecstasy prevention programs. To explore this temporal relationship, data from 10,088 high school seniors surveyed through the MTF study between 1996 and 1999 are analyzed. With this preliminary framework, project methods are described below.

METHODS

The federal government funds several major data collection efforts to measure the prevalence of drug use within the United States, each of which gathers information on a specific population (28]. The National Household Survey on Drug Abuse (NHSDA), for example, generates self-report survey estimates of drug use among household members ages 12 and older in the contiguous United States [29]. The Drug Abuse Warning Network (DAWN) is an annual national probability survey of drug-related problems treated in hospital emergency departments and drug-related death data collected from a sample of medical examiners and coroners' offices [30-3 1]. The MTF project began in 1975 as a way to study changes in the drug-using beliefs, attitudes, and behaviors of high school students across the United States. Today, the program surveys approximately 50,000 grade school, high school, and college students annually [32). Finally, the Arrestee Drug Abuse Monitoring (ADAM) Program collects self-report survey data and urine specimens from adult and juvenile arrestees in 35 jurisdictions nationwide [33].

Each MTF data collection takes places in approximately 130 public and private high schools, which provides an accurate cross-section of high school seniors throughout the United States. A multi-stage sampling design is used [32]. Stage I is the selection of a specific geographic area. Stage 2 is the selection of the high school(s) within that particular area. The third stage is the selection of individual students within each high school. During the fall of each academic year, a MTF representative makes an initial contact with each sampled school. After securing consent from the high school principal

or other administrator, arrangements are made for administering the survey. Two weeks prior to its scheduled administration, MTF staff members visit the teachers and provide a brief overview of the study. Teachers are then asked to announce the study to their students.

MTF staff members follow standardized data collection procedures delineated in an instruction manual [32]. While parental/guardian permission is not required, youths are informed that their participation is voluntary and confidential. Questionnaires are administered during normal class periods. Most respondents complete the questionnaire within 45 minutes, although additional time is permitted for those who require it.

In addition to basic demographic information, the questionnaire covers areas on criminal behavior, AOD use, education, health, politics, religion, social change, and social problems [32]. The AOD-use questions are fairly specific. Respondents are first to report whether they have ever used alcohol, amphetamines, barbiturates, cigarettes, crack cocaine, ecstasy, heroin, inhalants, lysergic acid diethylamide (LSD), marijuana, powder cocaine, other psychedelic drugs (e.g., phencyclidine (PCP) and mushrooms), and tranquilizers. For those drugs respondents report having ever tried, they are asked to indicate grade at first use, whether they have used the drug within the past 12 months, and the number of times used within the past 30 days. They are also asked about their perceived ability to reduce or stop using drugs and the personal, familial, and occupational consequences of their drug use.

While the students sampled in MTF are designed to be representative of high school seniors within the 48 contiguous states, there are several ways in which the survey data might fall short of full representativeness [32]. First, some schools may decline participation. Second, survey data may not be obtained from all of the students sampled. Both of these limitations could introduce bias to the sample. Third, questions about sensitive issues, such as sexuality and drug use, could lead to distortions and thus reduce validity. Finally, limitations in sample size could place limits on the accuracy of the estimates. These caveats aside, the MTF data provide enlightening information about a variety of behaviors of grade school and high school students in the United States. With this preliminary summary, data analysis and findings are presented below.

DATA ANALYSIS AND FINDINGS

Data analysis was accomplished in three phases. First, descriptive statistics were generated for each year between 1996 and 1999. Second, estimates of lifetime, 12-month, and 30-day ecstasy use were calculated for each of the four years under scrutiny. Third, each of the samples was divided into ecstasy users and non-users based on self-reported 12-month use of the drug. Individuals who reported lifetime use, but no use in the past 12 months, were excluded from the analysis. Chi-square statistics were used to detect significant associations between race and ecstasy use for each year during the time frame.

Table 1. Demographic Characteristics, 1996-1999

Variable	1996 (n = 2,460)	1997 (n = 2,662)	1998 (n = 2,619)	1999 (n = 2,347)
Sex				
Male	46%	46%	45%	45%
Female	54%	54%	55%	55%
Race/Ethnicity				
White	62%	59%	63%	66%
Non-white	38%	41%	37%	34%
Age				
< 18	47%	46%	44%	47%
≥ 18	53%	54%	56%	53%
Residence				
Small town	24%	24%	27%	29%
Suburbs	18%	19%	20%	20%
Medium city	13%	12%	12%	11%
Country	11%	12%	10%	9%
Large city	12%	11%	10%	11%
Very large city	8%	7%	8%	7%
Farm	5%	4%	4%	4%
Other	9%	11%	11%	9%

Demographic Characteristics

As shown in Table 1, a majority of the students in each year were female, white, and 18 years of age or older. The distribution of residence was constant between 1996 and 1999. Taken collectively, the data were comparable during the four-year time frame.

Self-Reported Ecstasy Use

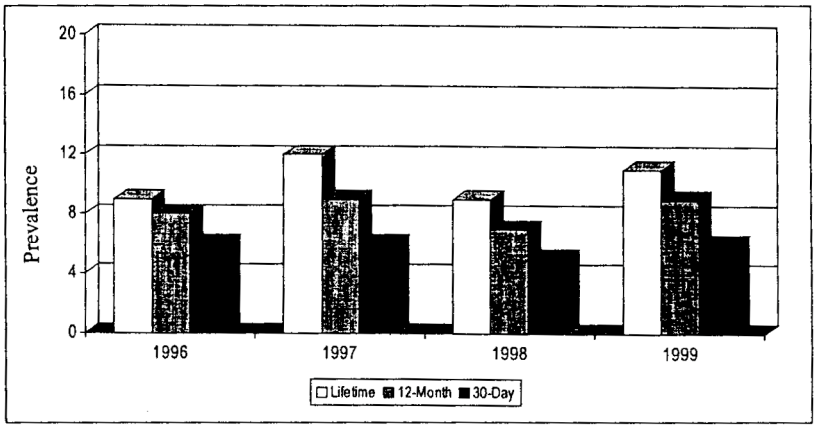

Figure 1. Ecstasy Use among High School Seniors, 1996-1999.

Figure I displays self-reported lifetime, 12-month, and 30-day ecstasy use for each year between 1996 and 1999. In 1996, 9 percent of the students reported lifetime ecstasy use, 8 percent reported 12-month use, and 6 percent reported 30-day use, As shown, the

prevalence estimates have remained fairly constant throughout the four-year time frame.

Temporal Relationship between Race and Ecstasy Use

Table 2 presents annual comparisons between self-reported 12-month ecstasy users and those respondents who reported no 12-month ecstasy use. Chi-square statistics were used to explore the temporal relationship between race and the use of ecstasy for each year in the time frame. In 1996, 12-month ecstasy users were significantly more likely to be white than their non-using counterparts (90 percent vs.73 percent, $p < 0.001$). Statistically significant differences were constant throughout the time frame under scrutiny. Taken collectively, these data suggest that the use of ecstasy remained a white phenomenon between 1996 and 1999.

Table 2. Relationship between Race and 12-Month Ecstasy Use, 1996-1999

		White
1996		
	Non-users	73%*
	12-month users	90%*
1997		
	Non-users	69%*
	12-month users	89%*
1998		
	Non-users	70%*
	12-month users	91 %*
1999		
	Non-users	65%*
	12-month users	89%*

*Chi-square significant at the $p \leq 0.001$ level.

DISCUSSION

Anecdotal reports have dismissed MDMA as a fad. The most appropriate response to those who believe in ecstasy's transience is that stability and resilience can only be confirmed or refuted through scientific research. Duration, or lack thereof, is an empirical question. Moreover, it is unreasonable to believe that the use of ecstasy will completely cease. While drugs tend to ebb and flow in their popularity [34, 35], it is reasonable to hypothesize that similar trends will occur with ecstasy. Even if ecstasy does ultimately get classified as a fad, it is important for national drug surveillance systems like ADAM, DAWN, MTF, and NHSDA-to continue to monitor its prevalence.

The use of ecstasy is unquestionably injurious to the human body. While initial effects include feelings of peacefulness, acceptance, and empathy, MDMA users can encounter

problems similar to those experienced by amphetamine and cocaine users [36, 37]. Psychological effects, which can linger for weeks after ingestion, include anxiety, depression, insomnia, memory loss, and paranoia [38-40]. Physical effects include blurred vision, involuntary teeth clenching, muscle tension, nausea, and sweating [37, 41]. While the long-term neurotoxic effects of ecstasy use are just now being investigated, initial evidence suggests that serotonin depletion is a major complication of MDMA ingestion [17]. Ecstasy-related deaths have also been reported in both rave [42-45] and non-rave [46] settings.

To date, three scholarly works have suggested that ecstasy users are significantly more likely to be white [25-27]. Unfortunately, these studies have all been conducted at single points in time, thus precluding any conclusions about the temporal relationship between race and the use of ecstasy. In the current study, chi-square statistics were used to assess temporal racial changes with respect to the use of ecstasy with data collected from 10,088 high school seniors surveyed through the MTF study between 1996 and 1999. A consistent, statistically significant relationship between race and ecstasy use for each year between 1996 and 1999 was discerned, suggesting that the use of ecstasy has remained a white phenomenon over time. These findings are consistent with previous studies that have discerned a relationship between race and the preference for alcohol or other drugs [18-24].

These results suggest that ecstasy prevention programs among high school seniors might benefit from greater sensitivity to racial differences, perhaps extending to different interventions for different ethnic groups. Clearly, given finite resources available to prevention specialists, funds should be monitored carefully. Schools comprised primarily of white students would benefit from ecstasy education programs considerably more than schools whose racial composition is mixed or predominantly non-white. Until future research detects a shift in the relationship between race and the use of ecstasy, it is strongly recommended that ecstasy-specific efforts be targeted to the population most inclined to its ingestion.

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