Substance Use Among Adults 35 Years of Age: Prevalence, Adulthood Predictors, and Impact of Adolescent Substance Use

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It has been shown that substance use peaks during late adolescence and young adulthood and declines thereafter.[1,2] As midlife begins and individuals assume more personal, familial, and societal responsibilities, the incentives and the opportunities to use substances generally subside, and concerns regarding health risks and negative consequences of substance use tend to increase. Of course, substance use occurs across the life span, and—even at midlife—many still use illicit substances occasionally, licit substances excessively, or prescription drugs without a doctor's prescription. The adverse health effects of continued substance use attest to the importance of examining substance use during midlife. Substance use is related to diseases such as emphysema, lung cancer, and liver disease, and intoxication from alcohol and other drugs remains a risk factor for automobile accidents.

One purpose of our study was to examine prevalence rates of current cigarette, marijuana, and cocaine use, as well as heavy drinking, among American adults aged 35 years by focusing on the extent of use among specific segments of this population. A second purpose of our study was to examine how demographics and adulthood roles and experiences relate to substance use at 35 years of age. Various factors are known to be related to substance use among adolescents or young adults. For example, women are less likely than men to abuse alcohol and use illicit drugs. Effects of factors such as race/ethnicity, birth cohort, being married, attending college, and becoming a parent also have been reported among young adults.[3–5] Our study investigated which of these factors continues to be significantly associated with substance use during midlife.

Other factors that are associated with substance use during young adulthood, such as occupational status, may become more strongly associated with use in middle adulthood, when careers become more stable and

Objectives. We examined the prevalence of substance use among American adults aged 35 years, and we considered adulthood predictors and the impact of adolescent substance use.

Methods. National panel data were drawn from the Monitoring the Future study. Logistic regressions were conducted to assess the impact of demographics, life experiences, and adolescent substance use on smoking, heavy drinking, prescription drug misuse, marijuana use, and cocaine use at 35 years of age.

Results. Factors related to increased likelihood of substance use include high school use, unemployment, and noncustodial parenthood. Lower use was associated with being female, a college graduate, a professional, married, or a custodial parent.

Conclusions. Among those aged 35 years, substance use was still rather prevalent and was a function of adulthood roles, experiences, and previous use. (*Am J Public Health.* 2004;94:96–102)

more is invested in work life. For example, studies have shown that high school marijuana use relates to occupational attainment during young adulthood. Among men, experimental use of marijuana in high school has been found to be unrelated to later occupational attainment 10 years after high school, although greater use during high school does relate to lower occupational attainment; among women, these associations are less clear.[6] As occupational careers unfold and individual differences in career paths become more marked, long-term consequences of adolescent substance use may become more pronounced.

The third purpose of our study was to determine how substance use at 35 years of age relates to use 17 years earlier, when the participants were high-school seniors. Some forms of substance use, particularly cigarette smoking, are known to be highly stable across time.[3] Also, evidence exists that individuals who have not initiated drug use by the age of 20 years are unlikely to initiate use later.[2] Therefore, our study examined high school use as a predictor of use at 35 years of age.

We sought to determine the prevalence of current and recent substance use at the beginning of midlife. We also investigated the association between substance use at 35 years of age and various important demographics,

social roles, adulthood experiences, and substance use at 18 years of age. We used multivariate analyses to assess the extent of overlap among the various predictors of substance use at 35 years of age.

METHODS

We gathered data from the Monitoring the Future study, which is described in detail elsewhere.[1,7] Each year, the project surveys a nationally representative sample of 17 000 high-school seniors in approximately 135 schools, which are selected through a multistage sampling procedure. Approximately 2400 participants are randomly selected from each group of seniors for follow-up, with heavy drug users oversampled at a rate of 3 to 1. Follow-up surveys are mailed to these participants on a biennial basis until they are 30 years of age. Additional surveys occur when the participants are 35 years of age, and those surveys were the primary basis of our study. We used data from 7 high school senior cohorts: the first set was collected between 1977 and 1983, when the participants were high school seniors, and the second set was collected between 1994 and 2000, when the participants were 35-year-old adults. The total unweighted sample of 10 225 represented approximately 61% of the participants

originally selected for follow-up. The weighted sample for our study was 7541. Previous attrition analyses with panel samples from the Monitoring the Future study have shown that participants who continue to respond to the study are more likely to be female, White, higher on high school grade point average and parental education level, and lower on high school truancy and senior year substance use compared with those who drop out of the study.[8,9]

Dichotomous measures of use of 5 substances at 35 years of age were included in our study: cigarette use in the past 30 days, heavy drinking (5 or more drinks in a row) in the past 2 weeks, marijuana use in the past 30 days, cocaine use in any form in the past 12 months, and prescription drug use (amphetamines, barbiturates, tranquilizers, or prescription narcotics) without a prescription in the past 12 months. The measures are described in detail in other publications,[1] and other analyses have found these measures to be reliable and valid.[10-12]

Participants were categorized according to the year in which they were high-school seniors. The first cohort group included those who were in the 12th grade between 1977 and 1980; the second cohort group included those who were high-school seniors between 1981 and 1983. A 3-level educational attainment variable was used to classify participants: those who never attended college, those who attended some college but did not earn a degree, and those who graduated from college.

Occupational attainment was determined by asking participants to indicate the category that best described their primary job. Participants were then classified into 1 of 5 categories based on their response (Table 1). Participants' employment stability was coded according to whether each respondent had been continuously employed or had been unemployed and looking for work for 1 week or more during the past 12 months. Among those who reported some unemployment during the past year (9% of the sample), the modal length of unemployment was 5 to 9 weeks and the mean length was 3 to 4 weeks.

Participants were categorized into 2 groups according to their current marital status: those who were not married or not living

TABLE 1—Job Categories Grouped by Survey Responses

Group	Job Categories
I	Laborer
	Service worker
	Operative or semiskilled worker
II	Sales clerk in a retail store
	Clerical or office worker
	Protective service
	Military service
	Craftsman or skilled worker
	Farm worker or farm manager
III	Owner of small business
	Sales representative
	Manager or administrator
IV	Professional without doctoral degree
	Professional with doctoral degree
V	Homemaker

with their spouse and those who were married and living with their spouse. Parental status was determined by reported number of children and each child's living arrangements. Three categories of participants were formed: participants without children, participants with at least 1 child living with them on a full- or part-time basis (i.e., custodial parents), and participants who were parents but had no children living with them on either a part- or full-time basis (i.e., noncustodial parents).

Participants also were categorized according to their substance use history during their senior year of high school. Each respondent was categorized into 1 of 4 levels of cigarette use: (1) never smoked, (2) some experience with smoking but no use in the past 30 days, (3) some cigarette use in the past 30 days but not a regular smoker, and (4) regular use—smoked one half pack per day or more in the past month. Dichotomous measures of substance use history for 3 other substances also were included: heavy drinking (5 or more drinks in a row) in the 2 weeks prior to the survey, lifetime use of marijuana, and lifetime use of other illicit drugs. The reliability and validity of these measures have been reported elsewhere.[13]

All analyses were conducted with SAS software (SAS Institute Inc, Cary, NC) and used weighted data. Weights were calculated to ad-

just for the oversampling of drug users (thus obtaining an accurate representation of the original population) and the differential attrition among users. Separate weights were created to adjust for differential dropout among users of cigarettes, alcohol, marijuana, and all other illicit drugs. For cigarettes, alcohol, and marijuana, weights specific to each substance were used. The weight for illicit drug use was used for analyses involving cocaine and misuse of prescription drugs.

RESULTS

Prevalence of Substance Use at 35 Years of Age

Table 2 shows the prevalence of use of each substance among adults aged 35 years by selected demographics. Approximately 26% of men and 24% of women aged 35 years had smoked cigarettes in the past 30 days, 32% of men and 13% of women reported recent heavy drinking, 13% of men and 7% of women reported using marijuana in the past 30 days, 6% of men and 3% of women reported using cocaine within the past 12 months, and 7% of men and 8% of women reported misusing prescription drugs within the past 12 months.

Predictors of Substance Use at 35 Years of Age

Table 3 shows odds ratios from a series of bivariate and multivariate logistic regressions that predicted substance use. Demographics and lifestyle factors were used to predict use of cigarettes, alcohol, marijuana, and cocaine. Odds ratios that are significant at the $P<.01$ level (justified because of the relatively large sample sizes) are indicated. Gender was a significant factor for 3 of the substances, with men having higher rates of heavy drinking, marijuana use, and cocaine use than women. There were no gender differences in smoking or misuse of prescription drugs. African Americans had lower rates of heavy drinking, marijuana use, and misuse of prescription drugs than did White Americans. African Americans' cigarette use and cocaine use were not significantly different from those of White Americans.

The year in which participants graduated from high school was, for the most part, unre-

TABLE 2—Prevalence of Smoking, Drinking, and Illicit Drug Use: Monitoring the Future, 1994–2000

	Percentage of Total[a]		Cigarette Smoking (Past 30 Days)		Heavy Drinking (Past 14 Days)		Marijuana Use (Past 30 Days)		Cocaine Use (Past 12 Months)		Prescription Drug Misuse (Past 12 Months)	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Total	3372	4169	26.47	24.04	32.10	12.90	12.69	6.71	6.06	3.13	7.41	8.16
Race/ethnicity												
White	88	85	26.31	23.93	32.61	12.89	12.98	6.86	5.86	3.13	7.65	8.56
African American	6	9	25.53	23.62	28.05	11.33	7.82	4.83	6.69	2.38	1.54	5.28
Other	6	6	28.51	25.03	28.07	15.09	13.43	6.87	8.88	5.29	10.11	7.43
Cohort												
1977–1980	61	60	27.34	25.52	31.66	12.93	12.93	7.04	6.13	3.27	7.82	8.19
1981–1983	39	40	25.24	21.98	32.00	13.48	13.48	6.20	5.96	3.02	6.78	8.12
Education												
No college	30	29	38.89	32.32	36.53	16.71	16.71	9.64	7.66	4.58	10.01	10.22
Some college	28	35	31.21	27.90	33.10	13.75	16.36	6.90	7.90	3.59	9.46	9.53
College degree	43	37	14.24	13.52	28.40	9.32	9.10	4.23	3.78	1.63	4.26	5.21
Job classification												
I	13	12	38.16	34.48	34.77	17.92	17.16	9.94	7.56	6.10	8.55	11.64
II	29	27	31.69	28.4	35.36	14.85	14.85	8.31	6.63	3.44	8.49	8.76
III	24	16	23.49	27.17	36.83	15.08	13.43	7.39	5.87	2.45	6.44	8.12
IV	33	33	16.48	16.33	25.21	9.98	9.51	4.89	4.02	2.34	5.56	6.58
Homemaker	1	12	26.17	18.44	23.01	8.10	5.78	3.53	1.73	2.85	7.60	5.96
Employment stability												
Continuously employed	91	91	25.11	22.96	31.90	12.57	11.81	6.32	5.50	2.96	7.01	7.65
Unemployed	9	9	39.48	30.82	34.00	16.45	23.15	8.88	8.02	5.13	11.26	13.35
Marital status												
Married	70	72	22.49	19.47	28.65	10.20	9.53	5.12	3.80	2.04	5.75	6.70
Unmarried	30	28	35.04	35.49	39.43	19.14	19.89	10.53	11.36	5.93	11.05	11.86
Parental status												
No children	33	25	27.00	25.60	36.20	16.83	16.53	9.05	9.22	4.54	8.00	9.62
Noncustodial parent	5	4	42.30	32.47	40.71	16.85	19.54	5.31	11.81	3.12	10.92	9.08
Custodial parent	63	72	24.76	23.03	29.17	11.25	10.15	5.90	3.96	2.68	6.79	7.52

[a]Weighted cases based on participants who responded to the marijuana item.

lated to later substance use. However, participants who graduated between 1980 and 1983 were less likely to smoke cigarettes at 35 years of age than were those who graduated between 1976 and 1979. Those who had completed a college degree were less likely than those who did not attend college to smoke cigarettes, drink heavily, use marijuana, use cocaine, or misuse prescription drugs. Those who took some college classes after high school were less likely to either smoke or drink heavily compared with those who had taken no college classes.

Professionals both with and without doctoral degrees were less likely to smoke, drink heavily, use marijuana, use cocaine, or misuse prescription drugs than were adults with other types of jobs. Owners of small businesses, sales representatives, managers, and administrators were more likely to drink heavily than were low- and semiskilled workers. Adults with a recent history of unemployment were more likely to smoke, use marijuana, use cocaine, and misuse prescription drugs compared with those who had been employed continuously over the past year. Homemakers

were less likely than those who held jobs outside the house to smoke, drink heavily, use marijuana, or misuse prescription drugs.

Married individuals were less likely than unmarried or separated individuals to smoke cigarettes, drink heavily, use marijuana, use cocaine, or misuse prescription drugs. Rates of heavy drinking, marijuana use, and cocaine use were lower among parents. These effects held only for parents whose children lived with them. Parents whose children lived away from them were more likely to smoke than were participants with no children, but they

TABLE 3—Bivariate and Multivariate Odds Ratios (ORs) Predicting Substance Use Behaviors: Monitoring the Future, 1994–2000

	Percentage	Cigarette Smoking Bivariate OR	Multivariate OR	Heavy Drinking Bivariate OR	Multivariate OR	Marijuana Use Bivariate OR	Multivariate OR	Cocaine Use Bivariate OR	Multivariate OR	Prescription Drug Misuse Bivariate OR	Multivariate OR
Gender											
Men[a]	45	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Women	55	0.88	0.74*	0.31*	0.41*	0.50*	0.56*	0.51*	0.49*	1.11	1.14
Race/ethnicity											
White[a]	86	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
African American	8	0.96	1.05	0.74*	0.77	0.59*	0.55*	0.89	1.00	0.46*	0.33*
Other	6	1.08	1.00	0.95	0.94	1.03	0.98	1.63	1.47	1.07	0.96
Cohort											
1977–1980[a]	39	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1981–1983	61	0.85*	1.08	1.02	1.03	0.87	0.86	0.87	0.85	0.93	0.93
Education											
No college[a]	29	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Some college	32	0.75*	1.03	0.77*	0.90	0.87	0.94	0.86	1.00	0.92	1.01
College degree	39	0.29*	0.53*	0.65*	0.74*	0.52*	0.57*	0.42*	0.53*	0.44*	0.45*
Job classification											
I[a]	12	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
II	28	0.88	0.87	1.11	1.13	0.96	0.90	0.79	0.74	0.83	0.77
III	20	0.69*	0.99	1.25*	1.28	0.95	1.02	0.68	0.78	0.68*	0.89
IV	33	0.40*	0.80	0.69*	0.84	0.60*	0.79	0.49*	0.68	0.57*	0.87
Homemaker	7	0.48*	0.85	0.33*	0.70	0.30*	0.64	0.43	1.05	0.56*	0.72
Employment stability											
Continuously employed[a]	91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Unemployed	9	1.89*	1.49*	0.65	1.15	1.90*	1.45*	2.16*	1.37	1.87*	1.52*
Marital status											
Not married*	29	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Married	71	0.48*	0.40*	0.57*	0.64*	0.44*	0.50*	0.32*	0.42*	0.52*	0.50*
Parental status											
No children[a]	28	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Noncustodial parent	4	1.71*	1.62*	1.10	1.02	1.00	0.87	1.12	1.03	1.14	1.15
Custodial parent	68	0.87	1.08	0.62*	0.79*	0.66*	0.69*	0.45*	0.64*	0.81	0.96
Base-year use—cigarettes											
No[a]		1.00	1.00								
Tried		3.33*	3.27*								
Used in past month		12.74*	12.51*								
Regular smoker		42.52*	39.15*								
Base-year use—heavy drinking											
No[a]	60			1.00	1.00						
Yes	40			3.70*	3.11*						
Base-year use—marijuana											
No[a]	42					1.00	1.00				
Yes	53					8.69*	8.30*				
Base-year use—other illicit drugs											
No[a]	64							1.00	1.00	1.00	1.00
Yes	36							5.29*	5.24*	3.40*	3.06*
R^2			0.20		0.09		0.07		0.04		0.03

[a]Excluded category in logistic regressions.
*Significantly different from excluded category, $P < .01$.

did not differ from nonparents with regard to heavy drinking, marijuana use, cocaine use, or misuse of prescription drugs.

The odds of smoking at age 35 years for participants who used cigarettes during the month before to their 12th- grade survey were more than 12 times the odds for those who had never smoked by the time of their senior year. The odds of smoking at age 35 years for participants who had tried cigarettes by their senior year were more than 3 times the odds for those who had never smoked by the time they reached the 12th grade. The odds ratios of smoking at age 35 years for participants who were daily smokers during their senior year were 42 times higher than those for participants who had never smoked by the time of their senior year. When compared with those who did not drink heavily as high-school seniors, participants who drank heavily had 3 times the odds of drinking heavily at age 35 years. When compared with those who had not tried marijuana by the twelfth grade, individuals who had tried marijuana by the 12th grade had 8 times the odds of using marijuana at age 35 years.

Those who had tried any illicit drug other than marijuana by their senior year had 5 times the odds of using cocaine and 3 times the odds of misusing prescription drugs at age 35 years, compared with those who had not.

The multivariate results in Table 3 show that some variables exerted a unique effect on substance use, whereas for other variables, the bivariate relationship was largely attributable to other factors. In most cases, variables that were statistically significant in the bivariate context remained significant in the multivariate context. Each of the bivariate effects of job classification became nonsignificant in the multivariate analyses. After other predictors were included (gender, marital status, and parental status), all associations between homemaker status and substance use also became nonsignificant.

Two associations were consistent across all substances and across both bivariate and multivariate tests: lower use among college graduates and lower use among married individuals. Consistent associations also were found between being a custodial parent and heavy drinking, marijuana use, and cocaine use.

Other variables in the analysis do not account for these associations.

History of substance use at 18 years of age, the time of the initial survey, was a strong predictor of cigarette use, heavy drinking, marijuana use, cocaine use, and misuse of prescription drugs at age 35 years. These predictors were significant at both the bivariate and multivariate levels. Despite the strength of the associations between history of use and use at 35 years of age, the addition of history of use into the multivariate regressions did little to reduce the explanatory value of the other variables. We performed the multivariate regressions both with and without senior year substance use. For most variables, the odds ratios were only minimally affected.

In some cases, predictor variables that are significant in the regressions without senior year substance use become nonsignificant when senior year substance use is added. The reduced significance suggests that the predictor in question is not related to *changes* in drug use and that the association (or at least its foundation) was largely present by the end of high school. The associations of this sort are (1) being African American and being less likely to smoke or to drink heavily, (2) having taken some college classes and being less likely to smoke, and (3) being in a managerial, sales, or administrative occupation and being more likely to drink heavily.

In other cases, predictor variables that are not significant in the regressions without senior year substance use become significant when senior year substance use is added. The emergence of significance suggests that the predictor in question is related to changes in drug use and that the association was not largely present by the end of high school. The associations of this sort are (1) being female and smoking less, and (2) being a custodial parent and being less likely to drink heavily, use marijuana, or use cocaine. In most cases, there is relatively little difference in the strength of association with and without senior-year substance use.

DISCUSSION

The proportion of adults who are frequently abusing alcohol and who are using illicit drugs at 35 years of age is relatively high,

and perhaps higher than expected. For example, more than 32% of 35-year-old men reported heavy drinking in the past 2 weeks. Nearly 13% of men and 7% of women reported marijuana use in the past month. Six percent of men and 3% of women reported some form of cocaine use in the past year. Over 7% of men and 8% of women reported misuse of prescription drugs in the past year. Substance use at 35 years of age also is not restricted to stereotypical drug users (e.g., individuals at low socioeconomic levels)—nearly 10% of professional men reported marijuana use in the past 30 days. Many of the prevalence rates reported here are similar to those reported elsewhere, and our findings are consistent with those of other studies. Because some individuals may report using more than 1 drug, it would be inappropriate, for example, to total the percentages of individuals using each drug to obtain an estimate of the percentage of individuals using any drug.

The rates of drug use reported here are consistent with those reported in the 1999 National Household Survey of Drug Abuse (NHSDA)[14] for adults aged 30 to 49 years. For example, results from the NHSDA showed that in the 30 days prior to the survey, approximately 33% of men and 27% of women aged 30 to 49 years reported having smoked cigarettes, and around 54% of men and 29% of women reported drinking 5 or more drinks in 1 day. However, NHSDA respondents reported less marijuana use in the month before the survey (6.42% of men and 2.13% of women) than did Monitoring the Future respondents.

A noteworthy strength of our study is the use of multiple cohorts of national panel data that spanned more than 18 years of each individual's life; however, a few limitations to the generalizability of the results should be noted. First, individuals who dropped out of high school before the spring of their senior year (possibly 15% of the population) were not included. Second, those individuals who were absent from school on the day of the 12th grade survey were excluded. Also, as is true for virtually all longitudinal studies, respondent attrition has occurred over the course of the study, and this attrition tends to be higher among drug users. Thus, it is likely that our estimates of substance use at 35 years of age

are underestimates of substance use in the population. Furthermore, attrition is differential with respect to race/ethnicity and gender: attrition tends to be higher among African American men. We were unable to break the "other" race/ethnicity group into subgroups because of small cell sizes. Nevertheless, the data remain representative of a large proportion of the American population, and the sample contains many users (including heavy users) of tobacco, alcohol, and other drugs (Table 2). Moreover, the comparison of Monitoring the Future and NHSDA data reveals that Monitoring the Future drug use rates are comparable to—or even higher than—those found in other surveys that do not suffer from the above-noted limitations. Finally, although self-report data collected through mail surveys may be biased in certain ways, studies have shown that advancements in survey methodology and the careful design of questionnaires have led to the production of good-quality data via self-report and mail surveys.[15,16]

At the group level, there was high stability of substance use behavior over time, even over long spans of time. Those who were daily smokers as high-school seniors had 42 times the odds of being smokers at age 35 years than were those who had not tried cigarettes by their senior year. Similar patterns are found for the association between heavy drinking in high school and heavy drinking at 35 years of age and for marijuana use in high school and marijuana use at 35 years of age. Those who had tried illicit drugs other than marijuana by their senior year had more than 5 times the odds of using cocaine and more than 3 times the odds of misusing prescription drugs at age 35 years than were those who had not tried illicit drugs by their senior year. These findings suggest that for most people, the foundation for later substance use is set by the time they finish high school. Nonetheless, there is important individual change in substance use and related behaviors over the life span.

The effects of substance use history do not appear to be mediated by demographics and adult life experiences. The odds ratios for senior-year substance use were only marginally reduced when current status indicators were included in the model. This marginal reduction suggests that use at 35 years

of age is determined in part by previous experience with each substance and in part by current status.

There also was an association between cohort and smoking; adults who graduated from high school between 1977 and 1980 were more likely to smoke than were those who graduated between 1981 and 1983. However, this association was significant only in the bivariate analyses and was not significant after we controlled for other factors. This change in significance may be because differences in education achievement between the 2 cohorts were related to the decreased smoking rate.

Current status was associated with current substance use. Despite the high stability of substance use behaviors over time, there were associations between current demographics and socioeconomic status and use at 35 years of age that remained when use at 18 years of age was included. Therefore, these effects cannot be explained wholly by other factors, including early use history. The most robust effect was the marriage effect. Married individuals were less likely to report smoking, drinking heavily, using marijuana, using cocaine, or misusing prescription drugs compared with those who were not married or who were separated. This effect remained after we controlled for a number of other relevant factors, such as parental status (reported number of children and child's living arrangement) and history of use. The consistent association between marriage and lower substance use confirms previous studies' findings.[3,5]

Research in young adults has shown that college students drink more than their nonstudent peers.[1,3] By 35 years of age, however, this pattern has reversed, and individuals who have graduated from college are less likely to drink heavily than are those who did not attend college. Similar but less dramatic crossover effects were found for marijuana use. Although senior-year marijuana use is higher among those not bound for college, during the 4 years after high school, marijuana use increases more rapidly among college students, which results in equal use among college students and nonstudents.[17] By 35 years of age, marijuana use among college graduates is lower than use among those who did not attend college.

Other research has shown an association between unemployment and substance use. For example, those who become unemployed between 20 and 25 years of age are more likely to have smoked heavily, used marijuana, or used cocaine during high school than are those who do not experience unemployment.[3] Most of this research has suggested that the associations between unemployment and substance use are attributable to selection processes.[3,5,18] Our study found associations between recent unemployment and current use that cannot be explained by use during high school, particularly for smoking and marijuana use. The consistency of these associations suggests that there may be effects of employment history on substance use or that an individual's recent history of use is related to unemployment independently of the effects of long-term use.

Previous research has shown that becoming a parent is associated with reduced substance use, but some of this association can be accounted for by the effects of other factors, particularly marital status.[3] Our study's closer examination of parental status further clarified the association between parental status and substance use. When custodial parents were considered separately from noncustodial parents, the effect of parental status was sufficiently robust to remain even in the presence of other factors. These findings suggest that living with one's child, rather than merely being a parent, is associated with lower substance use and that living with one's child is associated with reductions in substance use in excess of the changes associated with marital status and other factors.

Although custodial parents had lower rates of drinking heavily, using marijuana, and using cocaine than did nonparents, a notable segment of parents drank heavily or used illicit substances. For example, more than 29% of fathers whose children lived with them reported heavy drinking within the past 2 weeks. Also, about 1 in 10 fathers whose children lived with them reported marijuana use in the past month. Additionally, there was no association between custodial parenthood and misuse of prescription drugs. Parents of children less than 18 years of age whose children lived with them were just as likely to misuse prescription drugs as

were individuals without children and non-custodial parents.

CONCLUSIONS

At the beginning of midlife, substance use is still rather prevalent and is a function of adulthood roles, experiences, and previous use. Our findings regarding race/ethnicity, birth cohort, being married, and attending college are consistent with those reported in other studies and those found in other analyses of Monitoring the Future data.[3,4,5] Additionally, our study found that recent unemployment was related to substance use, and our study highlighted the importance of living arrangements in shaping the association between parenthood and substance use. ■

About the Authors

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Contributors

A.C. Merline conceived and conducted the analyses and led the writing of the article. P.M. O'Malley was a principal investigator for the study and collaborated on the conceptualization, analyses, and writing. J.E. Schulenberg was a principal investigator for the study and collaborated on the analyses and writing. J.G. Bachman was a principal investigator for the study and contributed to the conceptualization and writing of the article. L.D. Johnston was a principal investigator for the study and contributed to the writing of the article.

Human Participant Protection

The institutional review board of the University of Michigan approved this study and the consent information provided to the participants.

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