Discontinuous College Enrollment: Associations With Substance Use and Mental Health

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Objective: This study examined the prospective relationship of substance use and mental health problems with risk of discontinuous enrollment in college. *Methods:* Participants were 1,145 students at a large public university who were interviewed annually for four years beginning at college entry in 2004 (year 1). Discontinuous enrollment was defined as a gap in enrollment of one or more semesters during the first two years (early discontinuity) or the second two years (late discontinuity) versus continuous enrollment throughout all four years. Explanatory variables measured in year 1 were scores on the Beck Depression Inventory (BDI) and the Beck Anxiety Inventory, childhood conduct problems, cannabis use, number of illicit drugs used, and alcohol consumption. In years 3 and 4, participants reported lifetime history of clinically diagnosed attention-deficit hyperactivity disorder, depression, and anxiety, including age at diagnosis. Multinomial logistic regression models were developed to evaluate the association between the independent variables and discontinuous enrollment while holding constant background characteristics. *Results:* Higher BDI scores predicted early discontinuity but not late discontinuity, whereas cannabis and alcohol use predicted only late discontinuity. Receiving a depression diagnosis during college was associated with both early and late discontinuity. Self-reported precollege diagnoses were not related to discontinuous enrollment once background characteristics were taken into account. *Conclusions:* Students who experience depressive symptoms or seek treatment for depression during college might be at risk of interruptions in their college enrollment. Cannabis use and heavy drinking appear to add to this risk. Students entering college with preexisting psychiatric diagnoses are not necessarily at risk of enrollment interruptions. (*Psychiatric Services* 64: 165–172, 2013; doi: 10.1176/appi.ps.201200106)

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Mental health problems and substance use among young adults are major public health concerns because of their impact on well-being, safety, and an individual's productivity. College students have high rates of excessive drinking and drug use (1,2), and counseling centers have seen increasing numbers of students with mental health problems, including depression and suicidality (3), and students taking medications for psychiatric conditions (4). Nationally, one in ten college students sought counseling during the past year (4), with the most recent data showing that 28% of students "felt so depressed in the past year that it was difficult to function" (5). Regardless of college enrollment, young adulthood is a period of high risk for many psychiatric disorders (6), especially the onset of substance use disorders (7).

An understudied aspect of this problem is the possibility that psychiatric disorders and substance use among college students are associated with academic problems, perhaps making it more difficult for students to stay enrolled and complete their degree on time. For example, stress related to academic struggles might precipitate an underlying mental health condition, such as depression, or lead to escalation of substance use. Alternatively, psychiatric symptoms could negatively affect decisions to participate in both academic pursuits and

extracurricular activities, thereby reducing the student's sense of connectedness to the college environment.

Also, a student experiencing the onset of a new psychiatric disorder during college might not be equipped to recognize the problem or might not want to talk about it, which could lead to social and academic disengagement. Moreover, heavy drinking and illicit drug use have also been linked to academic performance problems (8,9). This association could be attributable to substance-related cognitive impairments that hinder the ability to retain information (10) as well as to the tendency for academic pursuits to become less important than drug seeking and drug using as the severity of a substance use disorder increases (11).

Considering that psychiatric disorders and substance use often co-occur (12), it is important to disentangle any potential overlap in their associations with academic outcomes in college. We identified three studies examining the relationships between mental health, substance use, and likelihood of graduating from college. First, Breslau and others (8) used survival analysis in a large national sample and found that substance use disorders were associated with early termination from college, as were bipolar, panic, and impulse control disorders, even after controlling for demographic characteristics and several measures of childhood adversity. Second, in a similar cross-sectional study, Hunt and others (9) simultaneously tested the possible correlation of ten different DSM-IV diagnoses (11) with college noncompletion. Bipolar disorder, antisocial personality disorder, and three drug use disorders (cannabis, amphetamine, and cocaine) independently predicted college noncompletion.

Third, Eisenberg and others (13) examined the longitudinal relationships of depression, anxiety, and eating disorders with subsequent grade point average (GPA) and college graduation. Both depressive symptoms and binge drinking independently predicted both lower GPA and greater likelihood of dropping out of college, and the presence of anxiety symptoms intensified the effect of depressive symptoms.

These three studies were limited in their ability to assess the effects of alcohol and other drug use. Breslau and others (8) and Hunt and others (9) only accounted for use that met DSM-IV criteria for abuse or dependence (11), a threshold that a majority of users do not meet, and Eisenberg and others (13) did not examine drug use at all. Moreover, none of the studies considered the timing of a psychiatric diagnosis, leaving open the question of whether precollege and college-onset diagnoses are equally important in predicting college departure.

This study built upon our previous research with a longitudinal cohort of individuals who were enrolled in college when the research began. Earlier findings showed that drug use was associated with skipping class and lower grades (14). In this study, the outcome variable was discontinuous enrollment—a gap of one or more semesters—that may or may not have been followed by reenrollment and degree completion. Educational researchers have regarded discontinuous enrollment as a negative outcome because it represents a setback to a student's academic career and places a student at risk of dropout, even if the student transfers to a different school (15,16). For instance, in a five-year national study, one-third of students who left college during their first year never returned, and of those who returned, only 17% earned a bachelor's degree, compared with 61% of students who persisted into their second year (17).

This prospective study examined the interrelationships between substance use and psychiatric conditions among college students as they relate to risk of discontinuous college enrollment. The analyses aimed to identify the differences in substance use, psychiatric diagnoses, psychiatric symptoms, and background characteristics between students who did and did not experience interruptions in college enrollment; develop an explanatory model predicting enrollment interruptions during the first four years of college on the basis of student characteristics in year 1 (for example, substance use, psychiatric symptoms, and precollege and college psychiatric diagnoses); and develop an explanatory model predicting interruptions of college enrollment during years 1 and 2 (early discontinuity) and years 3 and 4 (late discontinuity) on the basis of year 1 substance use and psychiatric symptoms, precollege and college psychiatric diagnoses, and background characteristics. This study focused on three broad psychiatric diagnoses: depression, anxiety, and attention-deficit hyperactivity disorder (ADHD).

Methods

Sample
Data were collected as part of the College Life Study, an ongoing longitudinal study of health risk behaviors of 1,253 young adults originally ascertained as incoming first-time first-year students at a large, public university in the mid-Atlantic region (18,19). After screening 82% (N=3,401) of the incoming cohort in 2004 during the summer before college entry, a sample was selected for longitudinal follow-up (87% response rate), beginning with a two-hour personal interview sometime during the first year of college (year 1). Students who used an illicit drug or a prescription drug for nonmedical purposes at least once before college were purposively oversampled to ensure adequate statistical power for drug-related analyses. Participants were followed up with similar assessments annually in years 2–4 (2005–2008), regardless of continued college attendance, with follow-up rates exceeding 87% annually. Interviewers were trained extensively in assessment procedures and human subjects protections. Participants received cash incentives. After giving participants a complete description of the study, we obtained written informed consent via institutional review board–approved protocols. A federal Certificate of Confidentiality was obtained.

A total of 108 individuals were not assessed in year 3 or 4 and, therefore, were excluded from the analytic sample. The final sample consisted of 1,145 individuals (604 [53%] females and 834 [73%] whites) who were between the ages of 17 and 20 during year 1 and who completed annual assessments in year 3 or 4 or in both years. The excluded individuals and

the analytic sample were similar with respect to neighborhood income and race, but the excluded individuals were more likely to be male, to experience gaps in college enrollment, and to have a lower high school GPA.

Outcome measure

Data on credit hours earned and degrees granted were obtained from the home university for eight semesters comprising the first four years of college (fall 2004 through spring 2008), as permitted by participants' informed consent. (Academic data from institutions to which students might have transferred after their first semester at the home university were not available.) Continuous enrollment was defined as being enrolled for at least one credit during all eight semesters or until graduation, whichever came first. Individuals earning zero credits in at least one semester were coded as discontinuously enrolled. For the 63 (6%) individuals in the analytic sample who graduated before spring 2008, discontinuous enrollment was defined on the basis of semesters prior to graduation. Because enrollment disruptions are likely to occur early in college, and because persistence early in college is regarded as a strong indicator of later persistence and completion of college (20), we further distinguished between early (years 1 and 2) and late (years 3 and 4) discontinuity. Individuals with both early and late discontinuity were coded for early discontinuity.

Explanatory variables

Psychiatric diagnoses. In years 3 and 4, participants were asked about their history of being given a diagnosis of ADHD, anxiety, or depression and their age at first diagnosis. For each diagnosis, we constructed a three-level categorical variable representing the timing of diagnosis by comparing the age at diagnosis with the age at year 1 assessment. The categories were before starting college, after starting college, or never diagnosed, the reference category.

Psychiatric symptoms. In year 1, the Beck Depression Inventory (BDI) (21) and the Beck Anxiety Inventory (BAI) (22) were self-administered to assess symptoms of depression and anxiety, respectively. For both scales, possible scores range from 0 to 63, with higher scores indicating greater symptoms.

Substance use. Participants were asked in year 1 about their past-year use of alcohol and illicit drugs (cannabis, inhalants, hallucinogens, cocaine, amphetamine or methamphetamine, heroin, and ecstasy) and nonmedical use of prescription stimulants, tranquilizers, and analgesics. The typical number of drinks consumed per drinking day and the number of days of cannabis use during the past year were assessed. The number of illicit drugs used during the past year was computed as an index of overall drug involvement.

Childhood conduct problems. An adapted 18-item version of the Conduct Disorder Screener (23–25) corresponding to *DSM-IV* criteria for conduct disorder (11) (except forgery) was administered in year 1. Behaviors were weighted by severity (23), and a summary score ranging from 0 to 26 was computed.

Background characteristics. High school GPA was obtained from the home university. Race was self-reported in year 3 or obtained from administrative data and later dichotomized as white or nonwhite, given the preponderance of non-Hispanic whites. The mean adjusted gross income for participants' home zip code during their last year of high school was captured from publicly available data (26) and denoted herein as neighborhood income. The highest level of educational attainment by either parent was self-reported. Gender was recorded in year 1.

Statistical analysis

Sample characteristics of participants with early, late, and no discontinuity of college enrollment were compared. Intercorrelations among all the hypothesized predictors were examined. Next, a series of logistic regression models were assessed to explain the association between the predictor variables and the dichotomous dependent variable (discontinuous versus continuous enrollment). The following steps were devised to isolate the additive contribution, if any, of drug use and drinking over and above the contribution of the psychiatric variables. After bivariate relationships were examined, a combined model was fit including the variables of psychiatric diagnosis (ADHD, depression, and anxiety), psychiatric symptoms (scores on the BDI and BAI), childhood conduct problems, and background characteristics (gender, race, neighborhood income, high school GPA, and parents' education). To find the most parsimonious model, nonsignificant diagnosis and symptom variables were dropped from the model and reintroduced one by one to evaluate the potential for statistical significance (α=.05). Then the substance use variables were introduced. Finally, the logistic regression analyses were replicated by using the multinomial dependent variable on early and late discontinuity, with continuous enrollment as the reference group.

In all regression analyses, background characteristics were retained regardless of statistical significance. We hypothesized that we would find first-order interactions between gender and each of the diagnosis, symptom, and substance use variables; between BDI and BAI scores, given that Eisenberg and others found that anxiety symptoms interact with depressive symptoms in predicting GPA and dropout (13); and between cannabis use frequency and depression diagnosis. Analyses were conducted using SAS, version 9.2 (27).

Results

By year 4, 14% of participants had been given a diagnosis of depression, 13% a diagnosis of anxiety, and 10% a diagnosis of ADHD (Table 1). The timing of diagnoses was somewhat evenly distributed between precollege and college ages. Illicit drug use in year 1 was highly prevalent: 62% of the sample used cannabis, and 24% used two or more illicit drugs. Several significant bivariate differences in participant characteristics by enrollment status were also found (Table 1). Intercorrelations among the psychiatric and substance use variables are presented in Table 2.

In the regression predicting overall discontinuous enrollment (Table 3), college depression diagnosis was associated with more than a twofold increase in risk of discontinuity, even

Table 1

Characteristics of 1,145 college students, by enrollment status[a]

Characteristic	Total (N=1,145) N	%	Continuous enrollment (N=805) N	%	Discontinuity of enrollment[b] Early (N=107) N	%	Late (N=233) N	%	p[c]
Female	604	53	414	51	51	48	139	60	.047
White	834	73	581	72	72	67	181	78	.100
Neighborhood income (M±SD $)[d]		7.3±3.4		7.2±3.2		7.2±3.6		7.8±3.9	.039
High school grade point average (M±SD)		3.87±.40		3.90±.39		3.78±.43		3.84±.42	.006
Parents' education									
High school, GED, or less	88	8	74	10	6	6	8	4	.004
Some college or technical	63	6	54	7	3	3	6	3	
Bachelor's degree	309	29	218	29	32	32	59	28	
Graduate degree	611	57	412	54	59	59	140	66	
Childhood conduct problems[e]		6.7±4.7		6.6±4.6		6.6±4.6		7.7±5.2	.054
Beck Depression Inventory (M±SD score)[f]		5.4±5.2		5.1±4.7		7.4±7.6		5.5±5.5	<.001
Beck Anxiety Inventory (M±SD score)[f]		7.6±7.0		7.3±6.5		8.0±7.2		8.4±8.3	.107
Diagnosis, by year 4									
Depression	162	14	96	12	26	24	40	17	.001
Precollege	93	8	63	8	14	13	16	7	.128
College	69	6	33	4	12	11	24	10	<.001
Anxiety	149	13	93	12	23	22	33	14	.014
Precollege	53	5	32	4	8	8	13	6	.200
College	96	8	61	8	15	14	20	9	.077
Attention-deficit hyperactivity disorder	113	10	67	8	20	19	26	11	.003
Precollege	68	6	43	5	12	11	13	6	.052
College	45	4	24	3	8	8	13	6	.028
Illicit drug use in past year									
Used cannabis	708	62	470	59	67	63	171	73	<.001
Cannabis use frequency (M±SD days)		22.8±55.5		18.8±46.7		34.7±76.9		27.4±57.3	<.001
Number of illicit drugs used (M±SD)		1.1±1.4		1.1±1.3		1.4±1.3		1.3±1.5	.003
0	399	35	311	39	30	28	58	25	<.001
1	468	41	316	39	40	38	112	48	
≥2	277	24	178	22	36	34	63	27	
Typical drinks per drinking day (M±SD)		4.4±2.9		4.3±2.9		4.3±3.0		4.9±2.6	.030

[a] With the exception of self-reported race and psychiatric diagnoses, all other variables were captured in year 1.

[b] Discontinuous enrollment was defined as a gap in enrollment of one or more of the first eight semesters of college before graduation in years 1 and 2 (early discontinuity) or years 3 and 4 (late discontinuity).

[c] Overall chi square test of independence, reported for the multinomial variable

[d] Mean adjusted gross income of homes in the participant's zip code during his or her last year of high school, in tens of thousands of dollars

[e] Possible scores range from 0 to 26, with higher scores indicating more severe problems.

[f] Possible scores range from 0 to 63, with higher scores indicating greater symptoms.

after controlling for gender, high school GPA, and other background characteristics. Additionally, BDI score and cannabis use frequency were independently associated with increased risk of discontinuity, on the order of 3% for each 1-point increase in BDI score and 4% for each additional ten days of cannabis use. None of the other hypothesized predictor variables tested in the final model were significant. With respect to control variables, gender, high school GPA, and parents' education were significant, but race and neighborhood income were not.

In the multinomial regression (Table 4), early discontinuity was 7% more likely for each increase of 1 point in BDI score and over three times more likely among students who were given a diagnosis of depression during college, holding constant high school GPA and other background characteristics. Although substance use was not related to early discontinuity, both cannabis use frequency and number of drinks per drinking day independently predicted late discontinuity, on the order of 5% for each additional ten days of cannabis use and 9% for each additional drink per drinking day. Additionally, onset

Table 2

Correlations of psychiatric and substance use variables among 1,145 college students[a]

Variable	Depression, college	Anxiety Pre-college	Anxiety College	ADHD Pre-college	ADHD College	BDI	BAI	Childhood conduct problems	Past-year use Cannabis	Cannabis use frequency	Illicit drugs (N)	Typical drinks per drinking day
Depression												
Precollege	–.075	.452	.048	.196	.088	.175	.103	.049	.029	.092	.098	–.016
College		–.021	.400	.014	.194	.112	.104	.029	.002	.049	.057	–.005
Anxiety												
Precollege			–.067	.121	.062	.138	.148	.012	.053	.076	.084	–.013
College				.017	.166	.148	.170	–.003	.068	.081	.117	.059
Attention-deficit hyperactivity disorder (ADHD)												
Precollege					–.051	.032	.021	.143	.037	.038	.063	.110
College						.067	.108	.041	.057	.057	.167	.045
Beck Depression Inventory (BDI)							.559	.144	–.022	.046	.048	–.081
Beck Anxiety Inventory (BAI)								.096	.005	.013	.069	–.052
Childhood conduct problems									.094	.170	.237	.259
Drug use in past year												
Cannabis										.323	.598	.440
Cannabis use frequency											.579	.267
Illicit drugs (N)												.384

[a] With the exception of self-reported psychiatric diagnoses, all other variables were captured in year 1; α=.05 for |r|>.057; α=.001 for |r|>.098

of depression diagnosis during college was associated with a more than twofold increase in risk of late discontinuity. None of the other hypothesized predictor variables tested in the final model were significant. With respect to control variables, high school GPA, parents' education, and gender (for late discontinuity only) were significant, but race and neighborhood income were not.

None of the hypothesized interactions were statistically significant in either the binomial or multinomial regression.

Discussion

In this study, being given a diagnosis of depression during college was strongly associated with interruptions in college enrollment, independent of other psychiatric diagnoses, psychiatric symptoms, and background characteristics. Moreover, first-year students with high levels of depressive symptoms were at

increased risk of missing one or more semesters during their first two years of college. After controlling for high school GPA and other background characteristics, the analysis showed that students entering college with a prior diagnosis of depression, anxiety, or ADHD were not at increased risk of interruptions in enrollment over four years.

These findings extend prior evidence that among college students, depressive symptoms—but not necessarily depressive disorders—predict increased risk of college noncompletion (8,9,13). Our ability to differentiate between diagnoses that occurred before and during college provided new information about this association.

These findings suggest that depressive symptoms during year 1 might be an important indicator of risk of retention problems and comport with the notion that early departures from

college are often attributable to difficulties with adjusting to college (17,28). Unlike Eisenberg and others (13), we did not find any evidence of an interaction between anxiety and depressive symptoms, possibly due to differences in our symptom and outcome measures. The fact that both BDI score and receipt of a depression diagnosis during college independently predicted discontinuous enrollment suggested that poorly controlled symptoms present an added risk factor for students being treated for depression. The absence of a significant interaction between gender and BDI score suggested that for men and women, depressive symptoms were equally problematic with respect to college retention.

Both alcohol quantity and frequency of cannabis use during year 1 predicted discontinuous enrollment during the last two years of college but not during

Table 3

Variables predicting discontinuous enrollment among 1,145 college students[a]

Variable[b]	Bivariate association			Final multivariate model		
	OR	95% CI	p	AOR[c]	95% CI	p
Male (reference: female)	.84	.65–1.08	.168	.73	.54–.98	.036
White (reference: nonwhite)	1.12	.84–1.50	.437	1.11	.78–1.56	.574
Neighborhood income	1.04	1.00–1.08	.048	1.03	.99–1.07	.180
High school grade point average	.62	.45–.85	.003	.62	.43–.89	.010
Parents' education (reference: graduate school)						
High school, GED, or less	.39	.22–.71	.002	.35	.19–.67	.002
Some college or technical	.35	.17–.71	.004	.32	.15–.69	.004
Bachelor's degree	.86	.64–1.16	.336	.83	.61–1.13	.230
Childhood conduct problems	1.02	.99–1.05	.248			
Beck Depression Inventory	1.03	1.01–1.06	.012	1.03	1.01–1.06	.014
Beck Anxiety Inventory	1.02	1.00–1.04	.052			
Depression diagnosis (reference: no)						
Precollege	1.23	.78–1.95	.370	.85	.50–1.41	.522
College	2.82	1.73–4.62	<.001	2.47	1.43–4.27	.001
Anxiety diagnosis (reference: no)						
Precollege	1.65	.93–2.90	.085			
College	1.44	.93–2.23	.104			
Attention-deficit hyperactivity disorder diagnosis (reference=no)						
Precollege	1.46	.88–2.43	.147			
College	2.20	1.20–4.01	.010			
Cannabis use frequency past year[d]	1.04	1.02–1.07	.001	1.04	1.01–1.07	.011
Illicit drug use past year (N)	1.14	1.03–1.27	.010	.97	.84–1.13	.716
Typical drinks per drinking day	1.05	1.01–1.09	.019	1.05	1.00–1.12	.063

[a] Results of logistic regression analyses. Discontinuous enrollment was defined as a gap in enrollment of one or more of the first eight semesters of college before graduation. After adjustment for all effects shown, the final multivariate model found no significant association between discontinuous enrollment and any of the hypothesized first-order interactions between variables.

[b] Lifetime psychiatric diagnoses and race were self-reported in years 3 or 4. All other variables were captured in year 1.

[c] AOR, adjusted odds ratio

[d] Cannabis use frequency was divided by ten to enhance interpretability of results.

the first two years. One possible explanation for this finding is that substance use problems might escalate with time and lead to academic problems later in college. Alternatively, cannabis use and very heavy drinking might be related to other variables that predict premature departure from college, such as disengagement (17), yet further study is needed to understand the relative importance of these factors for early and late departures.

It is also tempting to speculate that the correlates and causes of enrollment disruptions might differ depending on when the disruption occurs. For instance, early in college, depressive symptoms might indicate poor adjustment to the demands of college and consequent high risk of noncompletion, whereas drug use might indicate a lack of commitment or focus that presents less of a barrier to persistence but results in delayed degree completion. Future research on postsecondary educational attainment should integrate substance use and mental health risk factors.

Results must be interpreted in light of several limitations. First, data on enrollment at other institutions were not available; therefore, we cannot say how many participants coded as discontinuous might have enrolled elsewhere during an enrollment gap at the home university. Thus our results should be regarded as a conservative measure that has greater relevance for understanding retention at a particular institution than each individual's enrollment patterns. Second, in the absence of clinical assessments, self-reported psychiatric diagnoses are likely a proxy for treatment seeking, which tends to favor females and whites (29). We mitigated this limitation somewhat by controlling for gender and race and by assessing symptoms. Third, although we included a large number of possibly confounding variables, the observed associations still might be attributable to other unmeasured factors. Finally, generalizability of results to students in other higher education settings is unknown.

The limitations described above notwithstanding, the study had several strengths. First, discontinuous enrollment is a more subtle outcome than college completion, which has been the focus of most prior studies of academic outcomes. Understanding which students are at greater risk of experiencing interruptions in their education—whether from temporarily taking time off from college, transferring to another institution, or permanently dropping out of college—is advantageous for university administrators interested in achieving high retention and graduation rates. Second, our longitudinal design permitted the identification of risk factors that preceded disruptions in enrollment and, therefore, could be identified while students were in their first year of college. Third, whereas prior educational research has emphasized increased risk of discontinuous enrollment among nontraditional students, such as older, married, parenting, or employed individuals (17,30,31), our study

Table 4

Variables predicting early and late discontinuous enrollment among 1,145 college students[a]

| Variable[b] | Early discontinuity versus continuous enrollment | | | | | | Late discontinuity versus continuous enrollment | | | | | |
| | Bivariate association | | | Final multivariate model | | | Bivariate association | | | Final multivariate model | | |
	OR	95% CI	p	AOR[c]	95% CI	p	OR	95% CI	p	AOR[c]	95% CI	p
Male (reference: female)	1.16	.78–1.74	.465	1.39	.86–2.23	.176	.72	.53–.96	.027	.53	.38–.76	<.001
White (reference: nonwhite)	.79	.52–1.22	.293	.76	.46–1.26	.287	1.34	.95–1.89	.095	1.37	.90–2.10	.142
Neighborhood income	1.00	.94–1.07	.903	.99	.93–1.06	.843	1.05	1.01–1.10	.015	1.04	1.00–1.09	.075
High school grade point average	.50	.30–.83	.007	.55	.32–.96	.034	.69	.47–1.00	.051	.66	.43–1.00	.052
Parents' education (reference: graduate school)												
High school, GED, or less	.57	.24–1.36	.203	.43	.16–1.16	.096	.32	.15–.68	.003	.32	.15–.70	.005
Some college or technical	.39	.12–1.28	.120	.29	.08–1.02	.054	.33	.14–.78	.011	.33	.13–.82	.017
Bachelor's degree	1.03	.65–1.63	.916	1.01	.62–1.63	.976	.80	.56–1.13	.197	.76	.53–1.09	.130
Childhood conduct problems	1.05	1.01–1.09	.019				1.00	.97–1.04	.895			
Beck Depression Inventory	1.07	1.03–1.11	<.001	1.07	1.03–1.11	<.001	1.02	.99–1.05	.330	1.02	.99–1.05	.281
Beck Anxiety Inventory	1.01	.99–1.04	.326				1.02	1.00–1.04	.038			
Depression diagnosis (reference: no)												
Precollege	1.95	1.04–3.63	.036	1.42	.70–2.89	.331	.93	.53–1.65	.812	.62	.32–1.18	.145
College	3.18	1.58–6.41	.001	3.07	1.44–6.54	.004	2.67	1.54–4.63	<.001	2.27	1.22–4.20	.009
Anxiety diagnosis (reference: no)												
Precollege	2.12	.95–4.75	.068				1.45	.75–2.81	.276			
College	2.08	1.13–3.83	.018				1.17	.69–1.98	.567			
Attention-deficit hyperactivity disorder diagnosis (reference: no)												
Precollege	2.37	1.20–4.66	.013				1.08	.57–2.04	.818			
College	2.83	1.23–6.49	.014				1.93	.97–3.86	.062			
Cannabis use frequency past year[d]	1.03	.99–1.07	.130	1.00	.96–1.05	.961	1.05	1.02–1.07	<.001	1.05	1.02–1.09	.001
Illicit drug use past year (N)	1.20	.99–1.46	.065	1.14	.93–1.40	.208	1.12	.95–1.30	.176	.90	.76–1.07	.240
Typical drinks per drinking day	1.00	.93–1.08	.968	.99	.90–1.08	.744	1.07	1.02–1.12	.010	1.09	1.02–1.16	.008

[a] Results of logistic regression analyses. Discontinuous enrollment was defined as a gap in enrollment of one or more of the first eight semesters of college before graduation in years 1 and 2 (early discontinuity) or years 3 and 4 (late discontinuity). After adjustment for all effects shown, the final multivariate model found no significant association between early and late discontinuous enrollment and any of the hypothesized first-order interactions between variables.

[b] Lifetime psychiatric diagnoses and race were self-reported in years 3 and 4. All other variables were captured in year 1.

[c] AOR, adjusted odds ratio

[d] Cannabis use frequency was divided by ten to enhance interpretability of results.

focused on college students of traditional age and thus shed new light on the risk factors for discontinuity among a majority of students at four-year institutions.

The results have implications for health providers, campus administrators, and parents. If replicated, the findings might point to a need for greater cooperation between campus health services and academic assistance, which might help some struggling students complete college on time or even avoid dropping out. Further study is needed to evaluate the effectiveness of coordinated approaches to academic assistance that integrate substance use and mental health screening. Finally, parents should be vigilant for signs of depression and substance use among their children attending college and encourage early help seeking if they suspect a problem.

Conclusions

The findings underscored the importance of depressive symptoms, depression diagnosis, and substance use as independent predictors of college retention problems. Screening for drug use, heavy drinking, and depressive symptoms, especially during the first year of college, might be useful for identifying students at risk of temporary withdrawal or dropout. It is encouraging that students entering college with a preexisting diagnosis of depression or anxiety fared just as well as their counterparts with respect to maintaining college enrollment.

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