

Exposure to State Violence and Substance Use*

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October 11, 2022

Abstract

We analyze whether exposure to state violence affects substance use at the individual level. In doing so, we bring together the political science and public health literatures on the effects of violence, analyzing an outcome that is neglected in political science and a type of violence that remains understudied in public health. We leverage a unique panel study, the Population Council's Survey of Young People (SYPE) in Egypt, to test whether rates of substance use are higher among those who were exposed to violence during the country's 2011 revolution, a moment of intense state violence against civilians. Results demonstrate that direct exposure to state violence increases substance use; respondents exposed to violence are twice as likely to use drugs, alcohol, and tobacco than those who were not. Our findings are robust to specifications that control for respondents' reported exposure to state violence prior to the revolution and substance use among family and friends, factors identified in medical research as key predictors. Our study sheds light on a fundamental predicament of authoritarian governance and the downstream effects of state violence.

Keywords: Egypt, revolution, state violence, public health, substance use

Accepted for publication in *Research & Politics*

*The authors are indebted to Nicholas Lotito for assistance in the revision of this article, and thank Daniel Tavana and participants of Yale University's Political Violence and its Legacies seminar for comments on earlier drafts. Replication files are available at <https://doi.org/10.7910/DVN/QGZAPo>.

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Introduction

States regularly use violence to defend not only against external enemies but also internal challengers. The state will be violent towards its own citizens as it seeks to maintain order, control the population, and demobilize organized opposition (Hassan, Mattingly, and Nugent 2022). Political science research on the effects of conflict find a number of consequences from exposure to state violence that align with understandings of group threat drawn from behavioral psychology (Brewer and Brown 1998), including both defensive in-group favoring behaviors (Feldman and Stenner 1997; Berrebi and Klor 2008; Canetti-Nisim et al. 2009; Hetherington and Weiler 2009; Getmansky and Zeitzoff 2014; Hadzic, Carlson, and Tavits 2020; Hoffman and Nugent 2017; Elster 2019) and positive pro-sociality (Punamaki, Qouta, and Sarraj 1997; Bellows and Miguel 2009; Balcells 2012; Voors et al. 2012; Nugent 2020). At the same time, medical studies consistently demonstrate the pernicious individual-level effects of exposure to violence of all kinds, with an overwhelming focus on exposure to interpersonal violence in the home or family (Kendler et al. 2003a; Kendler et al. 2003b; Sullivan, Kung, and Farrell 2004; Kendler, Myers, and Prescott 2007; Ogden, Dichter, and Bazzi 2022). In this article, we seek to bring these two disparate literatures into conversation and analyze whether exposure to state violence affects substance use at the individual level. Our innovation is that we focus on an outcome neglected in political science analyses and a type of violence that remains understudied in the public health literature.

To test whether exposure to state violence affects substance use, we leverage a unique panel study of young Egyptians to test whether witnessing state violence increased subsequent drug, alcohol, and tobacco use. The Population Council's Survey of Young People in Egypt (SYPE) interviewed 10,916 young adults in 2009 and again from 2013 to 2014. Both waves of the survey asked several questions about the respondent's personal substance use habits. In 2011, between the two waves, Egypt experienced a revolution as part of the Arab Spring uprisings. Revolution is an instance of contentious politics during which state violence is particularly prevalent as the state seeks to reassert its authority. During the revolution, the Egyptian state responded to protest mobilization and opposition in all forms with brute force. As a result, a large number of Egyptians were exposed to state violence, many for the first time. Egypt thus

serves as an important test case, where exposure to violence is likely to be widespread enough following the revolution to detect its effect in individual survey data. In addition, the 2014 instrument included a battery capturing the respondent's experience of the 2011 revolution, which asked whether they witnessed violence during it.

We find that exposure to state violence during the 2011 revolution significantly increased substance use; respondents exposed to violence are 1 to 2 percentage points more likely to subsequently report using drugs, alcohol, and tobacco than those not exposed to violence. Substantively, the size of this effect is akin to the effect of losing employment or experiencing depression. Our results are robust to specifications that control for respondents' reported exposure to state violence prior to the revolution and relevant substance use among friends and family, an important predictor of substance use in the medical literature. The article proceeds as follows. First, we synthesize the political science literature on the effects of state violence and the public health literature on exposure to violence and substance use. Next, we outline our empirical strategy and discuss the results of our analyses. We then conclude with the implications of our findings, the limitations of our study, and thoughts for future research.

The Effects of Exposure to State Violence

Political science studies demonstrate that exposure to violence may have both positive and negative effects on politically relevant outcomes, with an understanding of threat drawn from social psychology (Brewer and Brown 1998). Violence often engenders defensive behaviors. For example, exposure to violence decreases pro-social behavior towards out-group members, increases support for conservative preferences that may harm, punish or exclude the out-group, and results in a larger number of votes for politicians who advocate these policies (Feldman and Stenner 1997; Berrebi and Klor 2008; Canetti-Nisim et al. 2009; Hetherington and Weiler 2009; Getmansky and Zeitzoff 2014; Hadzic, Carlson, and Tavits 2020; Hoffman and Nugent 2017; Elster 2019). However, the nature of violence matters for whether it has a positive or negative effect on politics. When violence is targeted, affecting some groups and not others, it creates more divisive outcomes. When violence is widespread and shared across groups, it can

be transformative and increase pro-social political behavior and preferences (Punamaki, Qouta, and Sarraj 1997; Bellows and Miguel 2009; Balcells 2012; Voors et al. 2012; Nugent 2020). The types of violence explored in these studies include civil or international war, state violence, and terrorism. A similar mechanism underpins the effects; the life-threatening nature of violence alters the salience of politically-relevant identities, with consequences for political behavior and preferences (Balcells 2012; Nugent 2020). More direct (i.e., personal) exposure to violence tends to have a stronger effect on a variety of political, social, and economic outcomes (Zimmerman and Posick 2016).

But beyond both the positive and pernicious political effects of exposure to state violence, there are also individual experiences and consequences of violence. Medical studies demonstrate that exposure to violence correlates with an increase in substance use (Sullivan, Kung, and Farrell 2004; Löfving-Gupta et al. 2018; Andreas 2019). Genetics explain a significant amount of the variation in rates of substance use (Gillespie et al. 2007); genetic traits may account for up to two-thirds of drug, alcohol, and tobacco use disorders (Kendler et al. 2003b). But while these characteristics are immutable, they are activated by a number of contextual variables that change throughout a person's life and vary across different individuals with similar genetic inheritances, perhaps demonstrated most convincingly in twin studies (Kendler et al. 2003a; Kendler, Myers, and Prescott 2007). Exposure to violence is a particularly influential contextual trigger. Violence may take the form of domestic and parental violence (Sullivan, Kung, and Farrell 2004; Ogden, Dichter, and Bazzi 2022), community violence (Löfving-Gupta et al. 2018), or a public tragedy like a mass shooting (North, Smith, and Spitznagel 1997). The effects of exposure to violence are particularly acute when violence is experienced during the developmentally formative childhood and adolescent years (Menard, Covey, and Franzese 2015; Mueller and Tronick 2019).

A common mechanism underpins the ways in which exposure to different types of violence increases individuals' reliance on substances. Those who experience violence directly may develop physical ailments and self-medicate with substances to ease these symptoms (Van Brown, Kopak, and Hoffmann 2020). In addition, witnesses to violence are prone to developing stress- and trauma-related cognitive and psychological issues as a result and similarly self-medicate to cope (Fricchione, Ivkovic, and Yeung

2016; Liberzon and Ressler 2016; Mukhara, Banks, and Neigh 2018). The extent to which exposure to violence is direct and personal, in addition to the longevity of the exposure, matters for how detrimental it is (Wilson, Smith, and Johnson 2013).

The medical literature provides us with an important basis in theorizing whether exposure to state violence will affect substance use. While exposure to state violence may have seemingly positive or helpful group-level effects, such as in-group solidarity, it is also likely disastrous for individual mental health and substance use rates. Similar to other types of violence, state violence creates stress and trauma for those who are exposed to it, and in turn, they self-medicate with substances to alleviate these symptoms. In addition, both the medical and political science literature agree that the nature of that exposure – whether it is experienced *directly* – is important for whether violence affects an individual. In line with existing research, we thus expect that individuals in the SYPE sample who were directly exposed to state violence during the 2011 Egyptian revolution to be more likely to report subsequent substance use than comparable individuals who were not exposed to state violence during the revolution.

Empirical Strategy

To test whether exposure to state violence increases reported substance use, we leverage a unique panel study of young Egyptians, the Population Council’s Survey of Young People in Egypt (SYPE). SYPE first surveyed a nationally representative sample of nearly 15,000 Egyptians between the ages of 10 and 29 in 2009. In 2013 and 2014, SYPE re-interviewed 10,916 respondents.¹ We highlight two important aspects of the SYPE that are helpful for our analyses. First, instruments for both waves included extensive and comparable questions about individual substance use and use by family and friends. This allows us to compare increases in substance use while controlling for a variety of individual, social, and community factors that might also increase an individual’s propensity to use drugs, alcohol, and tobacco.

Second, the two waves of the survey straddled the country’s 2011 revolution, part of the wave of uprisings in the Middle East and North Africa known as the Arab Spring. A revolution is when “a state

¹ Further information about SYPE is available at <https://www.popcouncil.org/research/survey-of-young-people-in-egypt-2009-and-2014-datasets>.

or political regime is overthrown and thereby transformed by a popular movement in an irregular, extra-constitutional, and/or violent fashion” and necessitates “the mobilization of large numbers of people against the existing state” (Goodwin 2001, 11).² While states regularly employ actual or threatened violence to maintain control over populations (Hassan, Mattingly, and Nugent 2022), revolution is an instance of contentious politics that prominently features defensive and often escalating state violence against mobilized civilians (Calvert 1967; Lichbach 1987; Davenport 2007, 2015). In Egypt, 18 days of sustained mass mobilization forced President Hosni Mubarak to step down after nearly 30 years in office. While his removal was swift, it was not without violence. In 2011, nearly 900 protesters were killed in the country’s capital alone, according to a leaked government report (Kingsley and Doss 2013).

Egypt is an important contemporary case of revolution, and one in which exposure to violence is likely widespread enough that its effects should be detectable in individual survey data. In addition, the nature of exposure to state violence during revolution may vary and may be either direct or indirect. The nature of exposure to state violence is also important for the significance, size, and direction of its effects. Individuals may be personally and directly exposed to state violence targeting themselves or others around them. Individuals may also indirectly experience violence by seeing it or hearing about it on social media or on television (LeBas and Young 2020). Variation in exposure permits us to further understand the relationship between violence and substance use in line with medical studies. The 2014 SYPE instrument included a battery capturing the respondent’s experience of the 2011 revolution, which asked whether they witnessed violence during that time. This allows us to examine whether similar individuals with differing exposure to violence during the revolution report different rates of subsequent substance use. Our main analyses examining the effect of exposure to state violence on substance use exploits the panel structure of the data, which permits us to account for unobservable bias that confounds causal inferences in cross-sectional analyses. We use a linear model that includes individual and time fixed effects.

Our independent variable of interest is exposure to state violence during the 2011 revolution. SYPE asks respondents to “think about the period since the start of the January 25th revolution” and

² See also Brinton (1938) and Gross (1958).

then respond whether they saw a person being injured or killed. This serves as a measurement of direct exposure to violence. 18.5 percent of our sample responded affirmatively. In addition, respondents could report whether they witnessed violence on television or social media, namely Facebook. These questions serve as measurements of indirect exposure to violence, and 98 percent and 30 percent of respondents responded affirmatively to each question, respectively. Since questions about exposure to violence during the revolution are, obviously, only asked in the second wave of the survey, we create a 2009 baseline measure for exposure to violence using the question, “have you ever witnessed police violence?” While the questions differ slightly in phrasing, and this likely refers to direct exposure, we believe it gives us a baseline if imperfect measurement of pre-2011 exposure. We note that only a small portion of our respondents – 2.5 percent – answered the 2009 question in the affirmative.

Our dependent variables capture drug, alcohol, and tobacco use. Drug use is measured by responses to the question, “have you experimented with any drugs before?” 1.4 percent of respondents in the first wave reported experimenting with illegal drugs in wave 1 of the survey, while 1.8 percent responded affirmatively in wave 2. The vast majority of those who use drugs report using tramadol or cannabis products in a follow-up question. Alcohol use is measured by responses to the question, “have you ever tried alcohol (beer, wine) before?” 1.1 percent of respondents responded affirmatively in 2009, and 2.2 percent responded affirmatively in 2014. Finally, tobacco use is measured by responses to the question, “Which statement do you think best describes your smoking behavior?” Those who reported that they currently smoke cigarettes or other tobacco products were coded as 1, and 0 otherwise. 11.8 percent of respondents reported smoking in 2009, while 12.2 percent reported this in 2014.

We include a number of controls in our analyses motivated by the medical literature on correlates of substance use and their regular inclusion in analyses. These are discussed in more detail in Appendix A.1. This includes sex, employment status, education, socioeconomic status, age, family substance use, friend substance use, depression, generalized trust, and social connectedness.³ Summary statistics for all variables are included in Appendix A.2.⁴

³ We include a cross-sectional analysis in Appendix A.3, and the results are confirmatory. While this second set of analyses are less well identified than the panel analysis, they permit us to control for variables that may not change between the two waves but are identified in existing studies as potentially important correlates of substance use, such as sex.

⁴ The SYPE did not ask about family alcohol use.

Results

Our results demonstrate that exposure to state violence during the 2011 revolution led to a subsequent increase in reported use of all three types of substances (Table 1). For someone who witnessed violence directly, the propensity to use drugs increased by 1.1 percentage points, the propensity to use alcohol increased by 1.8 percentage points, and the propensity to use tobacco increased by 2.6 percentage points in comparison to a similar person who did not witness violence. The coefficient plot in Figure 1 visualizes the significant effect size for witnessing violence on all types of substance use. Relative to the 2009 baselines for drug (1.4 percent), alcohol (1.1), and tobacco use (11.8), these are quite large increases.

The size of the effect of witnessing violence on substance use is similar to that of becoming unemployed, experiencing depression, or becoming less religious, major life events identified in medical studies as contributing to a significant increase in substance use. We note that, consistent with medical studies, whether a respondent's family or friends use substances has the largest effect on whether an individual uses that substance, though whether this is due to exposure, genetic inheritance, or social pressure remains undetermined. However, above and beyond the effects of other important predictors, exposure to violence during the revolution remains a highly significant and substantively important variable.

Table 1: Exposure to Violence and Substance Use

	<i>Dependent variable:</i>					
	Probability of Reported Use Drug Use		Probability of Reported Use Alcohol Use		Probability of Reported Use Tobacco Use	
	(1)	(2)	(3)	(4)	(5)	(6)
Witnessed Violence	0.021*** (0.006)	0.011** (0.005)	0.023*** (0.006)	0.018*** (0.006)	0.026** (0.012)	0.026** (0.012)
Friend Drug Use		0.132*** (0.012)				
Family Drug Use		0.221*** (0.020)				
Friend Alcohol Use				0.277*** (0.025)		
Friend Tobacco Use						0.118*** (0.009)
Family Tobacco Use						0.094*** (0.007)
Employed		0.003 (0.005)		-0.008 (0.005)		0.053*** (0.012)
Unemployed		0.010* (0.005)		0.009* (0.005)		0.009 (0.012)
Attended School (Completed below secondary)		0.005 (0.007)		0.0003 (0.008)		0.013 (0.018)
Attended School (Completed secondary+)		0.003 (0.008)		-0.001 (0.008)		0.004 (0.020)
Wealth Quintile		-0.001 (0.001)		0.001 (0.001)		-0.001 (0.003)
Depression		0.011* (0.006)		0.020*** (0.007)		0.018* (0.011)
Religiosity		-0.010* (0.006)		-0.008 (0.005)		-0.018* (0.011)
Generalized Trust		0.008* (0.004)		-0.003 (0.004)		-0.006 (0.009)
Number of Friends		0.0003 (0.0003)		0.001 (0.0004)		0.001 (0.001)
Observations	18,628	15,104	15,476	13,790	15,476	13,790
R ²	0.003	0.223	0.003	0.128	0.001	0.089

Note: *p<0.1; **p<0.05; ***p<0.01. OLS models with standard errors clustered by respondent and two-way fixed effects (individual and time). Columns 2, 4, and 6 include controls for time-varying measures of family and friend usage, employment, education, SES, depression, religiosity, generalized trust, and number of friends.

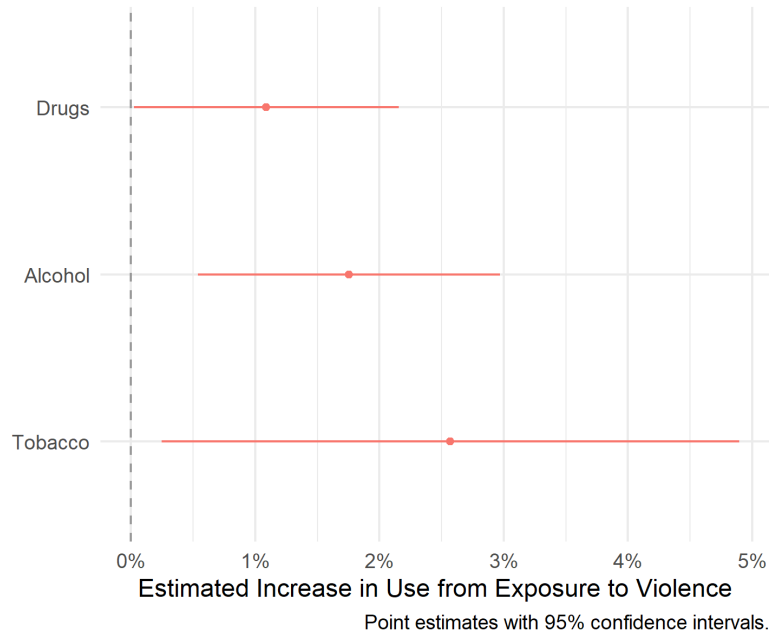


Figure 1: Marginal Effect of Witnessing Violence on Substance Use

We are also able to test whether direct or indirect exposure matters for the effect of violence on substance use. We noted above that the 2014 instrument asked about direct exposure (witnessing violence in person) and indirect exposure (seeing violence on television or social media). We substitute direct exposure for indirect exposure in the regression results included in Table 2. While seeing violence on television is significantly related to increased drug use, and seeing violence on social media is significant for both drug and alcohol use, indirect exposure is not a consistent predictor of substance use across different types.⁵ While we are unable to test the exact mechanism underpinning these results due to the limited questions asked on the SYPE survey, we believe these results confirm that proximity to violence and the extent to which exposure to violence is direct matters for the nature, size, and significance of its effect. The direct nature of exposure is identified both in political science and medical literature as being important for how violence affects political and personal behaviors through a variety of complementary emotional, cognitive, and identity mechanisms (Wilson, Smith, and Johnson 2013; LeBas and Young 2020).

⁵ The results for indirect exposure are also not consistent when we look at the cross-sectional analysis included in Appendix Table A.3.

Table 2: Different Types of Exposure to Violence and Substance Use

	<i>Dependent variable:</i>					
	Probability of Reported Use Drug Use		Probability of Reported Use Alcohol Use		Probability of Reported Use Tobacco Use	
	(1)	(2)	(3)	(4)	(5)	(6)
Saw Violence on TV	0.020* (0.011)		0.003 (0.012)		0.005 (0.026)	
Saw Violence on Social Media		0.010** (0.004)		0.011** (0.005)		-0.005 (0.010)
Friend Drug Use	0.132*** (0.012)	0.132*** (0.012)				
Family Drug Use	0.221*** (0.020)	0.222*** (0.020)				
Friend Alcohol Use			0.275*** (0.025)	0.275*** (0.025)		
Friend Tobacco Use					0.118*** (0.009)	0.118*** (0.009)
Family Tobacco Use					0.094*** (0.007)	0.094*** (0.007)
Employed	0.003 (0.005)	0.002 (0.005)	-0.006 (0.005)	-0.007 (0.005)	0.054*** (0.012)	0.054*** (0.012)
Unemployed	0.010* (0.005)	0.010* (0.005)	0.011** (0.005)	0.010** (0.005)	0.008 (0.012)	0.009 (0.012)
Attended School (Completed below secondary)	0.006 (0.007)	0.005 (0.007)	-0.001 (0.008)	-0.001 (0.008)	0.014 (0.018)	0.014 (0.018)
Attended School (Completed secondary+)	0.003 (0.008)	0.002 (0.008)	-0.002 (0.008)	-0.003 (0.008)	0.005 (0.020)	0.006 (0.020)
Wealth Quintile	-0.001 (0.001)	-0.001 (0.001)	0.0003 (0.001)	0.0004 (0.001)	-0.002 (0.003)	-0.002 (0.003)
Depression	0.011* (0.006)	0.011* (0.006)	0.016*** (0.006)	0.016** (0.006)	0.020* (0.011)	0.021* (0.011)
Religiosity	-0.009* (0.006)	-0.010* (0.006)	-0.007 (0.005)	-0.007 (0.005)	-0.016 (0.011)	-0.016 (0.011)
Generalized Trust	0.007* (0.004)	0.008* (0.004)	-0.003 (0.004)	-0.003 (0.004)	-0.007 (0.009)	-0.007 (0.009)
Number of Friends	0.0003 (0.0003)	0.0003 (0.0003)	0.001 (0.0003)	0.001 (0.0003)	0.001 (0.001)	0.001 (0.001)
Observations	15,104	15,103	15,104	15,103	14,426	14,425
R ²	0.223	0.223	0.118	0.119	0.088	0.089

Note: *p<0.1; **p<0.05; ***p<0.01. OLS models with standard errors clustered by respondent and two-way fixed effects (individual and time). All models include controls for time-varying measures of family and friend usage, employment, education, SES, depression, religiosity, generalized trust, and number of friends.

Implications, Limitations, and Future Research

We demonstrate that exposure to state violence during the 2011 revolutionary uprising in Egypt resulted in higher reported drug, alcohol, and tobacco use among a panel study of 10,916 young adults. The effect size — a 1-2 percentage point increase, depending on model specifications and type of — is similar to a number of variables identified as particularly important for shifting individual substance use, such as losing employment, experiencing depression, or becoming less religious. While inherited and contextual variables are important and continue to explain much of the variation, exposure to state violence can significantly alter substance use.

Our results point to a fundamental predicament of authoritarian governance: while violence may be necessary for states' survival, it also has unintended consequences that may create governance challenges.⁶ Increased substance use resulting from exposure to state violence has two important implications for politics in repressive contexts. First, our findings demonstrate that state violence is bad for public health; exposure has a significant negative effect on important public health outcomes. And yet state violence persists. Non-democratic regimes around the world use significant repression to quell mobilized populations (Bellin 2012), and in democracies such as the United States scholars have identified a myriad of ways that police brutality leads to negative health outcomes (Alang et al. 2017). State violence may contribute to burgeoning substance use crises as increasingly exposed populations seek to cope with the trauma of brutal regime responses.

Relatedly, the growth of substance use, by exposing more of the population to its ills, may potentially change public opinion and create demand for new government policies. Existing research finds that exposure to drug use shapes policy preferences (De Benedictis-Kessner and Hankinson 2019). To examine this further, we conducted a survey of Egyptians focused on exposure to recreational drug use and attitudes towards penalization of drug use and government funding of drug treatment facilities.⁷ Results, shown in Table A.4 and discussed in detail in Appendix A.4, demonstrate that individuals who

⁶ We are grateful to one of our anonymous reviewers for this phrasing.

⁷ See Appendix for question wording. IRB approval was received for an online survey through Qualtrics.

report exposure to drug use are more supportive of drug depenalization policies and of increased funding for drug treatment. If more people are exposed to violence and use illicit substances as a result, exposure to substance use will become more widespread in the population, in turn increasing demand for new government interventions. Both of these downstream effects highlight the potential for state violence to destabilize repressive regimes through the exacerbation of public health crises and through shaping the preferences and policy demands of citizens.

Our findings speak to the unintended consequences of political violence, and we hope our work will inspire others to expand the breadth of the outcomes analyzed. We conclude this piece by highlighting some of the limitations of our study with an eye toward future research. While the SYPE provides an invaluable panel data resource, the instrument did not include adequate questions to adjudicate the mechanism through which exposure to state violence increases substance use. In addition, because the sample was representative, it included small numbers of substance users. We surmise that the mechanism is likely some form of self-medication to deal with the trauma of being exposed to state violence, but there are other emotional, cognitive, and identity mechanisms that future studies should also explore. A creative targeted sampling of substance users would also increase the number of observations so that researchers may explore these questions with sub-group analysis. Finally, we encourage researchers to conduct studies in different contexts, especially where psychotherapy is widely available at a reasonable cost. Individuals are more likely to self-medicate when they are unable to access or afford psychotherapy and other medical treatments (Fagan, Wright, and Pinchevsky 2015), and the Egyptian context does not readily supply therapeutic treatment for substance use and abuse disorders. We also encourage other scholars to theorize and analyze the public health effects and implications of different types of state violence, by not only exploiting moments of acute mobilization, such as revolutions, but also comparing them with instances of persistent exposure such as heavy policing.

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A Appendix: Exposure to State Violence and Substance Use

A.1 Control Variables

We include a number of controls that have been identified in previous research as contributing to individual drug abuse and addiction. Table A.1 reports the summary statistics for all variables. We control for family drug use, which is a significant predictor of future use.⁸ Individual mental health issues related to anxiety and depression are highly correlated with drug use, particularly when these conditions are untreated (Edlund et al. 2015; Lai et al. 2015). In Egypt, researchers from Assiut University found that 72 percent of those with substance use disorder had severe depression compared to 6 percent of the control group (Mohamed et al. 2020). Accordingly, we control for depression among respondents using a module in the SYPE on mental health and social development.⁹

We include demographic controls for sex, employment status, education, socioeconomic status, and age, which are identified in medical studies as being important predictors of drug use (Biederman et al. 2000; Swendsen and Merikangas 2000; Galea and Vlahov 2002; Hosseinbor et al. 2014; Lai et al. 2015; Avenevoli et al. 2015; Robins 2018).¹⁰ Studies of drug use in Egypt suggest the highest rates of drug abuse among young adults, particularly males (El-Sawy, Abdel Hay, and Badawy 2010; Bassiony et al. 2018; Rabie et al. 2020). Finally, we also control for religiosity, which research suggests is negatively correlated with drug use (Chitwood, Weiss, and Leukefeld 2008). In addition to demographic covariates, an individual's relationship with the surrounding community is also important in predicting drug use. Those who feel socially disconnected or are embedded in communities of other users are more likely to use drugs (Bond et al. 2007; Branstetter, Low, and Furman 2011). We include a measurement of generalized trust and the respondents' reported number of friends to measure social connectedness. To measure connections to other drug users, we control for reported drug use by close friends.

⁸ There is a debate within the medical field whether the effect of family constitutes a genetic predisposition or environmental influence. For instance, Ahmed et al. (2020) find that genetics explained up to two-thirds of the variance in vulnerability to cocaine addiction.

⁹ We do this following the diagnosis criteria set out in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5). Respondents are coded as showing signs of depression when they agree with five or more of nine questions that measure different potential symptoms of depression (American Psychiatric Association 2020).

¹⁰ Time-varying variables are all included in the panel analysis, including employment status, education, and socio-economic status.

A.2 Summary Statistics

Table A.1: Survey Summary Statistics

Variable	N	Mean	St.Dev	Min	Max
<i>Survey of Young People in Egypt (SYPE):</i>					
Witness Violence (2014)	10890	0.18	0.39	0	1
Witness Violence (2009)	10916	0.03	0.16	0	1
Saw Violence on TV (2014)	10890	0.98	0.12	0	1
Saw Violence on Social Media (2014)	10889	0.30	0.46	0	1
Drug Use (2014)	10903	0.02	0.13	0	1
Drug Use (2009)	7761	0.01	0.12	0	1
Family Drug Use (2014)	10903	0.04	0.19	0	1
Family Drug Use (2009)	7761	0.03	0.16	0	1
Friend Drug Use (2014)	10903	0.07	0.25	0	1
Friend Drug Use (2009)	10916	0.05	0.21	0	1
Alcohol Use (2014)	10903	0.02	0.15	0	1
Alcohol Use (2009)	7761	0.01	0.10	0	1
Friend Alcohol Use (2014)	10903	0.03	0.17	0	1
Friend Alcohol Use (2009)	10916	0.02	0.13	0	1
Tobacco Use (2014)	10903	0.12	0.33	0	1
Tobacco Use (2009)	7761	0.12	0.32	0	1
Family Tobacco Use (2014)	10903	0.53	0.50	0	1
Family Tobacco Use (2009)	10916	0.50	0.50	0	1
Friend Tobacco Use (2014)	10550	0.48	0.64	0	2
Friend Tobacco Use (2009)	7335	0.48	0.66	0	2
Female	10916	0.54	0.50	0	1
Muslim	10916	0.97	0.17	0	1
Age (2014)	10891	24.23	5.70	14	36
Age (2009)	10891	19.23	5.70	9	31
Secondary Education+ (2014)	10915	0.67	0.47	0	1
Secondary Education+ (2009)	10916	0.46	0.50	0	1
Employed (2014)	10912	0.30	0.46	0	1
Employed (2009)	10916	0.20	0.40	0	1
Unemployed (2014)	10782	0.08	0.26	0	1
Unemployed (2009)	10824	0.06	0.24	0	1
Wealth Quintile (2014)	10916	3.14	1.41	1	5
Wealth Quintile (2009)	10916	2.94	1.35	1	5
Depression (2014)	10916	0.04	0.20	0	1
Depression (2009)	10916	0.07	0.26	0	1
Religiosity (2014)	10889	1.98	0.35	1	3
Religiosity (2009)	7761	1.92	0.36	1	3
Generalized Trust (2014)	10888	0.22	0.41	0	1
Generalized Trust (2009)	7761	0.10	0.30	0	1
<i>Qualtrics:</i>					
Drug Exposure	1500	0.26	0.44	0	1
Tramadol Exposure	1500	0.18	0.38	0	1
Cannabis Exposure	1500	0.19	0.39	0	1
Supports Drug Depenalization	1486	0.20	0.40	0	1
Supports Increased Drug Treatment	1476	0.75	0.43	0	1
Female	1500	0.43	0.50	0	1
Muslim	1500	0.94	0.23	0	1
Age	1446	35.12	13.13	18	88
Secondary Education+	1267	0.94	0.24	0	1
Employed	1500	0.62	0.49	0	1
Unemployed	1500	0.09	0.29	0	1
Out of Labor Force	1500	0.29	0.45	0	1

A.3 Cross-Sectional Analyses

Table A.2: Exposure to Violence and Substance Use

	<i>Dependent variable:</i>					
	Probability of Reported Use Drug Use		Probability of Reported Use Alcohol Use		Probability of Reported Use Tobacco Use	
	(1)	(2)	(3)	(4)	(5)	(6)
Witnessed Violence (2014)	0.011** (0.005)	0.013** (0.006)	0.021*** (0.007)	0.023*** (0.007)	0.021** (0.010)	0.022* (0.012)
Drug Use (2009)		0.046 (0.032)				
Friend Drug Use (2009)		0.023* (0.013)				
Family Drug Use (2009)		0.003 (0.014)				
Alcohol Use (2009)				0.008 (0.026)		
Friend Alcohol Use (2009)				0.021 (0.021)		
Tobacco Use (2009)						0.235*** (0.021)
Friend Tobacco Use (2009)						0.024** (0.010)
Family Tobacco Use (2009)						-0.005 (0.008)
Witnessed Violence (2009)		0.004 (0.012)		-0.002 (0.012)		0.041 (0.028)
Constant	0.018* (0.009)	0.076*** (0.021)	0.057*** (0.017)	0.083*** (0.027)	-0.004 (0.021)	0.173*** (0.045)
Sex/Age/Religion Controls	Y	Y	Y	Y	Y	Y
Additional 2009 Controls	N	Y	N	Y	N	Y
Governorate FE	Y	Y	Y	Y	Y	Y
Observations	10,864	7,659	10,864	7,659	10,864	7,242
R ²	0.035	0.051	0.025	0.031	0.205	0.292

Note: *p<0.1; **p<0.05; ***p<0.01. OLS models with standard errors clustered by sampling unit.

All models control for respondent sex, age, and religion. Models 2, 4, and 6 also control for 2009 measures of: employment, education, SES, depression, generalized trust, number of friends, and religiosity.

Table A.3: Different Types of Exposure to Violence and Substance Use

	<i>Dependent variable:</i>					
	Probability of Reported Use Drug		Probability of Reported Use Alcohol		Probability of Reported Use Tobacco	
	(1)	(2)	(3)	(4)	(5)	(6)
Witnessed Violence (2014)	0.013*** (0.005)	0.015** (0.006)	0.021*** (0.007)	0.023*** (0.007)	0.032*** (0.010)	0.030** (0.013)
Saw Violence on TV (2014)	0.010 (0.006)	0.020*** (0.004)	0.006 (0.010)	0.009 (0.012)	0.021 (0.021)	0.025 (0.028)
Saw Violence on Social Media (2014)	-0.007* (0.004)	-0.005 (0.005)	0.001 (0.004)	0.003 (0.005)	-0.030*** (0.008)	-0.022** (0.010)
Drug Use (2009)		0.045 (0.032)				
Friend Drug Use (2009)		0.023* (0.013)				
Family Drug Use (2009)		0.003 (0.014)				
Alcohol Use (2009)				0.008 (0.026)		
Friend Alcohol Use (2009)				0.021 (0.021)		
Tobacco Use (2009)						0.235*** (0.021)
Friend Tobacco Use (2009)						0.023** (0.010)
Family Tobacco Use (2009)						-0.006 (0.008)
Witnessed Violence (2009)		0.004 (0.012)		-0.002 (0.012)		0.041 (0.028)
Constant	0.012 (0.011)	0.058*** (0.022)	0.050** (0.021)	0.072** (0.032)	-0.004 (0.030)	0.161*** (0.055)
Sex/Age/Religion Controls	Y	Y	Y	Y	Y	Y
Additional 2009 Controls	N	Y	N	Y	N	Y
Governorate FE	Y	Y	Y	Y	Y	Y
Observations	10,863	7,658	10,863	7,658	10,863	7,241
R ²	0.035	0.051	0.025	0.031	0.206	0.293

Note: *p<0.1; **p<0.05; ***p<0.01. OLS models with standard errors clustered by sampling unit. All models control for respondent sex, age, and religion. Models 2, 4, and 6 also control for 2009 measures of: employment, education, SES, depression, generalized trust, number of friends, and religiosity.

A.4 State Violence, Increased Substance Use, and Drug Policy Preferences

In this section, we examine the relationship between exposure to drug use and drug policy attitudes. In March 2020, we fielded an online survey of 1,500 Egyptians. The instrument asked respondents about their drug use and the drug use among their friends and family, as well as about their preferences regarding the (de-)penalization of drug use and government funding of drug treatment facilities, including the following four questions:

Have you or anyone close to you (family or friend) ever used hashish as a recreational drug?

- A. Yes.
- B. No.

Have you or anyone close to you (family or friend) ever used tramadol as a recreational drug?

- A. Yes.
- B. No.

Which is closest to your opinion regarding Egypt's law concerning the criminalization of the consumption of marijuana and the efforts to decriminalize marijuana in Egypt? [*Those selecting A or B are coded as supporting depenalization.*]

- A. Possession of marijuana should not be a crime punishable by law.
- B. People arrested for possession of marijuana should not serve mandatory prison sentences for at least the first two offenses.
- C. Judges should determine prison sentences on a case by case basis.
- D. People arrested for possession of marijuana should always serve mandatory prison sentences.

Do you think that the Egyptian government should provide additional financial support for drug treatment facilities? [*Those selecting A are coded as supporting increased funding.*]

- A. Yes, the Egyptian government should provide more financial support for drug treatment facilities.
- B. Government support should remain the same for drug treatment facilities.
- C. No, the Egyptian government should reduce its financial support for drug treatment facilities.

Figure A.1 displays the distribution of policy preferences regarding drug penalization. We see that respondents who have used drugs or know others who have are more likely to support drug depenalization, defined as supporting either full decriminalization of cannabis possession or the depenalization of the first two offenses.

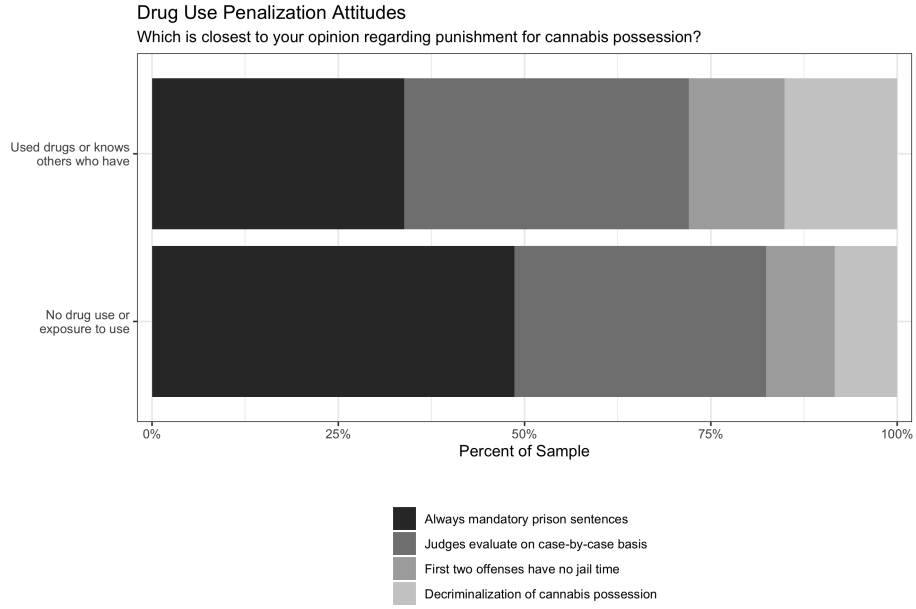


Figure A.1: Attitudes toward penalization for drug use, Egypt 2020

Figure A.2 displays the distribution of respondent preferences regarding drug treatment resources. Respondents who have used drugs or know others who have are more likely to support increased state funding for drug treatment programs.

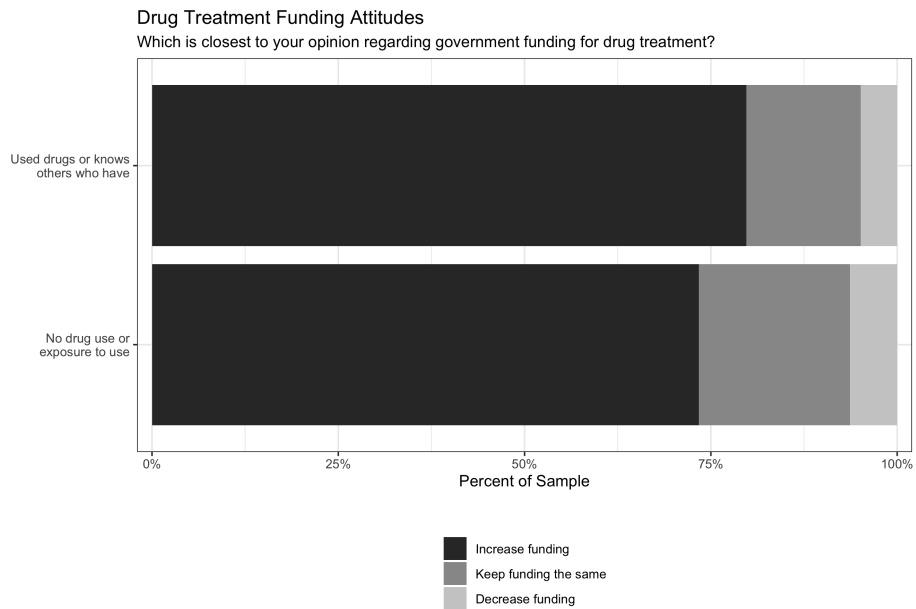


Figure A.2: Attitudes toward funding for drug treatment programs, Egypt 2020

Regression results demonstrate that exposure to drug use is associated with decreased support for punitive governmental drug policies. Individuals who report cannabis and tramadol use themselves or by friends and family are more supportive of drug depenalization policies and of increased funding for drug treatment. Columns 1 and 2 of Table A.4 demonstrate that those who are exposed to the recreational use of either cannabis or tramadol are over 12 percentage points more likely to support depenalization. For this analysis, we use a linear probability model that takes 1 if the respondent supports the full decriminalization of cannabis possession or the depenalization of the first two offenses or if the respondent supports increasing funding. This result holds when we control for respondent gender, age, religion, education level, and employment status. Columns 3 and 4 of Table A.4 demonstrate that those with drug use exposure are over 5 percentage points more likely to support increased state funding for drug treatment programs.

Table A.4: Qualtrics Survey: Exposure to Drug Use and Policy Attitudes

	<i>Dependent variable:</i>			
	Probability of Support for Policy		Drug Treatment	
	Drug Depenalization (1)	Drug Depenalization (2)	Drug Treatment (3)	Drug Treatment (4)
Exposure to Drug Use	0.122*** (0.023)	0.158*** (0.026)	0.059** (0.026)	0.077*** (0.028)
Employed		-0.029 (0.027)		0.013 (0.029)
Unemployed		0.003 (0.045)		-0.068 (0.048)
Secondary+		-0.050 (0.053)		0.221*** (0.057)
Female	-0.084*** (0.022)	-0.064*** (0.024)	0.031 (0.024)	0.034 (0.026)
Age	-0.003*** (0.001)	-0.003*** (0.001)	-0.001 (0.001)	-0.001 (0.001)
Muslim	-0.112** (0.046)	-0.100** (0.049)	-0.023 (0.050)	-0.011 (0.052)
Constant	0.422*** (0.052)	0.456*** (0.074)	0.782*** (0.057)	0.575*** (0.079)
Observations	1,433	1,211	1,426	1,206
R ²	0.049	0.056	0.005	0.025

Note: *p<0.1; **p<0.05; ***p<0.01.
OLS models. All models control for respondent sex, age, and religion.
Models 2 and 4 also control for employment and education.

As we discuss in the article's conclusion, if exposure to state violence increases public exposure to the drug crisis, regimes may actually contribute to growing demands for drug policy reforms. With these demands left unmet, the state may face new popular grievances as the downstream result of its authoritarian governance and heavy-handed response to opposition.

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