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Is the Legalization of Marijuana Associated with Its Use by Adolescents?

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Abstract

Background—Growing moves in the U.S. toward relaxed laws surrounding adult use of marijuana raise concerns about concurrent increases in adolescent use of marijuana.

Objectives—This study collected and analyzed primary data on the relationship between marijuana legalization status in U.S. states and adolescents' marijuana use.

Methods—Recruited through social networking sites and youth-services community agencies, a sample of 1,310 adolescents from 48 U.S. states and the District of Columbia reported their use of marijuana. Youths' use rates were compared with the marijuana legalization status of youths' states of residence.

Results—Study findings failed to show a relationship between adolescents' use of marijuana and state laws regarding marijuana use. Relationships were found for increased marijuana use by older youths, females, and non-Hispanic youths. Youths whose parents completed 2 or more years of college were less likely to report marijuana use than those whose parents completed fewer than 2 years of college.

Conclusions—Albeit study findings do not support predictions of growing marijuana use by adolescents in states with liberalized adult use laws, further monitoring of adolescents' use with larger and more representative samples is needed.

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Keywords

Marijuana legalization; marijuana use; Hispanic and female adolescents

Introduction

Nearly one-half of all U.S. states have passed or are considering legislation to decriminalize adult marijuana use. By relaxing prohibitions against use among adults for medical or recreational purposes or by otherwise decriminalizing adult use and possession, moves toward legalization may increase marijuana availability in the affected states.

Decriminalization may antecede higher rates of marijuana use by adolescents in states that have lifted adult use prohibitions (Bretteville-Jensen, 2006; Wright, 2015). Notwithstanding these concerns, the available data reveal a mixed picture. Whereas some investigators have failed to find increased adolescent marijuana use in the decriminalized states (Choo et al., 2014; Lynne-Landsman, Livingston, & Wagenaar, 2013), others call for caution in the face of equivocal findings on adolescents' use rates following the passage of less restrictive laws (Levy, 2013; Mason, Hanson, Fleming, Ringle, & Haggerty, 2015; Wall et al., 2011).

The ongoing monitoring of adolescents' marijuana use in states with different legalization statuses appears a wise research investment that can inform public policy. Real-time monitoring data will shed empirical light on the relationship between eased legal restrictions on adult marijuana use and adolescents' use of what is arguably a powerful and potentially harmful drug (Volkow, Baler, Compton, & Weiss, 2014). Until a consistent guiding theory for the effects of adult marijuana legalization on adolescent use emerges, a prudent monitoring approach may be to test the null hypothesis: adolescent use rates of marijuana do not differ between states that have decriminalized marijuana and states that continue to place legal sanctions on any marijuana use among adults.

We collected and analyzed primary data on marijuana use among a sample of adolescents who lived in states where marijuana use is legal because its use among adults is allowed for medical or recreational purposes or because its personal use and possession in various quantities among adults are otherwise decriminalized; or where adult use of marijuana for any purpose or its possession remain illegal. The surveys were administered during baseline data collection for two clinical trials to test drug abuse prevention programs. One trial focused on female adolescents; the other on Hispanic adolescents.

Methods

Between April 2013 and April 2015, a sample of 1,310 adolescents were enrolled and surveyed across the two clinical trials. Study respondents were recruited through Facebook and other social networking advertisements aimed at 13- to 15-year-olds, and through comparable printed advertisements aimed at 13- to 15-year-olds and distributed via youth services agencies, neighborhood centers, and other community-based facilities. When youths on Facebook and other social networking sites clicked on recruitment advertisements, they were directed to the study website. There, youths learned about study risks, procedures, and requirements; accessed assent and parent permission forms; viewed bilingual (for the

Hispanic sample) videotape presentations detailing study requirements, risks, and benefits; provided contact information; and learned how and where to submit assent and parental permission forms.

Youths recruited through youth services agencies, neighborhood centers, and other community-based facilities received the URL for the same website as accessed by youths recruited through Facebook and other social networking sites. All recruitment ads called for 13- to 15-year-old youths who were interested in participating a drug abuse prevention study, noted that participants would be compensated for their time, and referenced the study URL where detailed information and FAQs were available. Depending on the primary target audience, recruitment ads either specified interest in adolescent girls or in Hispanic youths. This differentiation between the two populations was necessary because youths were recruited for two clinical trials: one trial focused on adolescent girls; the other on Hispanic youth.

The combined sample included youths from 48 U.S. states and the District of Columbia. Identical sampling methods and recruitment, assent, and parental permission vehicles were employed for youths from states in which marijuana use is illegal and for youths from states in which marijuana use is permitted for medical or recreational purposes or is otherwise decriminalized.

Procedure

The study protocol was reviewed and approved by the Institutional Review Board of the investigators' host institution. After assenting to participate and receiving parental permission to participate, adolescent respondents were enrolled in the research. Respondents then completed online surveys about their use of marijuana and other drugs. Survey questions were taken from an established and reliable drug abuse prevention questionnaire (Centers for Disease Control and Prevention, 2004; test-retest $r = .82 - .95$).

Results

The study sample had a mean age of 14.1 years ($SD = 0.95$) and was 84.5% female. Ethnically, 49.1% of the youths were Hispanic; racially, 43.9% of youths were White, 12.7% were Black, and 43.4% gave their race as Other. The large percentages of female and Hispanic respondents in the sample were due to the nature of the underlying studies in which the data were collected. The large percentage of youths reporting their race as Other was due to youths who reported their race as Hispanic or Latino.

Across the sample, respondents reported a 30-day marijuana use prevalence rate of 9.5%. These data were categorized according to: a) whether respondents lived in a state that at—the time of the survey—had designated some form of adult marijuana use as legal, by decriminalizing adult use, allowing adult medical use, or allowing adult recreational use, totaling 61.5% of the sample across these three categories; or b) whether respondents lived in a state that continued to make marijuana use illegal, totaling 38.5% of the sample.

Comparisons between respondents' marijuana use and the legalization status of their states of residence were adjusted for age, gender, race, ethnicity, and parent education. Odds ratios (ORs) and confidence intervals (CIs) for respondents' marijuana use relative to their demographic backgrounds and the adult marijuana use legalization status of their states of residence appear in Table 1.

Unsurprisingly, respondents' age was related to their marijuana use: each unit increase in age was associated with an increase in the odds of marijuana use by a factor of 1.33 (95% CI, 1.09 – 1.68; $p < .001$). Whereas males had lower odds than females of marijuana use by a factor of .35 (95% CI, 0.20 – 0.96; $p < .05$), Hispanic respondents had lower odds of marijuana use than non-Hispanic respondents by a factor of 0.60 (95% CI, 0.35–0.93; $p < .05$). Respondents whose parents completed 2 or more years of college had lower odds of reporting marijuana use than respondents whose parents completed fewer than 2 years of college (OR, 0.49; 95% CI, 0.35 – 0.93; $p < .001$). Of central interest to the present study, the state legal status of adult marijuana use bore no relationship to respondents' marijuana use (OR, 1.01; 95% CI, 0.68 – 1.49, *ns*).

Discussion

Findings from youths sampled in this study suggest that eased sanctions on adult marijuana use are not associated with higher prevalence rates of marijuana use among adolescents. Because study respondents represented populations of female adolescents and Hispanic adolescents largely underreported in other examinations of the relationship between state marijuana laws and adolescents' use of marijuana, the data are particularly useful in advancing empirical knowledge about this timely topic.

The study is not without weaknesses. These include a small sample and low rates of respondent marijuana use. Owing to their relatively young age, study respondents had not yet entered the highest risk years for marijuana use. The short 1-month recall period for marijuana use failed to capture less frequent, but potentially no less informative patterns of use. Warranting reiteration is that study findings are limited in their generalizability only to youths who agreed to participate in a drug abuse prevention trial. Moreover, the dynamic nature of state laws governing marijuana use poses a challenge for definitively categorizing the nature of legalization status in each youth's place of residence. Thus, some youths may have changed their residences during the enrollment period—though enrollment data did not suggest these patterns.

These limitations notwithstanding, data reported in this study can inform the debate about the effects of relaxed marijuana laws on adolescents in important ways. Our data are relatively recent, having been collected in 2013 and 2015. Because of the primarily female and Hispanic nature of the sample, study findings document the relationship between adult marijuana laws and use rates among populations of youth who warrant oversampling due to their population growth, in the case of Hispanic adolescents, and due to their inordinate risks of harm from the impaired decision-making that is associated with marijuana use, in the case of adolescent girls. That youths came from a sample representing nearly all American states

and the District of Columbia further increases the value of their data for addressing questions about adult use marijuana legalization and marijuana use among adolescents.

U.S. states will likely continue to legalize adult use of marijuana. Concurrently, those charged with guarding the Nation's public health will debate the effects of adult use legalization on adolescents' use. By monitoring adolescent marijuana use as states liberalize their laws for adult marijuana use, practitioners and policy makers will have a scientific basis for informing these debates.

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Table 1

Adolescents' 30-day marijuana use by demographic variables and by the legalization status of adult use of marijuana in the adolescents' states of residence.

Sample <i>N</i> = 1,310	Odds ratio	95% CI	
		Lower	Upper
Age (continuous)	1.36 ^{**}	1.09	1.68
Gender (ref = female)			
Male	0.44 [*]	0.20	0.96
Race (ref = White)			
Black	0.84	0.46	1.53
Other	1.14	0.71	1.81
Ethnicity (ref = non-Hispanic)			
Hispanic	0.57 [*]	0.35	0.93
Parent education (ref = < 2 years of college)			
2 years of college	0.49 ^{**}	0.32	0.73
Legality of marijuana use (ref = use illegal)			
Use not illegal ^a	1.01	0.68	1.49

Notes. CI = confidence interval. Odds ratios for marijuana use were adjusted for age, gender, race, ethnicity, and parent education.

^aStates in which adult use of marijuana was legal for medical or recreational purposes or was otherwise decriminalized at the time of survey administration.

^{*}
p < .05;

^{**}
p < .001.