Drugnet: A Pilot Study of Adult Recreational Drug Use via the WWW

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This study was intended (1) to explore the potential of using the World Wide Web (WWW) of the Internet to sample hidden populations and (2) to collect exploratory data on the hidden population of nonabusive, recreational users of illicit drugs. The survey modules were designed to assess demographics and lifestyle, drug experiences (including absence of DSM-IV criteria for abuse or dependence), legal history (drug-related arrests, etc.), and mental health as measured by the General Well-Being Schedule (GWBS). The survey was completed by 276 persons, aged 18 to 62, with a mean age of 32.34. The sample was predominantly white (93%), male (78%), college educated (75%), and employed full-time (76%). The WWW is a useful tool for reaching hidden populations but is likely to impose a bias toward male, better educated, and more computer-involved samples on the respondents reached. This survey further documents the existence of a nonclinical population of drug users which is generally healthy, well-adjusted, and productive.

KEY WORDS: drug use; Internet; nonabusive drug use; successful adults; WWW.

INTRODUCTION

There is a large body of clinical research focusing on the attributes of drug abusers. In the course of clinical treatment for drug problems or drug-related health problems, a subgroup of abusers becomes accessible for study in treatment facilities. A second subpopulation becomes accessible to researchers as a result of their arrest for drug or drug-related offenses. These subpopulations are so well described that many Americans incorrectly believe they adequately represent all drug abusers and users.

Large-scale, population-based studies of individuals such as the National Household Survey on Drug Abuse (NHSDA) and The Monitoring the Future Study, however, reveal that there are millions more Americans who consume illicit drugs and never present themselves for treatment or become engaged with the

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Descriptive Drug Users

In many cases, the increased use of marijuana has led to its widespread use, particularly among young people. However, despite the widespread use, much of the scientific evidence about marijuana's effects on health is inconclusive. Studies have shown that marijuana use can have both short-term and long-term effects, including increased risk of respiratory problems, cognitive impairment, and cardiovascular disease. However, more research is needed to fully understand the impacts of marijuana use on health.

Recent studies suggest that marijuana use may be linked to increased risk of developing certain types of cancer, including lung cancer. However, the relationship between marijuana use and cancer remains unclear, and more research is needed to fully understand the potential implications.

Overall, the relationship between marijuana use and health remains complex, and more research is needed to fully understand the risks and benefits of marijuana use. While some studies have suggested potential benefits of marijuana use, such as reduced pain and anxiety, more research is needed to fully evaluate the potential benefits of marijuana use in the context of health and well-being.
and by subject referral (15,16). Zinberg was able to identify 90 opiate users who had between 3 and 23 years experience using heroin without addiction. Follow-up interviews were conducted 6 months to a year later with 60 subjects and 2 years later with 25, thus confirming that they did not subsequently become addicted but leaving the status of the lost cases unknown. Zinberg and his associates had clearly proven that, contrary to popular opinion and clinician belief, a stable population of long-term nonaddicted heroin users existed, while neither their absolute nor relative numbers were known. Hunt and Chambers (1976) combined data from a number of sources to estimate that the current heroin-using population of the United States numbered between three and four million, with only 10% being addicted (17). Their figures seem to be generally consistent with the results of epidemiologic surveys (1,3,5).

Erickson and Alexander (1989) have reported findings about cocaine use similar to those reviewed above for heroin use (18). They reviewed research which studied users in the community, outside of treatment and prison, and concluded,

Most social recreational [cocaine] users can maintain a fairly low use pattern and lengthy periods without escalation to addiction. Users appear to recognize the need to limit their use of cocaine and most seem to be able to accomplish this without professional intervention.

Cohen (1989) applied “snowball sampling” techniques (in which known subjects nominate new subjects, who in turn nominate others) to identify 160 cocaine users in the city of Amsterdam who were demographically and economically similar to the profile of cocaine users developed through a general household survey (19,20). His data offered no evidence that any of the subjects had ever lost control of their cocaine use. Only 2% of the subjects currently used cocaine at what Cohen considered a heavy level (2.5 g per week or more) and only 20% had ever done so.

Waldorf et al. (1991) studied a snowball sample of 267 current or former heavy users of cocaine in California (21). Heavy use was defined as using at least 2 g per week for at least 6 months or have used some cocaine every day for a minimum of 1 year. The author's describe this sample as falling in the top 5% consumption rate of all of the millions of Americans who have tried cocaine. Results showed that about half of the users had some serious clinical problems, while the other half reported few, if any, such problems. These authors state, “Many of our respondents used cocaine for years in a controlled manner.”

**Sampling “Hidden” Populations**

One of the major difficulties in drug abuse research is the fact that we are studying populations which are, for the most part, making a concerted effort to remain undetected (22). Our major opportunities to study drug abusers come about as a result of the abuser entering a treatment program, overdosing, or being arrested. Unfortunately, this gives rise to distorted samples of abusers, since many never seek treatment, overdose, or get arrested (23). Drug users are even harder to identify and they do not need treatment and are unlikely to overdose or be
and widely held hypotheses that there are no long-term, non-businessey users of which
these new information technologies—the World Wide Web—to study [occasional]
recreational drug users. The data were collected in an attempt to utilize one of
study. We call this method the "Potentially Hidden Population Methodology," and.
and the implications of these findings are quite clear. Our results support the
view that the majority of those who use the Web do so in a.

The purpose of this research was to explore (1) the
potential of using the then-

METHOD

population of occasional, recreational drug users.

The study of the relationship between the use of the Internet and the use of
occasional drug users has been quite limited. The few studies that have been
done have focused on the use of the Internet as a tool for

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drugs. The discovery of any substantial number of cases of such users, justifies re-
jection of the null hypothesis, much as the discovery of the first breeding colony
of black swans disproved the hypothesis that all swans are white.

Procedure

Between October 12 and October 27, 1996, Internet users were solicited to
participate in an anonymous on-line survey. The survey was located on the WWW
and the home page for the Drugnet survey was registered with the major search
engines such as Lycos and Alta Vista. Respondents were also actively solicited by
electronic mailing lists (e.g., Drug-Policy@wku.edu) and announcements posted on
USENET News Groups (e.g., the entire alt.drugs.* and rec.drugs.* hierarchies, as
well as other interest groups). Announcements were initially posted to groups which
were not drug-related as well as those which were, but objections to this practice
of “spamming” led to minimization of such postings. The on-line announcement
solicited happy, successful adults with stable home lives who occasionally used rec-
reational drugs—this being the population whose existence we sought to demon-
strate in the face of widespread popular and professional denial.

Users would then point their browsers to the web address (http://wku-
webl.wku.edu/~drugnet) and be given an opportunity to complete the survey. In
addition to the survey, this initial page included a short tutorial on how to complete
the survey, a link to a service that would increase the anonymity of their responses
(http://www.anonymizer.com) and, also, a statement of informed consent. Respon-
dents had to at least view the contents of the page before actually completing the
survey. Only if they indicated their agreement with the purpose and procedures of
the survey, would they be asked any questions with regard to their past history of
drug usage.

The survey itself consisted of several smaller questionnaires about the seven
drug categories. Respondents would only see the questionnaires dealing with drugs
with which they had previous experience. In addition, all respondents also com-
pleted three more sections: past legal experiences and opinions, the General Well-
Being Schedule, and demographics and lifestyle indices.

One major advantage of conducting surveys on the WWW is the ease with
which data can be collected and coded. For the current research, a program was
written in C computing language to handle the administration of the various surveys
and also to code and store the data for analysis. This type of program is known
as a Computer Graphics Interchange (CGI) and its actions are invisible to the re-
spondent. Furthermore, since the CGI program runs continuously in the back-
ground, the data are coded as each response is submitted and available for analysis
by the researcher as soon as subjects completed each section of the survey.

Instrument

The Drugnet questionnaire was composed of four components: (a) demograph-
ics and lifestyle indices. (i.e., age, gender, race, citizenship/residency, em-
RESULTS

Ported as 85 (30).

Higher scores indicate better well-being. Test-retest reliability has been to
Nutrition Examination Survey (HANES) I. Scores can range from 0 to 110 with
validated and valid self-report measure of mental health for
The GWS-1 was developed for the National Center for Health Statistics in all
in-the-blank, and short essay.

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spouses who worked, while 42 (32.8%) did not (n=148 missing data or had no significant other). The breakdown of the sample by type of work is as follows: (a) 63.2% (n=117) white collar, (b) 23.8% (n=44) self-employed, (c) 6.5% (n=12) blue collar, and (d) 6.5% (n=12) unemployed (n=91 missing data). One hundred forty-nine individuals also reported their actual job title. The largest single area of employment was in a computer related occupation (e.g., computer engineer, programmer, technician, etc.). Other jobs covered the entire spectrum of employment areas (e.g., attorney, broker, CEO, business owner, electrician, erotic dancer, fisherman, homemaker, physician, nurse, scientist, salesperson, teacher, veterinarian, etc.). The median household income for the entire sample (n=190) (including college students) was between $50,000 to $69,999 (n=86 missing data). When asked if their household income was enough to satisfy their needs 84.3% (n=161) said yes, while 15.7% (n=30) replied no (n=85 missing cases).

Description of Drug Usage

Table I displays for each drug category the number of individuals who "ever used" and "used in the past year." Of the total sample, 235 (85.1%) reported having ever used at least one illicit drug in their lifetime. Alcohol, marijuana, and cigarettes were the drugs most often ever used. Within the past year alcohol and marijuana remained the preferred drugs. The percentages for the other drug categories (i.e., cocaine, depressants, hallucinogens, and stimulants) are notably lower. There is a drop in the percentage from "ever used" to "used in the last year" for cocaine, stimulants, and hallucinogens.

Table II displays the ages at which individuals reported first trying a drug and getting high on it. Consistent with previous research, alcohol and cigarettes were the drugs initially consumed, followed by marijuana. Initial usage and intoxication experiences for the drugs ranged from a mean of 13.3 years (having tried alcohol) to a mean of 20.7 (became intoxicated by cocaine).

Individuals were asked to estimate the level of intoxication they "typically" experience when using a particular drug; excluding cigarettes (Table III). Alcohol intoxication was the lowest (Mdn=2), while hallucinogens produced the greatest level of intoxication (Mdn=4). The median value for all other drug categories was 3. A majority of all people reported getting mildly high to moderately high. Only for hallucinogens was there a majority that reported getting extremely high in most instances.

Individuals were asked an identical series of questions for each drug category that attempted to measure potentially harmful behaviors. A substantial percentage of individuals (viz., 24.1% for depressants up to 67.4% for marijuana) have used at least one of these drugs under dangerous circumstances, however, this behavior is not frequent. For depressants, cocaine, stimulants, and hallucinogens, at least 70% of respondents who reported using these drugs dangerously say this occurs less than once a year.

At least 85% of users for each category answered no to the question of whether or not use of a drug had ever caused a failure in education, work, or family life.
who reported ever using a particular drug stated they did not have trouble stopping a drug but did trouble doing so again, excluding tobacco, at least 7/9% of those parts of their intake. Individuals were next asked if they ever wanted to stop using the drug. Categories included: at least 99% of respondents said that it did not occupy large. Individuals were asked if getting drunk(s) occupied a large part of their time. Ex-

<table>
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<tr>
<th>Drug category</th>
<th>n</th>
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<tr>
<td>Alcohol</td>
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<td>Cocaine</td>
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<td>Marijuana</td>
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<tr>
<td>Depression</td>
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<td>Schizophrenia</td>
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Table I. Level of Alcohol Consumption (Weekly Expenditures)

| Disease indicating that drug was not indicated for this category |
|---|---|---|---|---|---|---|---|
| Schizophrenia | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Alcohol       | 40| 4.7| 9.3| 7.2| 4.7| 3.3| 2.9|
| Cocaine       | 40| 4.7| 9.3| 7.2| 4.7| 3.3| 2.9|
| Marijuana     | 40| 4.7| 9.3| 7.2| 4.7| 3.3| 2.9|
| Depression    | 40| 4.7| 9.3| 7.2| 4.7| 3.3| 2.9|
| Schizophrenia | 40| 4.7| 9.3| 7.2| 4.7| 3.3| 2.9|
| Depression    | 40| 4.7| 9.3| 7.2| 4.7| 3.3| 2.9|
| Alcohol       | 40| 4.7| 9.3| 7.2| 4.7| 3.3| 2.9|

Table II. Age of First Drug Use and First Indication

Resulting in different determinations for each mine period and drug.

Table III. Level of Alcohol Consumption (Weekly Expenditures)

Conditioning that data were not accepted for this category.

Table IV. Level of Alcohol Consumption (Weekly Expenditures)
when they wanted to. The last two questions which probed for potentially harmful behaviors were: (a) Have you ever experienced withdrawal illness (e.g., shakes, nausea, trouble sleeping) when you stopped taking this drug? and (b) Have you ever experienced health or psychological problems as a result of your use of this drug. Strong majorities (from 72.4 to 95.7%) answered “no” to both questions for each drug category.

Mental Well-Being

The samples ($n=199$) mean score on the GWBS was 80.82 ($SD=13.93$; range = 68 to 108). This is equivalent to the mean reported for a representative sample ($n=6931$) of American adults as measured in the Health and Nutrition Examination Survey ($X=80.3; SD=17.7$) (31). Broken down into stress categories, the Drugnet's sample scores were as follows: (a) positive well-being (73–110), 74.5% (b) moderate stress (61–72), 16%; and (c) severe distress (<60) 9.6%. In terms of overall mental well-being, as measured by the GWBS, this sample appears to be no different than the general population of noninstitutionalized, American adults.

Health and Behavioral Indices

These items were designed to probe for the respondents self-perception's of their health status and measure behaviors generally accepted as normal or appropriate for nondeviant, functional, social individuals. Two questions related to religion were asked for descriptive purposes only.

Respondents were asked to rate their own physical health status. Responses were as follows: (a) excellent, 31.1%; (b) good, 46.9%; (c) average, 14.8%; (d) fair, 5.1%; (e) poor, 1%; and (f) very poor, 1%. Thus, over 90% of the sample felt their physical health status was average to excellent. One question on the GWBS asks, How concerned or worried about your health have you been (in the last month). Response options are a Likert scale ranging from 0 (very concerned) to 10 (not at all concerned). The subjects median score on this item was 8.0 ($SD=2.24$; range = 0 to 10), indicating a positive physical health self-perception. The responses to this item appear to validate the previous question on self-perceived physical health status.

Of those individuals responding to the question—Do you vote regularly?—a strong majority (83.6%) responded yes. This is notably above the voting level in U.S. National Elections which ranges from 33% to 62% (31). One hundred eighty-seven (95.4%) of respondents said they regularly engage in non-drug-related recreational activities. Forty-three percent said they regularly get involved with community organizations such as the PTO, Elk's Lodge, etc. When subjects were asked if they were happy with their marital status, 90.2% of the respondents said yes. These responses appear to be indicative of positive social functioning. Finally, respondents were asked their current overall college GPA or their final GPA if they have already graduated from college. The mean reported GPA was 3.34 ($SD=.83$; range = 1 to 4), which represents A/B performance. This is indicative,
DISCUSSION

Will be reported in later reports.

Legal History and Attitudes

Your questions such as church affiliation, etc. in the sense of formalized, traditional, etc.

Differences reported arising difficulty responding to these items a number of in

reactions and threats came general masses concerning those items, a number of in

reasonable and separate small masses concerning those items, a number of in

a broad speculation of combinations levels was represented. The responses to those

four sessions each containing religious affiliation, etc. from 0 to 10, including those that make a minimal religious affiliation,

none of which were rated as very high on importance to 10 (central focus of life) and are likely to be responses with a moderate range of 0

significant lower than the proportion of the U.S. national population which agrees slightly with a statement requiring of 91.7% respondents, "no". This is why

highly significant to which a strong majority of 91.7% responded, "no". This is why

of very good academic accomplishment. The survey included two party descriptive

Nicholson, Whirle, and Dunham
of this study, several conclusions can be drawn about this sample. Overall, these
respondents appear to be what was sought—a normal, healthy group of individuals
who occasionally or socially use illicit drugs. Generally, they are well-educated, em-
ployed, active in social activities, comfortable with their physical health and possess
normal mental well-being as a group. Their recreational drug use does not appear
to be the central focus of their lives. This clearly distinguishes them from drug
abusers. Their drug consumption is generally low to medium in frequency and ap-
ppears to be well-controlled (i.e., consumed within nonharmful, self-defined parame-
ters).

Generalization of these findings to the entire population of nonabusive drug
users must be tempered by an awareness of the characteristics of the total popu-
lation using the Internet. Marketing surveys indicate that Internet users are (a)
more likely to be college-educated than the general public, (b) possess median
household incomes of approximately $60,000 (i.e., notably above the $42,000 me-
dian for all U.S. households in 1994), and (c) number between 15 and 30 million
and are rapidly increasing both in and outside of the United States (32,33). Natu-
really, a population of drug users identified via the Internet is likely to share many
of these characteristics if it is true that their drug use has not impaired their edu-
cational or career progress.

These data provide evidence, from a sample both larger and more diverse than
those we have previously cited (13–21), that substantial numbers of individuals are
able to use a variety of illicit recreational drugs in safe or minimally hazardous
ways. This is an important counter to the widely held view that drug abuse is the
inevitable outcome of drug usage which proceeds at all beyond experimentation.

As a pilot effort this project also contains notable limitations and many lessons
were learned which are being applied to a revised larger Drugnet survey. Of major
concern was the roughly 30% nonresponse rate for many of the items, particularly
in the demographic and behavioral components of the survey. Initial pilot testing
prior to going on-line indicated that people could complete the entire survey in 15
to 30 min, depending on their drug history and familiarity with computers. It is
possible that the survey was too long for some people and they lost interest in it.
The demographic questions were at the end of the survey, which is typical of for-
mats for many paper-and-pencil tests. If people find these items least interesting
to spend time on, it may be advisable to place these items at the beginning of
on-line surveys.

This rearrangement of survey sections is being implemented in the full-scale
study. A number of other changes are also being performed. Cigarettes are being
dropped as a category since they are generally not considered “recreational” drugs
and a category on opiates is being added. Questions with high levels of nonresponse
were analyzed and response patterns were studied. This revealed numerous oppor-
tunities to write clearer questions that hopefully will provide better information
and clarity. This was especially an issue with questions that involved branching.
Logical sequencing of questions and branches were enhanced and simplified.

In contrast to these problems and limitations several positive methodological
factors occurred. Most respondents were willing to write long essay responses to
the open-ended attitude questions not reviewed here. These comments were often
REFERENCES

(Additional references or notes may follow here.)


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