Adolescent health brief

Using Substances to Cope With the COVID-19 Pandemic: U.S. National Data at Age 19 Years

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A B S T R A C T

Purpose: To examine predictors of using substances to cope with the COVID-19 pandemic, including pandemic-related isolation, stress, economic hardship, demographics, and prepandemic substance use.
Methods: A U.S. national sample (N = 1,244) was followed from the 12th grade in Spring 2019 to Fall 2020 (M = 19.6 years) when young adults were asked about their use of marijuana, vaping, drinking, and other drugs to cope.
Results: In Fall 2020, 15.7% reported using marijuana, 8.9% increased vaping, and 8.2% increased drinking to cope with social distancing and isolation. In multivariable analyses controlling for demographics and prepandemic substance use, COVID-related isolation was associated with marijuana use (odds ratio = 1.31, 95% confidence interval = 1.06—1.63) and economic hardship with increased drinking (odds ratio = 1.39, 95% confidence interval = 1.01—1.92). There were few demographic differences. Most (>80%) who reported COVID-related substance use coping used that substance before pandemic.
Discussion: Young people reported using substances to cope with the COVID-19 pandemic, especially if they reported prepandemic use.

IMPLICATIONS AND CONTRIBUTION

In Fall 2020, 15.7% of 19-year-olds used marijuana to cope with the COVID-19 pandemic, 8.2% used more alcohol, and 8.9% vaped more. These substance use coping behaviors were associated with COVID-19-related stress, isolation, and economic hardship and were more common among those who used the substances before the pandemic.

The COVID-19 pandemic led to social distancing and isolation. U.S. young adults reported perceived increases in loneliness, anxiety, and depression during the pandemic [1] and more mood symptoms from before to after pandemic [2,3]. To deal with these stresses, they may have used substances to cope. Isolation [1,4], stress [2,5], and economic hardship [6] have been associated with substance use, and experiencing pandemic-related increases in any of these factors would be expected to heighten the risk for substance use. A key to understanding the impacts of the pandemic on substance use is the extent to which young people reported increases in using substances to cope [7], which is associated with long-term risks for substance use disorder symptoms [8,9]. Previous research is limited in generalizability but has demonstrated possible pandemic-related increases in alcohol, marijuana, and other drug use among adolescents and young adults [1,3,10—12] although substance use patterns vary [13—15].

Substance use in young adulthood differs by sociodemographic characteristics and adolescent substance use. Longitudinal data are needed to examine pandemic-related substance use coping by prepandemic substance use. The present study is based on a U.S. national, longitudinal sample followed up from high school in Spring 2019 (before pandemic) to age 19 years in Fall 2020 (during pandemic).

Specific research questions were as follows: (1) What proportion of 19-year-olds used substances to cope with the COVID-19 pandemic in Fall 2020? (2) Were COVID-specific experiences (i.e., isolation, stress, economic hardship) associated with using substances to cope? (3) Did substance use coping behaviors differ by demographic characteristics and prepandemic substance use?

Methods

Data came from the Monitoring the Future (MTF) Vaping Supplement collected from September to November 2020. Participants were selected from a nationally representative sample of U.S. 12th-grade students participating in the MTF in Spring 2019 [16]. Of the 13,713 12th-grade 2019 MTF participants, 7,850 were eligible for the Vaping Supplement (ineligibility included random selection into the MTF longitudinal study [17] [N = 2,450] or no contact information [N = 3,413]). Of those eligible, 4,358 were randomly selected, with oversampling of those who reported vaping or other substance use in the 12th grade (modal age: 18 years). Of invited individuals, 1,244 (28.5%) consented and participated in the 1-year follow-up survey. The study was approved by an institutional review board. The sample was M = 19.6 years (SE = .02), 56.0% male, 57.6% non-Hispanic White, 47.2% full-time 4-year college students, and 57.8% had a parent with college education.

Measures

Substance use coping was measured in Fall 2020 by asking, "To cope with social distancing and isolation, are you doing any of the following?" Items (yes/no) included "smoking more cigarettes," "vaping more," "drinking more alcohol," "using nonprescription drugs," "using prescription drugs," and "using cannabis or marijuana." [18].

COVID-related experiences were assessed by asking, "How much has the COVID-19 situation made you feel isolated or alone?" and "How much has social distancing caused stress for you?" (0 = not at all to 4 = extremely), and "Have you experienced any of the following as a result of the COVID-19 pandemic?" Responses (yes/no) to the last question were used to generate an economic hardship count (0–4) of not having enough money to eat, pay rent, pay for gas, and not having a regular place to sleep or stay.

Demographics included birth sex (male and female), race/ethnicity (non-Hispanic White and all other), full-time 4-year college/university student (yes/no), and parental college education (at least one parent graduated from college or not) as covariates.

Pre-pandemic past-year substance use (any/none) was measured in Spring 2019 (as part of the MTF 12th grade survey) and included vaping, marijuana use, and alcohol use.

Analytic strategy

Analyses used weighted descriptive analyses (Table 1) and multivariable logistic regressions (Table 2). Ten multiple imputations were used. Weights were used to account for the complex survey design and attrition. For each substance use coping outcome, three sets of regressions were examined: model 1

Table 1
Weighted descriptive statistics for COVID-related substance use coping behaviors at age 19 years and bivariate differences by COVID-related experiences, demographics, and age 18 substance use

	Marijuana use to cope			Increased vaping to cope			Increased drinking to cope			Overall
% Reporting yes (95% CI):	15.7 (12.6, 18.9)			8.9 (6.3, 11.5)			8.2 (6.2, 10.1)			
Variables	Mean (95% CI)									
	Yes	No	*p*	Yes	No	*p*	Yes	No	*p*	
COVID-related isolation (0–4 rating)[a]	**2.2 (1.9, 2.5)**	**1.6 (1.5, 1.7)**	**<.001**	**2.3 (2.0, 2.5)**	**1.6 (1.5, 1.7)**	**<.001**	**2.4 (2.1, 2.7)**	**1.6 (1.5, 1.7)**	**<.001**	1.7 (1.6, 1.8)
COVID-related stress (0–4 rating)[b]	**1.6 (1.3, 1.9)**	**1.2 (1.2, 1.3)**	**.01**	**1.8 (1.4, 2.1)**	**1.3 (1.2, 1.4)**	**.01**	**2.0 (1.6, 2.4)**	**1.2 (1.2, 1.3)**	**<.001**	1.3 (1.2, 1.4)
COVID-related economic hardship (0–4 count)	**.6 (.4, .9)**	**.4 (.3, .4)**	**.01**	.6 (.3, .9)	.4 (.3, .4)	.07	.7 (.3, 1.0)	.4 (.3, .4)	.05	.4 (.3, .5)
% (95% CI)										
Male sex (vs. female)	58.9 (48.7, 69.1)	55.4 (51.9, 58.9)	.53	58.6 (44.5, 72.7)	56.7 (52.3, 59.1)	.70	54.2 (42.6, 65.7)	56.1 (52.7, 60.0)	.75	56.0 (52.7, 59.2)
Non-Hispanic White (vs. all other)	59.0 (48.2, 69.9)	57.4 (53.8, 60.9)	.78	67.9 (54.7, 81.2)	56.6 (53.1, 60.2)	.13	69.2 (57.6, 80.8)	56.6 (53.0, 60.2)	.06	57.6 (54.2, 61.1)
Current student	38.6 (28.3, 48.8)	48.0 (45.2, 52.4)	.08	**25.4 (45.8, 52.8)**	**49.3 (13.5, 37.4)**	**<.001**	52.3 (43.1, 50.3)	46.7 (40.3, 64.4)	.38	47.2 (43.7, 50.6)
Parental education	58.4 (47.6, 69.2)	57.7 (53.8, 61.6)	.91	**52.4 (36.0, 68.8)**	**58.3 (54.8, 61.9)**	**.02**	**71.9 (60.8, 83.0)**	**57.0 (52.7, 60.4)**	**.02**	57.8 (54.2, 61.4)
Past-year substance use at age 18 years										
Marijuana	**85.8 (79.5, 92.2)**	**25.7 (22.5, 28.8)**	**<.001**							35.2 (31.7, 38.6)
Vaping				**80.9 (67.5, 94.3)**	**31.6 (27.5, 35.8)**	**<.001**				35.8 (31.6, 39.9)
Alcohol							**86.0 (77.6, 94.4)**	**51.0 (47.3, 54.6)**	**<.001**	53.8 (50.4, 57.3)

N = 1,244; N for past-year vaping analyses is reduced because questions asked of only a randomly selected subsample (n = 811).
p-values for differences are from logistic regression models with multiple imputed data that included only bivariate associations of each variable and each substance use outcome.
Bolded relationships are statistically significant (*p* < .05).
Current student indicated current full-time student in a 4-year college/university (vs. other); parental education indicates one parent has a college degree (vs. other).
CI = confidence interval.
[a] Measured using the following question: "How much has the COVID-19 situation made you feel isolated or alone?"
[b] Measured using the following question: "How much has social distancing caused stress for you?"

Table 2
Logistic regression results for COVID-related substance use coping behaviors at age 19 years

Substance use coping:	Marijuana use			Increased vaping			Increased drinking		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Variables	AOR (95% CI)								
COVID-related isolation (0–4)[a]	**1.35** (1.09, 1.68)**	**1.35** (1.10, 1.67)**	**1.47*** (1.18, 1.83)**	**1.32** (1.07, 1.61)**	**1.31* (1.06, 1.63)**	1.30 (.98, 1.74)	1.29 (.97, 1.70)	1.28 (.97, 1.68)	1.27 (.97, 1.66)
COVID-related stress (0–4)[b]	1.02 (.81, 1.29)	1.07 (.85, 1.34)	1.02 (.81, 1.28)	1.11 (.88, 1.41)	1.21 (.95, 1.56)	1.30 (.95, 1.78)	1.30 (.98, 1.73)	1.27 (.96, 1.69)	1.26 (.96, 1.65)
COVID-related economic hardship (0–4)	**1.31* (1.04, 1.65)**	**1.29* (1.01, 1.65)**	1.12 (.83, 1.50)	1.23 (.91, 1.64)	1.17 (.84, 1.63)	1.02 (.65, 1.61)	1.26 (.92, 1.71)	**1.41* (1.01, 1.96)**	**1.39* (1.01, 1.92)**
Male sex (vs. female)	~	1.30 (.81, 2.08)	1.41 (.84, 2.38)	~	1.28 (.68, 2.42)	1.81 (.83, 3.93)	~	1.16 (.70, 1.93)	1.18 (.71, 1.97)
Non-Hispanic White (vs. all other)	~	1.16 (.68, 1.95)	.95 (.54, 1.66)	~	**1.97* (1.01, 3.85)**	1.90 (.84, 4.32)	~	1.68 (.95, 2.98)	1.42 (.79, 2.54)
Current student	~	.63 (.37, 1.05)	.69 (.40, 1.18)	~	**.31*** (.15, .63)**	.61 (.26, 1.41)	~	1.06 (.63, 1.78)	1.09 (.64, 1.84)
Parental education	~	1.09 (.60, 1.95)	.98 (.53, 1.81)	~	.78 (.36, 1.67)	**.40* (.17, .96)**	~	1.76 (.98, 3.18)	1.61 (.89, 2.91)
Past-year substance use at age 18 years									
Marijuana	~	~	**18.14*** (10.00, 32.89)**	~	~	~	~	~	~
Vaping	~	~	~	~	~	**9.46*** (3.81, 23.49)**	~	~	~
Alcohol	~	~	~	~	~	~	~	~	**5.20*** (2.51, 10.78)**

Total sample N = 1,244; for model 3 for increased vaping, N = 811.
Bold indicates statistical significance; ***$p < .001$; **$p < .01$; *$p < .05$.
Current student indicated current full-time student in a 4-year college/university (vs. other); parental education indicated one parent had a college degree (vs. other).
AOR = adjusted odds ratio; CI = confidence interval.
[a] Measured using the following question: "How much has the COVID-19 situation made you feel isolated or alone?"
[b] Measured using the following question: "How much has social distancing caused stress for you?"

included COVID-related experiences, model 2 added demographics, and model 3 also added prepandemic past-year use of that substance.

Results

In 2020, 15.7% reported using marijuana, 8.9% increased vaping, and 8.2% increased drinking to cope with social distancing and isolation. Approximately 1% or less reported smoking more cigarettes, prescription drug use, and nonprescription drug use; analyses with these substances were not conducted owing to low endorsement.

Bivariate analyses showed that marijuana use was positively associated with COVID-related isolation, stress, and economic hardship (Table 1); no demographic differences were observed. Increased vaping was positively associated with COVID-related isolation and stress. Non-full-time students reported higher prevalence (12.6%) of increased vaping than full-time students (4.8%). Increased drinking was positively associated with COVID-related isolation and stress. Higher parental education was associated with increased drinking (10.2% parents with college education vs. 5.5% others).

In multivariable regressions (Table 2), COVID-related isolation and economic hardship were positively associated with marijuana use in model 1 and model 2 (adding demographics), and isolation remained positively associated in model 3 (adding prepandemic marijuana use). Prepandemic marijuana use was positively associated with marijuana use to cope with the pandemic.

COVID-related isolation was positively associated with increased vaping (models 1 and 2). It was not statistically significant in model 3, although odds ratios were of similar magnitude. Non-Hispanic White participants had higher odds, and full-time college students had lower odds, of increased vaping. Prepandemic vaping was positively associated with increased vaping to cope with the pandemic.

COVID-related measures were not significantly associated with increased drinking in model 1, but economic hardship was positively associated in models 2 and 3. Prepandemic alcohol use was associated with increased drinking to cope with the pandemic.

Discussion

Using substances to cope has increased markedly in the past 40 years [19], even before the pandemic, and is associated with later symptoms of substance use disorders [8,9]. The COVID-19 pandemic introduced massive changes to young people's lives, including isolation, stress, and economic hardships. These characteristics were associated with reporting using marijuana, using alcohol, and vaping to cope with the pandemic in a national sample of young adults.

Study limitations included reliance on a self-report item that specified an increased use to cope with social distancing and isolation, confounding with co-occurring developmental changes during the transition out of high school, and reliance on a school-based sample, thereby excluding high-school dropouts. There was also a lack of specification about the substance vaped and limited data on prepandemic substance use motives.

Most young adults did not report using substances to cope with the COVID-19 pandemic. However, a vulnerable group which previously used substances and/or experienced

pandemic-related isolation, stress, and economic hardship is at risk. Understanding these impacts is critical for developing interventions to mitigate short- and long-term risks for substance use disorders and negative consequences.

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