

Predictors of Stigmatization Towards Use of Various Illicit Drugs Among Emerging Adults

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Abstract — The stigma associated with illegal drug use is nearly universal, but each drug is associated with its own specific level of stigma. This study examined level of stigmatization towards users of various illegal drugs and determined what variables explain such attitudes. A sample of emerging adults (age 18 to 25) was surveyed throughout New York City ($N = 1021$) and lifetime use, level of exposure to users, and level of stigmatization was assessed regarding use of marijuana, powder cocaine, Ecstasy, and nonmedical use of opioids and amphetamine. Bivariate and multivariate analyses were conducted to examine predictors of stigmatization towards each drug. Results suggest that non-illegal drug users reported high levels of stigmatization towards users of all drugs, but lifetime marijuana users reported significantly lower levels of stigmatization towards users of all harder drugs. This may suggest that once an individual enters the realm of illegal drug use, stigmatization towards use of harder drugs decreases, potentially leaving individuals at risk for use of more dangerous substances. Since stigma and social disapproval may be protective factors against illegal drug use, policy experts need to consider the potential flaws associated with classifying marijuana with harder, more dangerous drugs.

Keywords — disapproval, emerging adults, exposure, stigma, urban health

Illegal drug use is a stigmatized, or socially disapproved, behavior throughout most of the world. However, use remains prevalent despite potential for adverse health, social and legal consequences. Stigmatization towards users appears to act as a prevention mechanism among nonusers (Palamar, Kiang & Halkitis 2011), but research is needed to determine what personal characteristics predict

stigmatization towards users. This investigation examines stigmatization towards users of various illegal drugs, and delineates factors that explain such attitudes across drugs.

Stigma, “an attribute that is deeply discrediting” (Goffman 1963: 3), occurs when an individual experiences social disqualification due to a specific attribute or flaw (Goffman 1963). Stigmatization, or the application of stigma, is a negative social response to a perceived flaw that involves mechanisms such as labeling, stereotyping, separation, and discrimination (Stuber, Meyer & Link 2008; Link & Phelan 2001). These mechanisms are used by those of higher social position to create a downward comparison to stigmatized individuals or groups as an attempt to establish social control and create a separation between “us” and “them” (Wills 1981; Morone 1997). Historical examples of stigmatized populations include those with mental illness, criminals, and drug users (Goffman

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1963). Stigmatization associated with illegal drug use that is not necessarily “abuse” or “addiction” remains understudied.

Previous research suggests that each drug is associated with its own level of stigma due to varying levels of social acceptability and potential for harm (Williams & Parker 2001; Blendon & Young 1998). Marijuana, the most prevalent illegal drug used in the United States, has become less stigmatized in recent decades (Hathaway 2004); however, “harder,” more dangerous drugs (e.g., cocaine, Ecstasy, opioids, amphetamine) appear to remain associated with higher levels of stigma. For example, drugs that are more harmful and addicting, such as heroin (Nutt et al. 2007), are consistently shown to receive higher ratings of disapproval in comparison to marijuana and Ecstasy (Johnston et al. 2011). It has been well documented that the experience of stigma among drug users can lead to adverse psychological and social consequences (Simpson & McNulty 2008; Hathaway 2004; Link et al. 1997); however, research examining predictors of stigmatization towards illegal drug users is limited.

National studies in the U.S. such as Monitoring the Future (MTF) track rates of illegal drug use and disapproval of use over time (Johnston et al. 2011). Results from MTF suggest that, in comparison to other illegal drugs, marijuana use continues to have the lowest rates of disapproval. In 2010, only 51.6% of 18-year-olds disapproved of adults who have tried marijuana once or twice. Rates of disapproval are lower (42.5%) among older emerging adults (23- to 26-year-olds). Adults who have tried cocaine once or twice experience high rates of disapproval (by 18-year-olds: 90.5%; by 23- to 26-year-olds: 86.0%) as do those who have tried Ecstasy (disapproval by 18-year-olds: 86.2%, 23- to 26-year-olds: 86.9%). Rates of disapproval of nonmedical use of amphetamine (e.g., Adderall®) are also high (disapproval by 18-year-olds: 88.1%; by 23- to 26-year-olds: 84.1%), and rates of disapproval of nonmedical use of opioids (painkillers such as Vicodin®) are not available. Level of disapproval can result from media coverage and celebrity deaths related to use, and is clearly associated with drug trends over time (Bachman, Johnston & O'Malley 1998, 1990).

Although the stigma associated with illegal drug use is nearly universal, use and abuse remain common throughout society. According to MTF, 61% of adults have used marijuana in their lifetime by age 25 (Johnston et al. 2011). Lifetime prevalence of use of “harder” drugs is lower. Specifically, by age 25, 17% of adults have used powder cocaine and 14% have used Ecstasy. Nonmedical use of prescription psychotherapeutic drugs is also high. By age 25, 24% of adults have used opioids and 19% have used amphetamine in a nonmedical fashion. Since rates of both use and disapproval of use remain high, it is questionable whether stigmatization may play a preventative role against use.

Evidence is beginning to suggest that stigmatization towards drug users is negatively associated with recent use of drugs such as marijuana, cocaine, and Ecstasy, and nonmedical use of opioids and amphetamine (Palamar, Kiang & Halkitis 2011). Racial minorities, those who have not attended college and those who are religious tend to report higher levels of stigmatization towards use; however, little is known about how use of one illegal drug affects stigmatization towards use of other drugs. This is important to examine because if use of harder drugs (e.g., cocaine) tends to depend on use of “softer” drugs (e.g., marijuana) (Kandel & Yamaguchi 1993), then stigmatization towards use of other drugs might change after initiation of one drug. Therefore it is important to examine how stigmatization is related to use of various drugs among both users and nonusers.

STIGMATIZATION BETWEEN DRUG USERS

Since each drug has its own level of social acceptance, users of different illegal drugs often stigmatize one another. For example, steroid users have been noted to stigmatize the use of psychoactive illegal drugs because such substances are used to get “high” instead of a means to physical fitness, and because steroids are neither dependency-forming nor psychoactive (Simmonds & Coomber 2009; Monaghan 2002). Likewise, Ecstasy and powder cocaine users tend to stigmatize the use of crack and heroin, which are perceived as “harder” substances. Specifically, Williams and Parker (2001) found that use of marijuana and Ecstasy among emerging adults was accepted over time; however, almost their entire sample of drug users completely rejected the use of heroin and crack, considering such use unacceptable. Similarly, McElrath and McEvoy (2001) interviewed Ecstasy users in Northern Ireland; 44% reported using at least 100 times, yet these users still stigmatized the use of heroin. Furthermore, within the nightclub scene, users and dealers of drugs such as Ecstasy and powder cocaine have been noted to stigmatize more dangerous club drugs such as gamma-hydroxybutyrate (GHB), which is commonly associated with overdose (Palamar & Halkitis 2006).

The dynamics of stigmatization between drug users are further nuanced as some research suggests users of the same drug often stigmatize and experience stigma from one another. For example, although heroin is the most stigmatized drug, results from thematic analysis suggest that “responsible” heroin users often stigmatize other heroin users who share needles, have acquired hepatitis C, or have become homeless (Simmonds & Coomber 2009). Thus, a hierarchy of perceived superiority exists throughout the injecting drug user community and also appears to exist with regard to more recreational drugs. The stigma experienced and inflicted by both users and nonusers of various drugs is complex and understudied. Further research is

necessary to determine what factors explain stigmatization towards users of different drugs.

ROUTE OF ADMINISTRATION AND STIGMA

When examining the stigma of drug use one should remain cognizant that route of administration is closely tied to level of acceptance. Routes of administration include inhalation (sniffing), ingestion, smoking, and injection. A century ago, sniffing and injecting drugs had lost social acceptance in the U.S., and by the 1930s “pill popping” (e.g., amphetamine) became a somewhat less stigmatized method to get high (Davenport-Hines 2004). Today, ingesting drugs in pill form appears to remain less stigmatized than some other methods of administration (e.g., sniffing, injecting). With the exception of marijuana, smoking or injecting illegal drugs (e.g., crack, heroin) is highly stigmatized because use is associated with a greater likelihood of physical dependence (Gossop et al. 1994) and often closely associated with low-income neighborhoods (Fuller et al. 2005; Boardman et al. 2001). Likewise, although crack-cocaine and powder cocaine are similar pharmacologically, crack is more strongly associated with dependence (Chen & Anthony 2004; Hatsukami & Fischman 1996), and powder cocaine, which is usually sniffed, is less stigmatized (Williams & Parker 2001; Ditton et al. 1991). Moreover, it is not uncommon for famous or upper class individuals to use powder cocaine (Ditton et al. 1991; Musto 1989), which some segments of society associate with glamour and status as opposed to stigma.

Injecting remains the most stigmatized route of administration. Injectors of drugs such as heroin are often considered “addicts” or “junkies” (e.g., Radcliffe & Stevens 2008) and are at higher risk for acquiring blood borne pathogens such as HIV and hepatitis C (Strathdee et al. 1997). The stigma associated with injection drug use is so severe that diabetics who require insulin often resort to hiding their legitimate syringe use (Tak-Ying Shiu, Kwan & Wong 2003).

Each drug can be administered through different routes of administration, but route is often implied when examining lifetime use of specific drugs. For example, marijuana would normally be smoked if used in an illegal manner, powder cocaine would normally be sniffed, and pills such as Ecstasy, opioids and amphetamine would normally be ingested. Some of these drugs can be injected; however, it is unlikely that injection was the first and only method of administration. We assessed stigmatization towards use of specific drugs, but did not specify route of administration.

THE CURRENT STUDY

We sought to examine factors that explain stigmatization toward use of various illegal drugs.

Specifically, we determined how demographic variables and drug use were associated with stigmatization toward use of various drugs among emerging adults (age 18 to 25). We also delineated factors that may explain shifts in stigmatization depending on which drugs were used.

METHODS

Procedure

Participants were recruited using a two-method approach: street-based recruitment for an online version of the survey and paper administration on the street. Recruitment was targeted to obtain a sample of emerging adults in areas that contained a large number of eligible respondents (Chutuape et al. 2009) and was conducted throughout Manhattan, New York, in city parks, at city college campuses and near other venues frequented by emerging adults (e.g., coffee shops). For both methods, one out of every three individuals, or groups of individuals, who appeared to be emerging adults were approached in select recruitment areas. With regard to Internet survey recruitment, potential respondents were approached, and upon confirmation of age, were asked if they would be willing to complete a ten-minute anonymous survey via Internet website. It was then explained that that survey was confidential, and that respondents would also have the option to leave their email addresses anonymously upon completion of the survey for a chance to win an iPod. Upon accepting a recruitment card, age, gender, race/ethnicity, and level of educational attainment were recorded. Respondents entered the URL for the survey website and unique password listed on the recruitment card and took the Internet survey after reading the electronic informed consent page. To meet inclusion criteria, respondents must have been (1) between the ages 18 and 25, (2) fluent in English, and (3) must have had access to the Internet.

The Internet version of the survey was administrated using the SurveyMonkey® program, which is ideal for collecting anonymous responses and maintaining secure data. Street survey recruitment was similar to Internet survey recruitment in that emerging adults were approached in selected areas; however, upon confirmation of age they were asked to complete the survey on paper. Respondents on the street were compensated \$3.00 US for their time. Recruitment occurred from May through October of 2009. The study protocol was approved by the Institutional Review Board of New York University.

Measures

Demographics and illegal drug use: Respondents were asked to answer items that assessed age (in years), gender, and race/ethnicity. The survey also assessed the lifetime use of marijuana, powder cocaine, Ecstasy, and the nonmedical use of select amphetamine and opioid prescription drugs. Opioids were defined as Oxycontin®,

Vicodin[®] and Percoset[®], and amphetamine was defined as Adderall[®] and Dexedrine[®]. Nonmedical use was defined as using a drug without a prescription or using it to get high (SAMHSA 2010). Each drug was listed along with its “street” names because younger users are often unaware of less colloquial names (Morral, McCaffrey & Chien 2003).

Exposure to drug users: Respondents were assessed via the *Exposure to Drug Users Index* in order to assess level of perceived exposure to users of each drug (Palamar, Kiang & Halkitis 2011). This seven-item measure consists of statements that measure perceived exposure to users of each of the five drugs and includes statements such as, “I have worked with a person that uses [drug name]” and “I have a friend who uses [drug name].” Responses were recoded into mean scores (Kuder-Richardson formula 20 [KR-20] reliability = .79 - .82).

Drug stigmatization: A newly developed measure, the *Drug Use Stigmatization Scale*, was used to assess level of personal stigmatization towards illegal drug users (Palamar, Kiang & Halkitis 2011). This seven-item measure consists of a list of judgmental statements that measure stigmatization of users of each of the five drugs. Items include statements such as, “[drug name] users are weak-minded” and “[drug name] users are dishonest,” and responses were recoded into mean scores for analysis (Cronbach’s α = .82 - .88). Level of stigmatization towards users of each drug was modeled as the outcome variable in each regression model.

Analytic Plan

First, we examined descriptive statistics for demographic variables, lifetime drug use, stigmatization and exposure to users of each drug. We also calculated number of illegal drugs used in one’s lifetime (limited to the five drugs investigated in this study). Next, we compared level of stigmatization between each drug using multiple t-tests and utilized a Bonferroni correction to prevent inflated Type I error. We then examined bivariate relations between stigmatization and drug use variables. Specifically, we calculated Pearson correlations to examine relations between stigmatization of each drug and to examine relations between stigmatization of each drug and number of drugs used in one’s lifetime. We then calculated point-biserial correlations to examine how stigmatization towards users of each drug was related to the following dichotomous variables: no illegal drug use (vs. any illegal drug use), only marijuana use (vs. no drug use), and hard drug use (vs. non-hard drug use). Hard drugs were defined as cocaine, Ecstasy, opioids and amphetamine.

We then built five separate multivariate linear regression models with level of stigmatization towards users of each drug as the outcome variable. Each model contained age, gender, race/ethnicity, and lifetime use of each of the

five drugs. Each model also contained exposure to users of the drug corresponding to the stigmatization outcome variable, so if level of marijuana user stigmatization was the outcome variable, level of exposure to marijuana users was the predictor variable. Age was categorized into indicator variables: 18 to 19 years of age was the comparison, and 20 to 22 and 23 to 25 years of age were entered into the models as indicators. These indicators allow age groups to be comparable to MTF rates previously described. With regard to gender, females were the indicator and males were the comparison. Whites were the comparison for the race/ethnicity variable, and Black, Hispanic/Latino, Asian American, and “other” race were entered as indicators. Lifetime use of each of the five drugs was also entered into all models as five separate indicator variables (1 = lifetime use, 0 = no lifetime use). Assumptions for linear regression (e.g., normality of error, no multicollinearity) were met prior to running analyses.

Due to missing pages on the street version of the survey, about 5% of cases were missing some scale data. We treated this data as missing at random (Rubin 1976) and to minimize biases we utilized SAS[®] PROC MI to impute this missing data in order to have a complete dataset for our models. Through this process we imputed ten simulated datasets with missing values estimated using all available demographic, drug, and other scale data. Final parameter estimates and standard error reflect the final combined dataset from all imputations. After deletion of cases with any missing demographic data ($n = 27$) and then multiple imputation, the final analytic sample contained full data from 1,021 respondents.

RESULTS

Recruitment

Of the 1,155 eligible individuals who accepted a study card and provided demographic information at recruitment, 279 (24%) responded by taking the online survey. There was a high level of association between demographic data gathered in person and online. In comparison to the data collected at recruitment, gender was 98.1% accurate ($\phi = .96$, $p < .001$), age was 90.6% accurate ($r = .93$, $p < .001$), race/ethnicity was 90.5% accurate, and years of education completed was 80.4% accurate ($r = .87$, $p < .001$). Internet respondents were younger than nonresponders ($M = 20.5$, $SD = 1.70$ vs. $M = 21.0$, $SD = 2.03$; $t(1153) = 4.08$, $p < .001$) and response patterns were also dependent on race: 29.1% of those of “other” race (including Asians) responded while 22.9% of Whites, 18.8% of Hispanic/Latino and 11.6% of Blacks took the Internet survey ($\chi^2(3) = 12.66$, $p = .005$). Seventy-four percent ($n = 769$) of those approached completed the paper survey, and the final sample size accrued from both methods of recruitment was 1,048.

Sample Characteristics

The age of the analytic sample ($N = 1021$) ranged from 18 to 25 ($M = 20.32$, $SD = 1.94$, $Md = 20$), consisted of 53.5% ($n = 546$) females, and was racially diverse. Specifically, 43.7% ($n = 446$) identified as White, 13.4% ($n = 137$) as Black, African American or Caribbean-American, 16.7% ($n = 170$) as Hispanic/Latino, 18.1% ($n = 185$) as Asian American, and 8.1% ($n = 83$) identified as “other” race.

Lifetime use of each drug within the sample was as follows: marijuana (65.4%, $n = 668$), powder cocaine (17.6%, $n = 180$), Ecstasy (13.5%, $n = 138$), nonmedical use of opioids (17.4%, $n = 178$), and nonmedical use of amphetamine (16.4%, $n = 167$). Rates are comparable to national rates reported by MTF, although marijuana rates in this New York City sample are slightly higher. A third of the sample reported never using any of the drugs (33.9%, $n = 346$), 36.4% ($n = 372$) used only one drug, and 29.7% ($n = 303$) reported using more than one drug. Number of drugs used could not be included in the regression models due to multicollinearity.

With regard to level of stigmatization, mean scores ranged from one to five, with marijuana less stigmatized than each of the four hard drugs ($p < .001$). Specifically, utilizing a Bonferroni correction for multiple comparisons ($p = .05/10 = .005$), the mean stigmatization score for marijuana ($M = 2.11$, $SD = 0.84$) was significantly lower than mean scores for cocaine ($M = 2.69$, $SD = 0.87$), Ecstasy ($M = 2.65$, $SD = 0.86$), and nonmedical use of opioids ($M = 2.74$, $SD = 0.85$) and amphetamine ($M = 2.71$, $SD = 0.86$). When comparing level of stigmatization for harder drugs (means listed above), Ecstasy was less stigmatized than cocaine, opioids and amphetamine, and cocaine was less stigmatized than opioids ($ps < .001$).

Bivariate Associations

Since the purpose of this study was to investigate predictors of level of stigmatization across different drugs, bivariate correlations were first run between each dependent variable (level of stigmatization towards users of each of the five drugs). Levels of stigmatization of drugs harder than marijuana were strongly related, and level of stigmatization of nonmedical use of opioids was almost perfectly correlated with level of stigmatization of nonmedical use of amphetamine (Table 1). Marijuana stigmatization was not as strongly correlated with hard drug stigmatization. These results suggest that participants tend to stigmatize harder drugs similarly at high levels, but do not stigmatize marijuana to the same extent.

With regard to lifetime drug use, number of drugs used in one's lifetime was negatively related to stigmatization of marijuana ($r = -.46$, $p < .001$), powder cocaine ($r = -.34$, $p < .001$), Ecstasy ($r = -.34$, $p < .001$), and nonmedical use of opioids ($r = -.31$, $p < .001$) and amphetamine ($r = -.33$, $p < .001$). As shown in Table 2, use of no

TABLE 1
Pearson Correlations between Level of Stigmatization Towards Users of Each Drug

		Powder		
	Marijuana	Cocaine	Ecstasy	Opioids
Powder Cocaine	.67			
Ecstasy	.70	.93		
Opioids	.65	.90	.90	
Amphetamine	.65	.90	.90	.95

Note: p -values for all correlations were $< .001$.

drugs was positively associated with stigmatization toward use of each drug. Using only marijuana (compared to use of no drugs), however, was negatively associated with stigmatization of all other drugs. Hard drug use (compared to nonuse of hard drugs) was also negatively associated with stigmatization towards use of each drug.

Multivariate Linear Regression Models

Separate multivariate linear regressions were built with stigmatization of each drug as the outcome variable. As shown through bivariate associations between dependent variables (stigmatization towards users of each drug), statistical correction was required because each outcome was strongly related. Therefore, Bonferroni corrections were applied ($\alpha = .05/5$) in order to avoid inflated Type I error. Therefore, beta coefficients were considered significant at a more conservative alpha level ($\alpha = .01$). Findings at the more liberal .05 level are also noted (designated by †).

In the first model, stigmatization of marijuana was the outcome variable ($F(13, 1007) = 42.99$, $p < .0001$). As shown in Table 3, while controlling for demographic predictors, both lifetime marijuana use ($b = -0.56$, $p < .0001$) and exposure to marijuana users ($b = -0.09$, $p < .0001$) were negatively associated with level of stigmatization towards marijuana users. In the second model, stigmatization of powder cocaine was the outcome variable ($F(13, 1007) = 17.33$, $p < .0001$). Older emerging adults (age 23 to 25) reported lower levels of stigmatization ($b = -0.21$, $p = .005$). While controlling for demographic predictors, lifetime marijuana use ($b = -0.29$, $p < .0001$) and exposure to cocaine users ($b = -0.06$, $p < .0001$) were negatively associated with level of stigmatization towards users of cocaine.

Level of stigmatization towards Ecstasy users was the outcome variable in the third model ($F(13, 1007) = 14.96$, $p < .0001$). Older emerging adults (age 23 to 25) reported lower levels of stigmatization ($b = -0.20$, $p = .007$). While controlling for demographic predictors, lifetime marijuana use ($b = -0.36$, $p < .0001$) and exposure to Ecstasy users ($b = -0.05$, $p < .0001$) were negatively associated with level of stigmatization towards users

TABLE 2
Point-Biserial Correlations between Lifetime Drug Use Variables and Stigmatization

	Marijuana Stigmatization	Powder Cocaine Stigmatization	Ecstasy Stigmatization	Opioid Stigmatization	Amphetamine Stigmatization
No Illegal Drug Use	.51	.29	.31	.28	.28
Used Marijuana Only	-.47	-.22	-.24	-.20	-.20
Hard Drug Use	-.37	-.30	-.31	-.27	-.30

Note: No illegal drug use ($N = 346$) was compared to any illegal drug use ($N = 675$), only marijuana use ($N = 366$) was compared to no drug use ($N = 352$), and hard drug use ($N = 303$) was compared to no hard drug use ($N = 718$). Hard drug use was defined as use of powder cocaine, Ecstasy, or nonmedical use of opioids or amphetamine. All correlations were $p < .001$.

of Ecstasy. In the fourth model, stigmatization towards nonmedical opioid users was the outcome variable ($F(13, 1007) = 12.59, p < .0001$). Older emerging adults (age 23 to 25) reported lower levels of stigmatization ($b = -0.24, p = .002$). While controlling for demographic predictors, lifetime marijuana use ($b = -0.32, p < .0001$), lifetime nonmedical opioid use ($b = -0.28, p = .002$) and exposure to opioid users ($b = -0.05, p < .0001$) were negatively associated with level of stigmatization towards nonmedical opioid users. In the final model, stigmatization towards nonmedical amphetamine users was the outcome variable ($F(13, 1007) = 14.15, p < .0001$). Older emerging adults (age 23 to 25) reported lower levels of stigmatization ($b = -0.22, p = .004$). While controlling for demographic predictors, lifetime marijuana use ($b = -0.32, p < .0001$), lifetime nonmedical opioid use ($b = -0.28, p = .001$), and exposure to amphetamine users ($b = -0.05, p < .0001$) were negatively associated with level of stigmatization towards nonmedical amphetamine users.

DISCUSSION

This study examined predictors of stigmatization towards illegal drug users among a diverse sample of emerging adults in New York City. We examined what predictors explained stigmatization towards users of five of the most commonly used drugs in the U.S.: marijuana, powder cocaine, Ecstasy, and nonmedical use of opioids and amphetamine. As expected, marijuana was the least stigmatized drug in the study. This corroborates findings from MTF in that marijuana receives the lowest ratings of disapproval compared to other illegal drugs (Johnston et al. 2011). Opioids and amphetamine were the most stigmatized drugs, and associated with almost identical levels of stigmatization when use was in a nonmedical manner. Although opioids and amphetamine come in pill form and are available through prescription, they were stigmatized at greater levels than Ecstasy and even powder cocaine, which is known to be one of the most deleterious drugs (Nutt et al. 2007). Public health warnings and contact with individuals who misuse prescription drugs

may be convincing emerging adults that these pills are not necessarily safe just because they are available through prescription. This may have led to higher stigmatization toward use.

Neither gender nor race/ethnicity were significant predictors of stigmatization towards use of any drug; however, older respondents (age 23 to 25) expressed lower levels of stigmatization towards users of all hard drugs. This finding also corroborates results from MTF, in that older emerging adults tend to express lower levels of disapproval of use (Johnston et al. 2011). Age, however, was not a predictor for marijuana stigmatization. High exposure to users was also associated with lower levels of stigmatization towards users of that particular drug; therefore, the stigmatization of illegal drug users may be driven, in part, by lack of exposure to users, such that individuals who stigmatize are the ones who have not been exposed to users. Therefore, they may hold their views, in part, as a result of media (Blendon & Young 1998) or possibly educational programs, but not due to actual exposure to users.

Lifetime marijuana use was the other most consistent and robust predictor of lower stigmatization. While controlling for age, gender, race, exposure to users, and use of other drugs, marijuana users reported lower levels of stigmatization towards users of marijuana as well as the four harder drugs. We also found that non-drug users expressed high levels of stigmatization towards users of all drugs. Therefore, it is possible that stigmatization towards hard drug users, which appears to be protective against use (Palamar, Kiang & Halkitis 2011), may decrease once marijuana has been used. Findings from Gateway Theory researchers suggest that use of softer drugs such as marijuana is often associated with an increased risk of use of harder drugs such as cocaine (e.g., Kandel & Yamaguchi 1993; Kandel, Yamaguchi & Chen 1992); thus, it is important to examine whether attitudes toward use are associated with such changes in risk. It is unlikely that use of marijuana itself "leads" to use of hard drugs as progression of use appears to be dependent on contextual factors and affiliation with "deviant" peers (Tarter et al. 2006). We have determined that low levels of exposure to users is related

TABLE 3
Linear Regression Model Results Comparing Predictors of Stigmatization toward Users of Each Drug

Predictor	Marijuana Stigmatization b (SE)	Powder Cocaine Stigmatization b (SE)	Ecstasy Stigmatization b (SE)	Opioid Stigmatization b (SE)	Amphetamine Stigmatization b (SE)
Age ^a					
Age 20 – 22	3.13*** (0.08)	3.23*** (0.07)	3.14*** (0.07)	3.20*** (0.07)	3.22*** (0.07)
Age 23 – 25	–0.05 (0.05)	–0.12† (0.05)	–0.11 (0.05)	–0.12† (0.05)	–0.13† (0.05)
Female ^b	–0.09 (0.07)	–0.21* (0.08)	–0.20* (0.08)	–0.24* (0.08)	–0.22* (0.08)
Race/Ethnicity ^c	0.02 (0.04)	–0.01 (0.05)	–0.01 (0.05)	–0.04 (0.05)	–0.05 (0.05)
Black	0.12 (0.07)	0.05 (0.08)	0.05 (0.08)	0.05 (0.08)	0.05 (0.08)
Hispanic/Latino	0.00 (0.06)	–0.11 (0.07)	–0.04 (0.07)	–0.10 (0.07)	–0.12 (0.07)
Asian American	0.04 (0.06)	–0.01 (0.07)	0.01 (0.07)	–0.02 (0.07)	–0.07 (0.07)
Other	0.16† (0.08)	0.14 (0.10)	0.16 (0.10)	0.07 (0.10)	0.10 (0.10)
Lifetime Drug Use					
Marijuana	–0.56*** (0.05)	–0.29*** (0.06)	–0.36*** (0.06)	–0.32*** (0.06)	–0.32*** (0.06)
Powder Cocaine	–0.06 (0.07)	–0.17 (0.09)	–0.12 (0.09)	0.02 (0.09)	–0.04 (0.09)
Ecstasy	–0.07 (0.08)	–0.11 (0.09)	–0.19† (0.10)	0.03 (0.09)	0.03 (0.09)
Opioids	–0.14† (0.07)	–0.14 (0.08)	–0.11 (0.09)	–0.28* (0.09)	–0.28* (0.09)
Amphetamine	–0.05 (0.07)	0.10 (0.09)	0.05 (0.09)	–0.06 (0.09)	–0.11 (0.09)
Exposure to Users ^d	–0.09*** (0.01)	–0.06*** (0.01)	–0.05*** (0.01)	–0.05*** (0.01)	–0.05*** (0.01)
R ²	0.36	0.18	0.16	0.14	0.15

Note: Comparison groups: ^aAge 18–19, ^bMale, ^cWhite. ^dExposure to Users corresponds to level of stigmatization of the same drug.
†p < .05 (not significant due to Bonferroni correction), *p < .01, **p < .001, ***p < .0001.

to high stigmatization towards them, and further, we have deduced that stigmatization towards hard drug users may decrease upon illegal use of marijuana. Therefore, while there are numerous plausible explanations for progression to hard drug use from marijuana use (Morrall, McCaffrey & Paddock 2002), our study suggests that stigmatization towards use of harder drugs may decrease once an individual has used marijuana. This decrease in stigmatization towards users of other drugs may in turn increase risk of use. Thus, it may be that once an individual uses marijuana, he or she has entered the realm of illegal drug behavior, and may begin to stigmatize other illegal drugs at lower levels.

Since current drug policy categorizes all illegal drugs similarly, despite varying levels of social acceptance or harmfulness (Nutt et al. 2007), it appears tenable that once an individual becomes an illegal drug user through use of marijuana, the user may begin to deem him- or herself part of a subculture of illegal activity. Similarly, previous literature suggests that illegal marijuana and hard drug markets can overlap, which may increase the chances of being introduced to more dangerous drugs (Reinarman, Cohen & Kaal 2004; Engelsman 1989). Marijuana is the least stigmatized illegal drug, and the most prevalent (Johnston et al. 2011), but since marijuana is categorized or scheduled with more dangerous and addicting drugs, individuals appear to stigmatize other drugs less upon acquiring this drug user status. Likewise, individuals who try marijuana may feel that the effects are relatively benign and thus after initiation may disregard public health messages about the dangers of harder drugs as well. Therefore, the legal status of marijuana may be a double-edged sword. If marijuana became a legal substance then it would likely be stigmatized even less and prevalence might increase. However, as we deduce from our findings, since marijuana is categorized along with harder drugs, individuals stigmatize users of other drugs less once one becomes a "drug user" after initiation, which may increase the risk of use of more harmful drugs.

Limitations

Response rates are a study limitation with regard to recruitment for the Internet version of the survey. Specific-

ally, only 24% of those provided a recruitment card on the street took the Internet survey. Another limitation is that this sample was targeted (to adults aged 18 to 25) and not randomly selected. Targeting emerging adults on streets may limit findings because younger or older looking individuals may not have been approached, thus, selection bias may have occurred. Honest reporting of drug use is also a limitation as some respondents may have denied use because it is a socially undesirable behavior.

With regard to the questions about exposure, it is not always known whether a peer is a substance user, and it is not always known what a peer has been using. In a certain respect this is selection bias because individuals may only be aware of obvious symptoms of inebriation (Fish 2005). Finally, this study was cross-sectional so causality should be interpreted with caution. However, temporal associations appear to be reliable in this survey because demographics, lifetime use of each drug, and exposure to users occurred prior to answering the survey about current stigmatization of drug use. Therefore, we have little doubt regarding the efficacy of stigmatization as the dependent variable within models. A longitudinal study would most accurately allow us to delineate temporal associations, as stigmatization appears to change over time and is influenced by drug use and exposure to users.

Conclusion

Stigmatization towards illegal drug users varies by drug, and depends on whether or not the individual has used specific illegal drugs. Stigmatization towards users of hard drugs appears to depend on whether or not marijuana has been used in one's lifetime. This finding has important policy implications because it suggests that once an individual enters the world of illegal drug use through the use of "soft" drugs such as marijuana, he or she may stigmatize more dangerous drugs at lower levels, which might increase the likelihood of use. Policy experts need to consider how attitudes toward use of various drugs influence use of other drugs, because the current realm of categorization and illegality may be working against prevention efforts.

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