

Perceived public stigma and stigmatization in explaining lifetime illicit drug use among emerging adults

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Illicit drug use is often associated with adverse health and legal consequences, as well as stigma, or social disapproval. Stigma may be enacted as a preventive measure against drug use; however, research was needed to investigate its effects on use in an empirical manner. This cross-sectional study surveyed 1021 emerging adults (age 18–25) throughout Manhattan, New York. We investigated how two forms of stigma – perceived public stigma and personal stigmatization – along with religiosity and exposure to users, explained lifetime use of five drugs: marijuana, powder cocaine, ecstasy, and non-medical use of opioids and amphetamine. Odds ratios for lifetime use of each drug were estimated using age-adjusted stepwise logistic regression models. Results suggest that high levels of exposure to users increased the odds of lifetime use of each drug, and protective effects of religiosity and racial minority status often diminished when controlling for stigma. High levels of stigmatization toward users tended to decrease the odds of use, and perceived public stigma toward users did not explain use of any drug. In conclusion, although individuals who stigmatize users are protected from use, the perception of public stigma does not appear to be valuable in preventing use. Since stigma is associated with adverse psychological and social consequences in users, the efficacy of stigma as a public health tool against drug use is questionable. Public health efforts can deglamorize and discourage use while aiming to reduce stigma toward users by treating use as a health behavior and not a deviant or moral behavior.

Keywords: *Stigma, social disapproval, illicit drug use, religiosity, emerging adults*

INTRODUCTION

Illicit drug use has remained a public health problem in the United States (US) for over a century. Use is problematic because it is often associated with adverse effects, physical dependence, and risky behaviors such as unsafe sex (Caulkins, 2001; Halkitis, Mukherjee, & Palamar, 2009; Wagner & Anthony, 2002). Although some drugs are relatively safer than others (Gable, 2004; Nutt, King, Saulsbury, & Blakemore, 2007), the use of every illicit drug is associated with social and legal penalties. Despite these consequences, illicit drug use remains prevalent in the US (Johnston, O'Malley, Bachman, & Schulenberg, 2011; Substance Abuse and Mental Health Services Administration [SAMHSA], 2010), and it remains questionable whether stigma plays a role in preventing use.

Although the stigma associated with illicit drug use is nearly universal, experimentation remains a relatively normal aspect of American society. According to Monitoring the Future, an ongoing national investigation of drug use in the US, by age 25, 64% of adults had used an illicit drug in their lifetime (Johnston et al., 2011). Specifically, by age 25, 61% of those surveyed reported using marijuana, 17% cocaine, and 14% ecstasy in their lifetime. A more alarming trend is the recent increase in non-medical use of prescription drugs. By age 25, 24% reported lifetime non-medical use of opioids (e.g., painkillers such as Oxycontin®) and 19% of adults reported lifetime non-medical use of amphetamine (e.g., Adderall®). The majority of drug initiation and current use occurs during early adulthood (SAMHSA, 2010); therefore, these “emerging adults” (Arnett, 2000) are at high risk for use and associated consequences. One factor that may explain use within this age group is stigma.

Stigma is understood as the process of social disqualification by society as a result of a specific attribute or flaw (Goffman, 1963). This removal of social acceptance is often carried out as an attempt to exert social control by reinforcing a higher social position over others using downward comparison (Wills, 1981). This process can occur through a variety of mechanisms such as labeling, stereotyping, separation, status loss, and discrimination (Link & Phelan, 2001), and signifies a separation between “us” and “them” (Morone, 1997).

There is growing debate about the protective potential and ethicality of stigma as a public health tool (Bayer, 2008, 2010; Bayer & Stuber, 2006; Bell, Salmon, Bowers, Bell, & McCullough, 2010; Burris, 2008). For example, the recent decline in tobacco use in the US may be attributed to an increase in stigma toward users, but stigma may have a harmful effect on smokers (Bayer & Stuber, 2006; Stuber, Galea, & Link, 2008). While there is debate about the efficacy and moral grounds for stigmatizing such risk behaviors, research is needed to empirically examine the effects of stigma on illicit drug use. There is a dearth of literature reporting how perceived public stigma (the perception of stigma applied by society) and stigmatization (the personal application of stigma to others) explain illicit drug use, and this study seeks to examine whether these factors protect individuals against lifetime use. Therefore, this study examines not whether stigmatization is ethical, but whether it appears to prevent lifetime use of various illicit drugs that have high prevalence rates in the US.

Most studies that have examined the stigma associated with illicit drug use have assessed samples of socially disadvantaged participants, who tend to be more severely affected by stigma. Specifically, seminal studies have tended to focus on participants who were homeless, drug-dependent, had psychiatric disorders, or have been in drug treatment (e.g., Link, Struening, Rahav, Phelan, & Nuttbrock, 1997; Luoma et al., 2007; Young, Stuber, Ahern, & Galea, 2005). Although research is beginning to assess how adolescents in the general population stigmatize drug use, the main focus continues to be the stigma associated with addiction and not general use (Adlaf, Hamilton, Wu, & Noh, 2009). While it is important to continue to examine how stigma affects socially disadvantaged populations, rates of illicit drug use remain high in the US and use transcends socioeconomic lines. In order to inform prevention strategies for all social strata, we need to examine how stigma is perceived among and applied by illicit drug users and non-users within the general population.

Regardless of whether stigma can serve as a preventive measure against use, the stigma associated with rejecting abstinence often results in psychosocial consequences. Specifically, the perception of stigma often results in secrecy, shame, low self-esteem, preoccupation with non-disclosure, and social

withdrawal (Hathaway, 2004; Link et al., 1997; Luoma et al., 2007; Palamar, 2012; Smart & Wegner, 2003). Hiding use from peers can be stressful and lead users to dissociate from friends – forming new social circles, often consisting of other drug users (Maycock & Howat, 2005), and fear of stigma remains a barrier to drug treatment (Luoma et al., 2007; Radcliffe & Stevens, 2008). Since the stigma associated with use can be harmful in those who reject abstinence, it is important to examine whether it has any value in preventing initiation of use.

When examining how stigma is associated with drug use, it is important to consider level of exposure to users. Contact with users is negatively related to stigmatizing attitudes (Adlaf et al., 2009; Palamar, Kiang, & Halkitis, 2011, 2012) and may decrease the perception of “otherness” (Corrigan & Watson, 2004; Link & Cullen, 1986). Likewise, it is unlikely for individuals to stereotype or stigmatize use when one has peers who use in his or her social network (Adlaf et al., 2009). In addition to exposure, it is important to consider religiosity when examining stigma because religion is a major social force tied to morals and values (Gilmore & Somerville, 1994), which may guide attitudes toward behaviors that have been deemed unacceptable. Results from national studies suggest that religiosity is positively associated with disapproval of drug use (Bachman, Johnston, & O’Malley, 1998) and is protective against use of various drugs (Degenhardt, Chiu, Sampson, Kessler, & Anthony, 2007; Herman-Stahl, Krebs, Kroutil, & Heller, 2006). Stigma is highly dependent on both exposure to users and religiosity (Palamar et al., 2011); therefore, when examining how stigma explains drug use, it is important to control for these variables.

Finally, with regard to demographics, gender is a strong determinant of drug use. Males are generally more likely to use illicit drugs than females (Merline, O’Malley, Schulenberg, Bachman, & Johnston, 2004), and males are also more likely to be offered illicit drugs (Moon, Jackson, & Hecht, 2000), which is an indicator for unequal exposure. Lower rates of use among females may also occur, in part, because females who use drugs experience higher rates of stigma than males (Simpson & McNulty, 2008). Educational attainment is a predictor of drug use and race/ethnicity is also a determinant of use (Merline et al., 2004), with White individuals consistently more likely to use illicit drugs in comparison to their non-White counterparts (Johnston et al., 2011; Kroutil et al., 2006). Research is needed to delineate these effects of demographics from stigma, exposure to users and religiosity when examining illicit drug use.

This study sought to examine the extent to which perceived public stigma and personal stigmatization explain lifetime illicit drug use among a sample of emerging adults. Specifically, the main aim of this study was to determine how these factors explain lifetime use of five of the most commonly used illicit

drugs by this age group: marijuana, powder cocaine, ecstasy, opioids, and amphetamine.

METHODS

Procedure

Targeted sampling strategies were applied to obtain a purposive sample of emerging adults. This type of recruitment is optimal when such locations contain a quarter or more eligible respondents (Chutuape et al., 2009). Recruitment was conducted throughout Manhattan, New York, in parks, at college campuses, and near other locations frequented by emerging adults (e.g., coffee shops). Respondents were recruited on the street and two methods of survey administration were utilized to ensure adequate response rates: (1) paper survey administration (on the street) and (2) an Internet version of the survey to be taken at a later time. For both methods, one out of every three individuals or groups who appeared to be emerging adults was approached. To meet inclusion criteria, respondents must have been (1) between the ages of 18 and 25, (2) fluent in English, and for the Internet version of the survey must have (3) had access to the Internet. Street surveys were conducted in person and respondents were compensated \$3.00 for their time. With regard to recruitment for the Internet survey, potential respondents were approached and asked if they were willing to complete a confidential and anonymous survey via Internet. It was then explained that respondents would also have the option to leave their e-mail addresses, anonymously, for a chance to win an iPod. Age, gender, race/ethnicity, and level of educational attainment were collected at recruitment to assess Internet survey response rates, and potential respondents were provided with a recruitment card containing a unique password and the URL for the online survey. The online survey was administrated using SurveyMonkey®. Recruitment occurred for both forms of the survey from May through October 2009 and the study protocol was approved by the Institutional Review Board of New York University.

Recruitment and response rates

With respect to recruitment for the Internet version of the survey, of the 1155 eligible individuals who provided basic demographics and accepted a study card at recruitment, 279 (24%) took 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 ($\phi = 0.96$, $p < 0.001$), age was 90.6% accurate ($r = 0.93$, $p < 0.001$), race/ethnicity was 90.5% accurate, and years of education completed was 80.4% accurate ($r = 0.87$, $p < 0.001$). Inconsistencies may be explained by respondents passing the study card on to peers (who were also eligible according to characteristics provided online). In addition, age (in years) and education increases over

time, and there was confusion among respondents regarding number of years of education attained. Respondents were younger than non-respondents ($M = 20.5$ ($SD = 1.70$) versus $M = 21.0$ ($SD = 2.03$), $t(1153) = 4.08$, $p < 0.001$) and Internet response rates also differed by race. Specifically, 29.1% of those of “other” race responded while 22.9% of Whites, 18.8% of Hispanic/Latino, and only 11.6% of Blacks responded ($\chi^2(3) = 12.66$, $p = 0.005$). The response rate for street surveys, however, was 74% ($N = 769$), leaving us with a combined sample size of 1048.

Demographic characteristics differed by mode of survey administration. Specifically, those who took the Internet survey were older ($M = 20.52$ years old, $SD = 1.74$ versus $M = 20.24$ years old, $SD = 2.00$, $t(559) = 2.24$, $p = 0.026$) and more educated ($M = 14.43$ years, $SD = 1.46$ versus $M = 14.15$ years, $SD = 1.63$, $t(1046) = 2.57$, $p = 0.010$) than those who took the street survey. Respondents who identified as White (57.3% versus 42.7% non-White, $\chi^2(1) = 29.16$, $p < 0.001$) or female (58.8% versus 41.2% male, $\chi^2(1) = 4.76$, $p = 0.017$) were also more likely to have taken the Internet survey. Additionally, Internet respondents were more likely to report non-medical lifetime use of amphetamine (20.1% versus 15%, $\chi^2(1) = 3.92$, $p = 0.03$).

Measures

Demographics

Respondents were asked to self-report age (in years), and check off their gender (male or female), race/ethnicity (White, Black/African American/Caribbean, Hispanic/Latino, Asian/Pacific Islander, or Other), and most recent educational degree attained (high school diploma/GED or less, some college or an associate's degree, bachelor's degree, or graduate school).

Illicit drug use

The survey assessed lifetime use (“Have you ever used ___?”) of five drugs: marijuana, powder cocaine, ecstasy, and non-medical use of select amphetamine and opioid prescription drugs. Answer options were “Yes” and “No.” Opioids were defined as Oxycontin®, Vicodin®, and Percoset® and amphetamine was defined as Adderall® and Dexedrine®. Non-medical use was defined as using a drug without a prescription or to get “high” (SAMHSA, 2010). Each drug was listed along with its “street” names to ensure clarity.

Religiosity

Level of religiosity was assessed through two items, which were calculated into a composite score. Religious salience was measured through a four-point Likert scale which asked, “How important is religion in your life?” Answer options ranged from (1) “Not important” to (4) “Very important.” Level of religious service attendance was also assessed: “How often have you attended religious services (such as

church or temple) within the last year?” Answer options ranged from (1) “Never” to (4) “About once a week or more.” These variables are commonly utilized in national investigations (e.g., Bachman et al., 1998; Degenhardt et al., 2007) and were highly correlated ($r_s = 0.67$, $p < 0.001$).

Exposure to illicit drug users

Respondents were assessed via the *Exposure to Drug Users Index* to determine level of perceived exposure to illicit drug users (Palamar et al., 2011). This seven-item index consists of statements such as, “I have worked with a person that uses [drug name]” and “I have lived with a person who uses [drug name],” for each of the five drugs. Responses to these items were “Yes,” “No,” and “I don’t know.” Items answered as “I don’t know” were recoded into “No” because this index assesses perception of exposure. Responses were then recoded into mean scores for analysis (KR-20 reliability = 0.77–0.82). This index was shown to have high criterion and incremental validity in this sample (Palamar et al., 2011).

Perceived public stigma

Respondents were assessed via the *Stigma of Drug Users Scale* to examine level of perceived stigma toward drug users (Palamar et al., 2011). This 10-item measure consists of statements that measure the perception of public stigma toward users of each of the five drugs and includes statements such as “Most people believe [drug name] users cannot be trusted” and “Most people think less of a person that uses [drug name].” Responses to these five-point Likert items ranged from (1) “Strongly Disagree” through (5) “Strongly Agree.” Responses were recoded into mean scores for analysis ($\alpha = 0.77$ –0.82), and this scale was shown to have good criterion, construct, and incremental validity in this sample (Palamar et al., 2011).

Stigmatization

The *Drug Use Stigmatization Scale* was used to assess level of personal stigmatization toward illicit drug users (Palamar et al., 2011). This seven-item measure consists of negative statements about users such as “[Drug name] users are weak-minded,” and “[Drug name] users make me angry,” for each of the five drugs. Responses to these five-point Likert items ranged from (1) “Strongly Disagree” through (5) “Strongly Agree.” Responses were recoded into mean scores for analysis ($\alpha = 0.83$ –0.88), and this scale was also shown to have high criterion, construct, and incremental validity in this sample (Palamar et al., 2011).

Analytic plan

Hierarchical multivariate logistic regression models were built separately for each drug outcome (e.g., lifetime marijuana use: 0/1) and provided odds ratios (ORs) for lifetime use of each drug. Age was controlled

because opportunity for exposure to drugs may increase with time. To control for unequal opportunity for use, age variables were entered as separate indicators (19–25) built into the first step of each model to strictly control for potential age effects. Therefore, remaining predictors can be understood as age adjusted. Gender, educational attainment, race/ethnicity, and exposure to users were entered into Step 1, religiosity was entered into Step 2, and stigma variables were entered into Step 3.

Missing data and multiple imputation

Approximately, 5% of the sample was missing a subscale from the paper survey due to accidental omission during the printing process. Since these pages were missing in a systematic manner, we treated scales as missing at random (Rubin, 1976). To minimize analytic biases, we conducted multiple imputation using SAS PROC MI to create 10 simulated versions of the data for analysis. The 10 sets of estimates were combined and analyses were repeated using the complete-case data set. After casewise deletion of cases with missing demographic or drug use data, and multiple imputation of cases with missing scale data, the analytic sample for the final logistic models was 1021.

RESULTS

Sample characteristics

The sample was racially diverse and the age of respondents ranged from 18 through 25 ($M = 20.32$, $SD = 1.94$, $Md = 20$). Sample characteristics are presented in Table I. Lifetime use by respondents was as follows: marijuana (65.4% [95% CI = 62.5–68.4]), cocaine (17.6% [95% CI = 15.3–20]), ecstasy (13.5% [95% CI = 11.4–15.6]), non-medical use of opioids (17.4% [95% CI = 15–19.8]), and amphetamine (16.4% [95% CI = 14.1–18.6]).

Table I. Sample demographics ($N = 1021$).

Characteristic	<i>N</i>	%
<i>Gender</i>		
Male	475	46.5
Female	546	53.5
<i>Race/ethnicity</i>		
White	446	43.7
Black/African American/Caribbean	137	13.4
Hispanic/Latino	170	16.7
Asian American/Pacific Islander	185	18.1
Other	83	8.1
<i>Educational attainment</i>		
High school/GED or less	347	34.0
Some college or associate’s degree	471	46.1
College graduate (BA and BS)	203	19.9

Table II. Results of age-adjusted multivariate logistic regression predicting lifetime marijuana use.

Variable	Step 1		Step 2		Step 3	
	OR	95% CI	OR	95% CI	OR	95% CI
Female ^a	0.91	0.66–1.24	0.92	0.67–1.26	0.99	0.71–1.40
Education ^b						
Some college	1.09	0.74–1.58	1.05	0.71–1.54	0.93	0.62–1.40
BA or higher	1.19	0.64–2.22	1.20	0.64–2.25	1.01	0.53–1.95
Race/ethnicity ^c						
Black	0.32***	0.20–0.51	0.39***	0.24–0.63	0.43*	0.26–0.72
Hispanic/Latino	0.66	0.42–1.04	0.69	0.44–1.08	0.67	0.41–1.10
Asian	0.40***	0.26–0.62	0.45***	0.29–0.70	0.45*	0.28–0.72
Other	0.65	0.36–1.17	0.71	0.39–1.29	0.83	0.44–1.52
Exposure to users	1.52***	1.42–1.63	1.49***	1.39–1.60	1.35***	1.25–1.46
Religiosity			0.71***	0.60–0.84	0.82 ⁺	0.68–0.98
Perceived public stigma					1.02	0.78–1.34
Stigmatization of users					0.32***	0.25–0.41
Pseudo-R ²	0.36		0.38		0.47	

Notes: Comparison groups: ^amale, ^bhigh school or less, and ^cWhite.

⁺ $p < 0.05$, * $p < 0.01$, and *** $p < 0.0001$.

Table III. Results of age-adjusted multivariate logistic regression predicting lifetime powder cocaine use.

Variable	Step 1		Step 2		Step 3	
	OR	95% CI	OR	95% CI	OR	95% CI
Female ^a	0.63 ⁺	0.43–0.93	0.61 ⁺	0.41–0.92	0.62 ⁺	0.41–0.93
Education ^b						
Some college	1.05	0.63–1.74	1.03	0.62–1.74	1.02	0.60–1.73
BA or higher	0.53	0.26–1.12	0.59	0.28–1.25	0.55	0.26–1.16
Race/ethnicity ^c						
Black	0.12***	0.03–0.41	0.14*	0.04–0.51	0.15*	0.04–0.52
Hispanic/Latino	0.72	0.42–1.24	0.78	0.45–1.36	0.76	0.43–1.33
Asian	0.58	0.32–1.08	0.75	0.40–1.41	0.77	0.41–1.47
Other	0.84	0.42–1.66	0.88	0.44–1.78	0.93	0.45–1.89
Exposure to users	1.54***	1.43–1.66	1.54***	1.42–1.67	1.49***	1.38–1.62
Religiosity			0.66*	0.52–0.83	0.69*	0.55–0.88
Perceived public stigma					0.95	0.70–1.30
Stigmatization of users					0.66*	0.50–0.87
Pseudo-R ²	0.41		0.42		0.43	

Notes: Comparison groups: ^amale, ^bhigh school or less, and ^cWhite.

⁺ $p < 0.05$, * $p < 0.01$, and *** $p < 0.0001$.

Multivariate logistic models

Separate, hierarchical logistic regression models were built for each drug with lifetime use as the criterion variable. The outcomes in these separate models, however, were not independent. Specifically, research has indicated that use of “harder,” more dangerous drugs often depends on use of marijuana as most individuals who have used hard drugs first used marijuana (Kandel & Yamaguchi, 1993). Likewise, 303 (29.7%) respondents reported using more than one drug, and there were significant correlations between lifetime use of each drug ($\phi = 0.27$ through 0.55, $p < 0.001$). Therefore, Bonferroni corrections were applied to minimize Type I error ($\alpha = 0.05/5$), resulting in an α -level for each model set to 0.01. Results at the

0.05 α -level are also noted in tables (⁺) to demonstrate potential trends in light of our correction.

The first model analyzed lifetime marijuana use. As presented in Table II, exposure to marijuana users consistently explained lifetime use, and those who reported high levels of religiosity were protected, but this effect was lost in the final step while controlling for stigma. In the final step, for every additional unit of exposure to marijuana users, the odds of use rose by 35%, and as level of stigmatization toward marijuana users rose by one unit, the odds of lifetime use decreased by 68%, with all else equal.

The second model analyzed lifetime cocaine use. As presented in Table III, exposure to cocaine users was a

Table IV. Results of age-adjusted multivariate logistic regression predicting lifetime ecstasy use.

Variable	Step 1		Step 2		Step 3	
	OR	95% CI	OR	95% CI	OR	95% CI
Female ^a	0.53*	0.34–0.82	0.50*	0.32–0.78	0.49*	0.31–0.78
Education ^b						
Some college	1.13	0.64–1.97	1.06	0.60–1.89	1.05	0.58–1.91
BA or higher	1.10	0.50–2.41	1.23	0.56–2.73	1.12	0.49–2.52
Race/ethnicity ^c						
Black	0.17*	0.05–0.59	0.25 ⁺	0.07–0.89	0.24 ⁺	0.07–0.88
Hispanic/Latino	0.56	0.30–1.03	0.68	0.36–1.28	0.70	0.37–1.33
Asian	0.55	0.28–1.06	0.74	0.37–1.48	0.78	0.39–1.58
Other	0.82	0.39–1.74	1.01	0.47–2.16	1.09	0.49–2.39
Exposure to users	1.57***	1.44–1.70	1.54***	1.41–1.67	1.48***	1.36–1.62
Religiosity			0.45***	0.34–0.60	0.48***	0.36–0.65
Perceived public stigma					0.65 ⁺	0.45–0.94
Stigmatization of users					0.69 ⁺	0.51–0.95
Pseudo- <i>R</i> ²	0.36		0.41		0.43	

Notes: Comparison groups: ^amale, ^bhigh school or less, and ^cWhite.

⁺*p* < 0.05, **p* < 0.01, and ****p* < 0.0001.

Table V. Results of age-adjusted multivariate logistic regression predicting lifetime non-medical use of opioids.

Variable	Step 1		Step 2		Step 3	
	OR	95% CI	OR	95% CI	OR	95% CI
Female ^a	0.62 ⁺	0.42–0.92	0.62 ⁺	0.42–0.92	0.62 ⁺	0.41–0.92
Education ^b						
Some college	1.06	0.65–1.74	1.02	0.62–1.69	1.02	0.61–1.70
BA or higher	0.73	0.35–0.55	0.77	0.36–1.64	0.72	0.34–1.56
Race/ethnicity ^c						
Black	0.32*	0.14–0.75	0.39 ⁺	0.17–0.94	0.39 ⁺	0.16–0.94
Hispanic/Latino	0.59	0.34–1.03	0.63	0.36–1.09	0.58	0.33–1.01
Asian	0.24***	0.12–0.48	0.27***	0.13–0.56	0.27***	0.13–0.56
Other	0.60	0.29–1.24	0.64	0.31–1.32	0.62	0.29–1.33
Exposure to users	1.53***	1.42–1.64	1.51***	1.40–1.62	1.47***	1.37–1.59
Religiosity			0.72**	0.57–0.90	0.78 ⁺	0.62–0.98
Perceived public stigma					0.76	0.56–1.02
Stigmatization of users					0.62***	0.47–0.80
Pseudo- <i>R</i> ²	0.36		0.37		0.40	

Notes: Comparison groups: ^amale, ^bhigh school or less, and ^cWhite.

⁺*p* < 0.05, **p* < 0.01, ***p* < 0.001, and ****p* < 0.0001.

consistent risk factor. Identifying as Black was protective against use, but this effect decreased when controlling for religiosity and stigma. In the final step, with all else equal, for every unit increase in exposure to cocaine users, the odds of use rose 49%. For every unit increase in religiosity, the odds of use decreased 31%, and for every unit increase in stigmatization of users, the odds of use decreased by 34%.

The third model analyzed lifetime ecstasy use. As presented in Table IV, identifying as female, exposure to ecstasy users and religiosity consistently explained lifetime use. Black respondents were protected, but this effect was lost when controlling for religiosity and stigma. Perceived public stigma and stigmatization

only approached significance as protective factors. In the final step, with all else equal, for every unit increase in exposure to users the odds of lifetime use increased 48%, and for every unit increase in religiosity, the odds of use decreased 52%.

The fourth model analyzed lifetime non-medical use of opioids. As presented in Table V, those who identified as Asian American were consistently protected, and those with high levels of exposure to users were consistently at risk. Those who reported high levels of religiosity were protected, but this effect was lost in the final step while controlling for stigma. In the final step, for every unit increase in exposure to users the odds of lifetime use increased 47%, with all

Table VI. Results of age-adjusted multivariate logistic regression predicting lifetime non-medical use of amphetamine.

Variable	Step 1		Step 2		Step 3	
	OR	95% CI	OR	95% CI	OR	95% CI
Female ^a	0.82	0.56–1.20	0.82	0.56–1.21	0.83	0.56–1.22
Education ^b						
Some college	1.08	0.67–1.74	1.05	0.65–1.71	1.02	0.62–1.67
BA or higher	0.86	0.42–1.76	0.87	0.42–1.79	0.80	0.38–1.66
Race/ethnicity ^c						
Black	0.25*	0.10–0.60	0.29*	0.12–0.72	0.29*	0.12–0.72
Hispanic/Latino	0.57	0.32–1.01	0.60	0.34–1.05	0.55 ⁺	0.31–0.98
Asian	0.40*	0.22–0.72	0.45*	0.24–0.82	0.46 ⁺	0.25–0.84
Other	0.53	0.26–1.09	0.56	0.27–1.15	0.58	0.28–1.23
Exposure to users	1.40***	1.31–1.50	1.39***	1.30–1.49	1.35***	1.26–1.45
Religiosity			0.77 ⁺	0.62–0.96	0.82	0.66–1.02
Perceived public stigma					0.71 ⁺	0.53–0.95
Stigmatization of users					0.67*	0.52–0.87
Pseudo-R ²		0.28		0.28		0.31

Notes: Comparison groups: ^amale, ^bhigh school or less, and ^cWhite.

⁺ $p < 0.05$, * $p < 0.01$, and *** $p < 0.0001$.

else equal. As stigmatization of opioid users increased by one unit, the odds of use decreased 38%.

The last model analyzed lifetime non-medical use of amphetamine. As presented in Table VI, Black respondents were consistently protected, and those with high exposure were consistently at higher odds of use. Asian-Americans were protected, but this effect was lost when controlling for stigma. Perceived public stigma only approached significance. In the final step, for every unit increase in exposure to amphetamine users, the odds of lifetime use increased 35%. For every unit increase of stigmatization of amphetamine users, the odds of lifetime use decreased 33%, with all else equal.

DISCUSSION

This study investigated illicit drug use in a diverse sample of emerging adults in New York City. Results of our multivariate logistic models determined numerous significant associations with lifetime use of marijuana, cocaine, ecstasy, opioids, and amphetamine.

Previous literature suggests that it is important to account for exposure to users when examining stigma because contact may reduce stigma (Adlaf et al., 2009; Link & Cullen, 1986). Likewise, exposure to users was negatively related to stigmatization and perceived public stigma toward users in this sample (Palamar et al., 2011), so we controlled for this effect in our models. Exposure to users had a consistent, robust effect on lifetime use of all five drugs, which continued after controlling for religiosity, perceived public stigma, and stigmatization. For each drug, every unit increase in exposure to users was associated with an increase in odds of lifetime use between 35% and 49%. This effect was strongest for cocaine. Exposure is an

important factor in explaining drug use because such connections are necessary as it is unlikely for individuals to gain access to drugs even with a desire to do so (Durrant & Thakker, 2003; Parker, Aldridge, & Measham, 1998). However, if an individual is unaware of his or her peers' drug use, it is unlikely that such exposure will influence use.

In many models, the protective effects of religiosity and racial minority status diminished when controlling for stigma variables. White respondents were more highly exposed to users and stigmatized illicit drug users at lower levels than their non-White counterparts (Palamar et al., 2011), and these models were able to delineate the specific effects of race while examining how stigma explains illicit drug use. Blacks in particular tended to stigmatize use at higher levels (Palamar et al., 2011) and this helps to explain why they were protected against use in these models. With respect to religion, religiosity was a consistent protective factor against cocaine and ecstasy use, but the initial protective effect diminished or disappeared in the marijuana and opioid models when controlling for stigma. Religiosity was not a significant protective factor against amphetamine use in any step. This suggests that religiosity is more protective against use of the "hard drugs," cocaine and ecstasy, but it is not as protective against lifetime use of the other drugs, over and above stigma, and exposure. Cocaine and ecstasy might receive higher levels of moral or religious disapproval in addition to general stigma, but further research is required to investigate how specific components of religiosity predict use of these drugs. It should be noted, however, that religious individuals reported higher levels of stigmatization (Palamar et al., 2011); therefore, in some respects the protective effects of religiosity may have served as an indicator of stigmatization.

Perceived public stigma was not protective against lifetime illicit drug use, although there were trends in the ecstasy and amphetamine models. Stigmatization, however, consistently explained use of marijuana, cocaine, opioids, and amphetamine while controlling for demographic predictors, exposure to users, religiosity, and perceived public stigma. Higher levels of stigmatization were associated with lower odds of use; therefore, in regard to the items on the stigmatization scale, the individuals who did not use these drugs tended to feel that drug use is morally wrong or that users are dishonest, weak-minded or have no future. The non-significant effects of perceived public stigma in the presence of robust stigmatization effects lead to further understanding about drug-related stigma. Personal disapproval or stigmatization toward drug use protects individuals from lifetime use, but knowing that users are stigmatized by the public does not appear to be a deterrent against lifetime drug use.

Several aspects of this study warrant future research. Levels of stigmatization change over time (Adlaf et al., 2009), so additional studies are needed to examine how level of stigma changes upon repeated exposure to users, and more information is needed about types of exposure (e.g., “positive” *versus* “negative” experiences) as well as source of exposure (e.g., family, coworkers). We must keep in mind that drug use within itself is not a public health problem – consequences of use such as adverse effects, addiction, and increased risk behavior (e.g., driving while intoxicated and unsafe sex) are the true risk, so future research needs to examine how stigma relates to severity of drug use behavior. Further research is also needed to examine why stigmatizers devalue drug users, and to assess their opinions on how such devaluation may affect users. Finally, prospective studies are needed to determine temporal associations of stigma, exposure, and use over time.

Limitations

Response rates are a limitation for the Internet version of the survey. Specifically, only 24% of those who received a recruitment card took the Internet survey. Internet responders also tended to be younger than Internet non-responders and Internet non-responders tended to identify as Black at recruitment. It should be noted that hierarchical models were also built, controlling for recruitment method, and overall results were identical. Another potential limitation is that this sample was not randomly selected; therefore, selection bias may have occurred. Age was also a limitation in this study. Specifically, 25-year-olds in comparison to 18-year-olds, have up to seven additional years of opportunity for exposure to users. Therefore, instead of examining potential age effects in the multivariate models, we strictly controlled for such effects. Level of educational attainment might have been a function of age in this young sample; however, this study found no educational attainment effect on drug use. The stigma

scales used in this study also need to be validated on additional samples.

Self-reporting is also a limitation, and with regard to exposure, one is not always aware of a peer’s substance use or the substance used. In some respects, this is selection bias because individuals may only be aware of obvious symptoms of inebriation (Fish, 2005). Another limitation is that this study examined lifetime drug use. Future studies also need to focus on trajectories of use and recent use to acquire a better picture of how stigma affects use. Larger studies would be better fit to produce ORs for recent use with a greater level of confidence as rates are much lower. Finally, this study was cross-sectional, so temporality and causality could not be inferred.

Public health implications

While perceived public stigma and personal stigmatization are separate (non-overlapping) concepts, and both concepts are positively correlated with one another with respect to use of each of the five drugs (Palamar et al., 2011), this investigation allowed us to delineate their individual effects on lifetime use. Results suggest that stigmatization helps to protect individuals from use of various illicit drugs, but the perception of this stigma applied by the public does not appear to protect against use. This finding sheds some light with respect to Bayer’s (2008) question regarding the use of stigma as a public health tool: “Not can we but should we?” While “should we” refers to the ethicality of using stigma as a public health tool, these findings suggest that stigmatizing drug use protects oneself from use, but not necessarily others. We cannot determine whether stigma is morally justifiable, but our findings do suggest that perception of public stigma, with all else equal, does not appear to prevent those at risk from using. So, a stigmatizing attitude appears to be effective as a personal characteristic, but our evidence suggests that in the bigger picture, perception of societal stigma as a public health tool is not preventive against lifetime use. If perception of public stigma is not useful with regard to the public’s health, then the ethics of its use have become even more questionable.

Having negative attitudes toward use are protective against use, but such attitudes are negatively associated with exposure to users and are likely derived from other sources such as the media (Blendon & Young, 1998; Palamar et al., 2011). Highly religious individuals also stigmatize use at high levels (Palamar et al., 2011), so aside from lack of exposure to users, such attitudes may in fact be held on moral grounds. Since stigma is associated with psychological and social harm among users, is stigmatizing drug users on moral grounds “immoral”? If stigma does not protect others who are at risk and instead inflicts harm on them, then it is not likely an effective (or ethical) prevention tool for the public. Perhaps, policy needs to change because illicit drug users are deemed criminals, which may help

explain why the majority of the public feels that illicit drug use is morally wrong (Blendon & Young, 1998). As public health practitioners, we need to stay focused on what behaviors cause harm, and what can be done to prevent harm. Negative attitudes and moral judgments toward users appear to increase harm among those who are already users, and these attitudes appear to be perpetuated by policy that treats users as criminals. Stigmatizers, although protected from use, may be part of the public health problem, but the drug policy that appears to drive such negative attitudes may be part of the larger problem.

Although illicit drug use has been deemed a criminal behavior, and thus an immoral behavior, certain elements of public health and government policy are beginning to lean in a more positive direction. As shown in recent literature, health experts tend to view stigma as being harmful, and a current aim of the National Institute on Drug Abuse (2010) is to reduce the stigma associated with drug abuse and addiction. In addition, there has been increased emphasis on treatment and public service announcements now tend to focus on the potential harms associated with use rather than teaching stigmatizing terms such as “users are losers.” However, simply reducing the stigma associated with recreational use may increase the odds of use. Public health efforts can deglamorize use or maintain a reasonable public fear of use without having to resort to stigma.

Conclusions

This study was among the first to examine perceived public stigma and stigmatization in relation to lifetime use of illicit drugs. Although stigmatization is a protective factor for the non-user, the perception of such stigma from the public does not appear to protect others from use. We also must remain cognizant that the drug user who is stigmatized may suffer adverse mental health, social or political consequences as a result as stigma. Most drug policies are punitive, treating drug involvement as a criminal offense, but a public health-based paradigm, focusing more on prevention (e.g., through education) and treatment might reduce the public’s desire to inflict stigma as a means to prevent use. It is time to explore alternative prevention mechanisms and treat drug use as a health behavior and not a deviant or moral behavior.

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