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School collective occupation movements and substance use among adolescents: A school-level panel design



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ABSTRACT

Background: Recently, social movements across the world have demanded reforms to education systems and other institutions. Although such movements have affected large numbers of people across multiple countries, we know little about the impacts they have had on population health. We focus on one example: the massive strikes and collective occupation of secondary schools across Chile, which occurred contemporaneously with a large increase in marijuana use among students in this age group. We aimed to evaluate the causal effects that the 2011 Chilean school strikes had on adolescent substance use, including the initiation of marijuana use and the use of alcohol and marijuana.

Methods: School-level, aggregated panel design using data from the National Drug Surveys among Secondary Students from 2005 to 2015 for students in grades 9–12. We used a fixed-effects difference-in-difference model to estimate the effect of school occupations on prevalence of self-reported indicators of drug use.

Results: Reported marijuana use doubled between 2009 and 2013 among Chilean adolescents. After controlling for secular trends in outcomes and for school characteristics, there was no evidence of increased marijuana initiation, alcohol and marijuana use, or of an increase in heavy use among adolescents being directly attributable to school strikes and occupations in 2011.

Conclusions: The 2011 Occupy school movement in Chile had no detectable causal effect on substance use among Chilean adolescents. The increase in marijuana use from 2009 to 2013 seems to be part of broader social changes occurring among the school-age population.

1. Introduction

During the current decade, major social movements have taken place all over the world. Although some of these movements arose in response to national crises, most demanded that structural changes be made to economic and political systems in a globalized context (Della Porta and Diani, 2015). The Occupy movement in the United States and other countries and the “Indignados” movement in Spain are examples of these (Anduiza et al., 2014; Castaneda, 2012). Educational institutions played major parts in these social movements, calling for improved access, quality and research funding, as well as lower costs, among other demands (Barrionuevo, 2011; Smink, 2011). Generally, college students are the ones who lead these movements (e.g., the 2009 University of California sit-ins), but in other cases, secondary school students have participated in and even promoted these actions, as

happened during the school takeovers in Greece in 2013 or Brazil in 2015 (Christides, 2013; Ortellado, 2015).

In 2011, high school students in Chile led a series of massive strikes to demand structural reforms to the country’s education system (Barrionuevo, 2011). This social movement affected a large proportion of schools and students and included, among other things, boycotts of classes, protest marches and blocking access to schools, so teachers and other authorities could not enter the occupied buildings. Students actively participating in the school occupation lived for days, weeks and even month inside the blocked school until the strikes were deposed.

Although social movements are common worldwide, the physical and psychological consequences of these movements, including substance use, have received little attention. Most research on this topic has focused on the economic changes or crises that cause social

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movements (de Goeij et al., 2015), rather than on the impact such social movements have on health or health behaviors through direct mechanisms (e.g., marching or occupying schools) or through indirect pathways (e.g., violence due to police action or not being able to go to school because the building has been occupied). To our knowledge, there is only one study that has explicitly examined the effect of a social movement in a health outcome; Ni et al. (2016) analyzed the direct and indirect effect that the Occupy Central movement in Hong Kong had on depressive symptoms, finding a substantial and sustained psychological distress in the community exposed to the protests.

Regarding the educational protest, there is a plausible link between the school occupations and a higher adolescent substance use. Several mechanisms may increase the risk in this context, including the absence of school norms during the strike period (Kumar et al., 2002; Perra et al., 2012; Stigler et al., 2011), decreased parental monitoring or control (Frauenglass et al., 1997; Schofield et al., 2015; Wang et al., 2014), and intensification in contact between peers and peer influence (Schofield et al., 2015; Tucker et al., 2014). It can also be a way to express rebellion and challenge authority among adolescents, incorporating to their protests also a growing debated issue at the global level (McGinty et al., 2016; Room, 2014; Williams et al., 2016); the discussion about drug policy, particularly regarding cannabis consumption and regulation, has often been used as a tool for expressing differences in ideology in the political and ethical fields (Husak and de Marneffe, 2005).

In Chile, the reported prevalence and incidence of marijuana use increased significantly among high school students during the year of the school strikes (from 15.1% in 2009–19.5% in 2011 in past year prevalence), followed by an even larger increase in 2013 (30.6%) and a current estimate of 34.2% (Observatorio Chileno de Drogas, 2015). But, more remarkably, the initial increase registered in 2011 occurred only among students from public and subsidized schools, where the strikes were concentrated (Observatorio Chileno de Drogas, 2011). Alcohol use, on the other hand, has remained relatively stable across years, with a past month prevalence ranging from 34.7% to 35.6% between the years 2009 and 2015, while the proportion of binge drinkers among current users ranged from 62.8% to 64.4%. (Observatorio Chileno de Drogas, 2015).

To address the gap in our understanding of the potential health impact of collective social movements, we focused on the case of Chile and evaluated the causal effects that the Chilean school strikes in 2011 had on initiation of marijuana use, the use of alcohol and marijuana, and the heavy use of alcohol and marijuana among adolescents.

2. Material and methods

2.1. Design and procedures

This is a quasi-experimental school-level panel study, in which the “treatment” group comprises schools exposed to strikes and the “control” group comprises those that were not exposed. We used data from the National Drug Surveys among Secondary Students (NDSSS) from 2005 to 2015 to create a panel design study, aggregated at the school level. The NDSSS is led and financed by the Chilean Drug Observatory of the National Service for the Prevention and Rehabilitation of Drug and Alcohol Consumption (SENDA), and it is conducted every 2 years following the same field protocol for each version (the cooperation rate of schools ranged from 71.2% to 87.1%). The survey has a two-stage random sample design (sample sizes range from approximately 33,000 to 60,000 students nationwide), with a random selection of classes from the 8th to 12th grades (stage 1) and students within classes (stage 2). The sampling frame includes public schools, subsidized private schools, and private schools without government subsidies from municipalities with more than 30,000 inhabitants in the 15 regions of the country. Survey fieldwork is generally conducted between October and December, with minor

variation across years.

The survey involves an anonymous, self-administered questionnaire that takes approximately 50 min to complete. Selected students remain in the classroom and register their responses on a separate answer sheet for later optical scanning. The survey includes questions on licit and illicit drug use and access, risk perceptions, and opinions regarding drug policy, among other topics. Methodological details of the survey, the questionnaires and main results can be found on the web page of the Chilean Drug Observatory, Research Department of SENDA (<http://goo.gl/JJ2MX4>).

Because it is not possible to identify individuals for potential follow-up, we aggregated survey results at the school level, and then identified schools that were repeatedly included in the surveys of 2005, 2007, 2009, 2011, 2013 and 2015. Hence, our units of analysis are schools that included classes from the 9th to 12th grades. We excluded 8th graders from the analysis to consider the more homogeneous population of high school students involved in the strikes. We also excluded private schools because less than 1% were occupied as part of the strikes and because students are generally from a higher socioeconomic status than students from public schools or subsidized private schools.

2.2. Exposure

School strikes started in early June of 2011 and lasted until December of that year. There was some overlap with the survey fieldwork period, although the most intensive and widespread parts of the strikes occurred before to the survey start date. In the 2011 version of the survey, pollsters indicated on the class registration sheet whether the school had been on strike during that year and whether the school had been occupied. This information was provided by school authorities prior to the beginning of the survey. We considered as exposed those schools that were occupied for at least 1 day.

2.3. Outcomes

We selected six outcomes on the basis of their common use in substance use research among adolescents: (1) the rate of new users of marijuana during the past year, (2) the prevalence of marijuana use during the past month, (3) the prevalence of heavy use of marijuana, (4) the prevalence of alcohol use during the past month, (5) the prevalence of heavy use of alcohol, and (6) the prevalence of drunkenness occurring at least once during the past month. For the first outcome the question was, “When was the first time you used marijuana?”; the possible answers were (a) “In the past month,” (b) “More than a month but less than a year ago,” (c) “More than a year ago,” and (d) “Never used.” The rate was estimated as the number of students who responded (a) or (b) divided by all students who had not used marijuana in their lifetime and who gave a valid answer. For the rate of past-month marijuana use, the question was, “When was the last time you used marijuana?”; this included the same answer categories as the previous question, and we divided the number of students in a school who answered (a) by all students who gave a valid response. For the rate of heavy marijuana use, the question was, “How many times have you used marijuana in the past month?”; we defined heavy use of marijuana as using it 10 or more times during the past month (Manson et al., 2017). For the rate of past-month alcohol use, we used the same question and metrics as for past-month marijuana use but referred to alcohol. Heavy use of alcohol was defined as drinking on 10 or more days during the past month, using the question “On average, how many days did you drink alcohol in the past month?” Finally, we defined past-month drunkenness as being drunk one or more times during the past month. This last outcome was first measured in 2007.

2.4. Analysis

We used descriptive statistics and graphical tools to inspect the data

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