

# Declining Rates of Adolescent Marijuana Use Disorders During the Past Decade May Be Due to Declining Conduct Problems

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The article by Gruzca *et al.*<sup>1</sup> in this issue of the *Journal* uses data from the National Survey on Drug Use and Health from 2002 to 2013 to examine trends of past-year adolescent marijuana use and *DSM-IV* marijuana use disorders in a large (N = 216,852), nationally representative sample of adolescents. The primary findings are that there has been a modest (9.8%) decrease during that period in past-year marijuana use in 12- to 17-year-olds and a more substantial (24%) decrease in past-year marijuana use disorders. Gruzca *et al.* examined several potential protective or risk factors as possible explanations for these findings, specifically conduct problems, permissive parental attitudes toward substance use, parental monitoring, positive parental relationships, exposure to drug education, religious commitment, and number of activities outside school. What stood out was that a decrease in conduct problems accounted for the decrease in marijuana use disorders. In particular, in marijuana users without conduct problems, there was no decrease in the prevalence of marijuana use disorders; however, there was a decrease in the development of marijuana use disorders in those with conduct problems. Another finding of interest to clinicians is that overall rate of marijuana use disorders in 12- to 17-year-olds was quite high, with a past-year prevalence of 3.5%, which was higher than substance use disorders for all other illicit substances combined (1.8%) and only slightly lower than alcohol use disorders (4.9%).

The findings from this study regarding prevalence rates reinforce evidence from complementary studies, such as the Monitoring the Future study (MTF),<sup>2</sup> which surveys high school students about their drug use. The MTF reported that past-year adolescent marijuana use increased during the 1990s and then peaked at approximately 1997, with a decrease in past-year use evident in 8th, 10th, and 12th grades until approximately 2007, when an upturn occurred that stabilized between approximately 2010 to 2011 and since then has largely held level. Results from the National Household survey do not capture 18-year-olds and thus the findings between the 2 surveys are largely consistent in documenting a decrease in past-year use for 12- to 17-year-olds between 2002 and 2013, although it should be noted that the trend is not entirely linear and the most recent data indicate a mild increase.

There are some interesting aspects of this study beyond the trends in annual past-year adolescent prevalence rates. A recent study of general-population adults reported a large

increase in adult, population-wide marijuana use and marijuana use disorders between 2001 to 2002 and 2012 to 2013.<sup>3</sup> Past-year adult marijuana use increased from 4.1% to 9.5%, and marijuana use disorders increased from 1.5% to 2.9%. Thus, it is somewhat surprising that a similar increase did not occur nationally among adolescents during the same time span. Overall, adolescent past-year marijuana use rates (13.6% in 2013) are still higher than adult rates; however, the adult rates are approaching adolescent rates.

The adult study by Hasin *et al.*<sup>3</sup> and the adolescent study by Gruzca *et al.* documented a decrease in the prevalence of marijuana use disorders in users. Hasin *et al.*<sup>3</sup> considered the role that the increasing potency of marijuana<sup>4</sup> might have on developing dependence (because of its potentially increased rewarding effects), which would have been predicted to increase prevalence in users, but did not find support for this explanation, because although use rates went up, the conditional probability of developing dependence decreased somewhat. Gruzca *et al.* examined different measured explanatory factors and found that a decrease in conduct problems accounted for the decrease in the development of marijuana use disorders. Although this is not proof of a causal effect, one potential inference is that as marijuana use becomes more acceptable, more individuals without conduct or adult antisocial problems will use marijuana and that the risk of developing a use disorder is lower in individuals without comorbid conduct or adult antisocial problems.<sup>5</sup>

In the current climate of an active policy debate about marijuana regulations, this article also could be interpreted by some as “proof” that marijuana liberalization laws have no effect on adolescent marijuana use. No such inference is warranted. The relation between the quasi or full legalization of marijuana for medical or recreational purposes for adults and adolescent marijuana use is complex; however, the article by Gruzca *et al.* examines time trends primarily during marijuana medical legalization and cannot be used to infer the effects of adult recreational legalization. Palamar *et al.*<sup>6</sup> reported that 10% of non-using high school students intend to use marijuana if legal, thus predicting a substantial increase in adolescent use when marijuana is legal for adult recreational use (as it is in 4 states). See also the discussion by Pacula *et al.*<sup>7,8</sup> and Hopfer<sup>9</sup> regarding the complexity of policy effects, experiences with Dutch depenalization policies, and possible effects of large-scale commercialization. &

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