

College Adjustment Adds Incremental Validity in Assessing Substance Misuse in College Students

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This study examined college adjustment aspects that are associated with substance misuse, complementing demographic and individual difference factors that have successfully predicted problematic use in past studies. A stepwise regression with college students (N = 936) showed that college-specific depression, knowledge of campus resources, academic success, college-specific anxiety, and social adjustment served as risk factors for problematic substance use, as did self-esteem, negative affect, and spiritual well-being. Ethnicity, class year, and campus location also predicted substance misuse. These results can lay the groundwork for universities to address retention risk factors related to substance misuse.

Key words: substance misuse, substance abuse, college adjustment, self-esteem, spirituality

College is considered a time of exploration and learning, when young adults seek to define who they are. During this period of growth, college students may experience emotional highs and lows and have various reactions to the tumultuous nature of the college experience. Unfortunately, drug and alcohol misuse is often prevalent in college (Sullivan & Wodarski, 2004; White et al., 2005). Substance use can be recreational, utilized to garnish social approval (Boyle et al., 2020). However, social substance use may also lead to abuse as a method of coping with stress, which threatens student success and retention. We sought to understand the specific factors that influence substance misuse in college populations through the lens of college adjustment, taking individual differences and demographic factors into consideration.

Substance Misuse as an Important Aspect of College Adjustment

Substance abuse among college students is an unfortunate and enduring phenomenon. Despite collective efforts to recognize concerns and implement preventative strategies, in the United States the rate of substance misuse among college students continues to rise (Welsh et al., 2019). Of the full-time college student respondents to the 2016 National Survey on Drug Use and Health by the Substance Abuse and Mental Health Services Administration (SAMHSA), 39% indicated that they engaged in binge drinking, 13% engaged in heavy alcohol use, and 22% used an illicit drug, all within the previous month (Lipari & Jean-Francois, 2016). These rates are comparable with or higher than 2022 data from the U.S. population; in that survey, 21% indicated binge drinking in the previous month, 5% noted heavy alcohol use in the previous month, and 25% reported taking an illicit drug in the past year (SAMHSA, 2023). To gain a holistic understanding of college students' risk for problematic use, which is greater than the risk for young adults who are not in college (Afuseh et al., 2020), researchers must investigate how college adjustment factors may add incremental validity when predicting substance use in college populations.

We define *college adjustment* as the array of academic, behavioral, interpersonal (social), and intrapersonal (emotional) adaptations that need to be met for individuals to successfully navigate their higher education experiences. College adjustment measures have historically developed in clinical settings where people are struggling. Therefore, the adjustment literature has focused primarily on grades, mental health, or a limited outcome array (e.g., Anton & Reed, 1991; Baker & Siryk, 1984). A more thorough approach is achieved with the Wooster-Wickline College Adjustment Test (WOWCAT; Wickline et al., 2009), which provides a multifaceted approach to understanding college adjustment, assessing substance misuse, anxiety and depression, academic performance, personal autonomy, family support, social

life, extracurricular activities, living arrangements, and coping/knowledge of campus resources. The use of a holistic lens in approaching problematic substance abuse in college populations allows for a more comprehensive understanding of the personal and situational risk factors for retention.

Demographic Predictors of Problematic Substance Use in College Students

GENDER

Historically, men tend to engage in more risk-taking behaviors, including substances use and abuse, than do women. Mather and Lighthall (2012) found that stress tends to exaggerate gender differences, with women taking fewer risks under stress. Other researchers found that men are more likely to engage in problematic use of substances than are women (McCabe et al., 2007). However, a meta-analysis by Byrnes et al. (1999) found that although men typically reported more risky behavior than did women, men reported more substance use in college and women reported more in adulthood. Moreover, the differences between risk-taking behavior in men and risk-taking behavior in women have been decreasing across time. McHugh et al.'s (2018) review of substance use disorders (SUD) found that the historical gap between men and women has been shrinking globally. When controlling for access to substances (more likely for men), substance use did not differ by gender.

Ethnicity

Several studies have found that Hispanic and White college students reported higher rates of drug use and drug-related problems than their African American and Asian peers (McCabe et al., 2007; Vilsaint et al., 2019). The 2022 National Survey on Drug Use and Health indicated that Whites reported higher alcohol use, binge drinking, or heavy alcohol use than other ethnicities, whereas multiracial and Black individuals indicated higher rates of illicit drugs, and Asian individuals specified the least amount of substance misuse (SAMHSA, 2023). Together, findings from multiple sources indicate differences by ethnic group that vary by type of substance.

SEXUAL ORIENTATION

Sexual orientation can also play a role in substance misuse, possibly because of stigmatization in the LGBTQIA+ community (Meyer, 2003). Studies have indicated that sexual minority women and gay men young adults had significantly higher rates in most substance categories when compared with heterosexual peers (Dagirmanjian et al., 2017; Schuler et al., 2018). As such, sexual orientation could be important as a risk factor for substance misuse.

AGE AND CLASS YEAR

Although the typical college student in the United States is between the ages of 18 and 24, Choy (2002) noted that “traditional” college students are now the exception, making up just 25% of college students. Drug and alcohol use increase from early adolescence until 26 years of age and then decline (Chen & Jacobson, 2012; SAMHSA, 2023). Compared with young adults who are not in college and who report more alcohol and marijuana problems after high school, college students indicate relatively fewer alcohol and marijuana problems at 18 but greater increases between ages 18 and 21 (White et al., 2005). Young adults appear most susceptible to problematic alcohol and drug use during the typical college-age years. Students’ class year might also be important. Very little research examines class year with drinking and drugs, as most studies focus on first-year students (Arnekrans et al., 2018; Cho et al., 2015). However, routine marijuana and alcohol use predict delayed college graduation (Wilhite et al., 2017). It is important to study the drug and alcohol use of students from every undergraduate class standing, not just first-year students.

GEOGRAPHIC LOCATION

The few studies that investigated variations of problematic substance use across rural and urban environments presented conflicting findings. Thrash and Warner’s (2016) review indicated that geographic substance use studies have conflicted widely (Herman-Stahl et al., 2001; Shannon et al., 2014), with certain studies showing no differences. Looking at the transition to college specifically, Derefinko et al. (2018) found that rural students were less likely to use marijuana and alcohol in their first year; these differences disappeared by junior year.

Individual Difference Predictors of Problematic Substance Use in College Students

SELF-ESTEEM

Low self-esteem is a potential motivator for binge-drinking behaviors in college populations; young adults with high self-esteem reported decreased and less frequent alcohol use and binge drinking than did their peers with lower self-esteem (Gerrard et al., 2000). In a longitudinal study, Lee and Clancy (2019) found that adolescents with higher self-esteem were less likely to use recreational drugs. Research also indicates that all students who reported recent substance use consistently had the lowest self-esteem scores, regardless of substance type (Emery et al., 1993). Together, these studies present rather consistent findings.

SPIRITUALITY/RELIGIOSITY

The link between spirituality/religiosity and collegiate problematic substance use is well documented. A study examining the relationship between spirituality, shame,

and substance abuse in college populations found that those who believed God was absent or was punishing them felt higher levels of shame while engaging in hazardous drinking (Prosek et al., 2017). Scientists have consistently found a negative relationship between religiosity and excessive drinking and drug use in young adults (e.g., Russell et al., 2020). Moreover, a review found that spiritual and religious interventions tend to be efficacious for treating substance abuse (Hai et al., 2019).

MOOD/AFFECT

Given the stresses that college life can bring, mood states can predict substance misuse. According to Guinle and Sinha (2020), negative affect—a precursor to many mood disorders—is a state of emotional distress with a wide array of reactions. Their review clearly highlights how high rates of negative affect predict alcohol use disorders (AUD). In a 15-day study of college drinkers, Stevenson et al. (2019) found that individuals with more positive affect were less likely to drink to cope with emotions, contributing to fewer alcohol-related problems, whereas negative mood predicted alcohol-related consequences. Numerous studies have demonstrated connections between affect and substance abuse issues (e.g., Alterman et al., 2010; Batchelder et al., 2022; Kang et al., 2019; McKee et al., 2020).

Important Specific College Adjustment Factors

Students can encounter challenging stressors while adapting to college life. Avoiding substance misuse is just one aspect of college adjustment. Specific college adjustment factors that have shown promise in predicting substance misuse include academic performance, mental health, campus engagement, social life, and coping skills.

ACADEMIC STRESS AND ADJUSTMENT

The effort that college students devote to earning their degree can vary widely. Substance use issues can have academic consequences such as poor study habits, increased absenteeism, lower grades, and elevated dropout rates (Wallis et al., 2019). Numerous studies, including meta-analyses and review studies, have shown that academic success is negatively correlated with substance use, misuse, and abuse (e.g., Jaynes, 2021; Sullivan & Wodarski, 2004).

MENTAL HEALTH

Mental health is one of the strongest predictors of problematic substance use (e.g., Hunt et al., 2020; Lai et al., 2015; Liu et al., 2019). Depression and anxiety are two of the most common mental health concerns reported by college students, with cases consistently increasing over the past 50 years (BlackDeer et al., 2021). As mental health issues have increased in recent decades, so has the prevalence of substance use

(Halladay et al., 2024). Frequently, depression and anxiety show temporal precedence, diagnosed before substance use dependency and SUD (Groenman et al., 2017; Mochrie et al., 2020).

CAMPUS ENGAGEMENT AND SOCIAL LIFE

During college, making the transition from family support toward campus belonging is crucial for student success. This experience can be stressful, contributing to adjustment and retention difficulties (Oluwatomiwo, 2015). Additionally, it is important that students who transition to college develop a network of friends with whom they can discuss personal concerns (Mason et al., 2014). Simply put, the people whom students surround themselves with matter. The troubling reality is that members of fraternities and sororities frequently use and abuse substances (e.g., Scott-Sheldon et al., 2008; Witcraft et al., 2020). Outside Greek life, students whose friendship networks include substance users are at risk of becoming substance users themselves (Mason et al., 2014; Taylor, 2006). Finally, students who are harassed by others or have little social support tend to have higher rates of problematic alcohol use (McGinley et al., 2015). Social networks are an essential component of college adjustment.

COPING SKILLS AND LEARNING TO BE INDEPENDENT (AUTONOMOUS)

For many students, college is their first opportunity to live independently, explore new freedoms, and learn self-sufficiency. Gaining autonomy can be liberating but challenging. Even individuals who use substances associate adulthood with living away from parents and less binge drinking (Blevins et al., 2021). Research involving adolescents indicates that lower drug use and greater parental encouragement of independence predict increased autonomy and competence (Chassin et al., 1999). When young adults have other coping skills, they are less likely to use substances. In a study of NCAA elite college athletes, Knettel et al. (2023) indicated that lower behavioral disengagement, higher perceived stress control, and religious coping decreased the risk of engaging in alcohol- and drug-related risk behaviors. Bravo et al. (2016) demonstrated that college students' mindfulness decreased the connection between depressive symptoms and drinking behavior. Thus, coping strategies besides substances can serve as protective measures.

The Current Study

Past studies have investigated numerous adult substance abuse risk factors, for both those in college and community samples. Thus, our first aim is replication: We expect that individual differences and demographics will also predict college problematic substance use. However, to our knowledge, our study is the first to look at college

adjustment factors in predicting substance misuse. We hypothesize that a variety of college adjustment subdomains will predict substance misuse. Our final goal is to establish incremental validity. After determining correlations between substance misuse and other factors, we expect that college adjustment variables will contribute a unique portion of the variance in predicting substance misuse.

Method

PARTICIPANTS

The sample included 936 college students between the ages of 18 and 61 ($M = 20.37$, $SD = 4.54$) across three campuses of one large, public southeastern U.S. university. Participants' gender identification was female (73.9%), male (25.1%), transgender (0.2%), and other (0.8%). Regarding ethnicity, 60.8% identified as White, 24.1% Black/African American, 5.3% Hispanic/Latinx, 5% multiracial, 3.7% Asian, 0.4% Native American, and 0.8% other. For sexual orientation, 77.8% of students identified as heterosexual, 12.4% bisexual, 3.5% homosexual, 2.8% asexual, 1.9% pansexual, and 1.5% other. The sample consisted of 45.5% first-years, 26% sophomores, 14.3% juniors, 11.2% seniors, and 2.9% other. Of the respondents, 57.1% primarily attended the large rural campus, 40.9% attended the small urban campus, and 1.9% attended the small-town campus outside a military base.

MEASURES

Problematic substance use. Problematic substance use was assessed using the WOWCAT (Wickline et al., 2009) Substance Abuse subscale ($\alpha = .856$, current sample). Rather than indicating particular substances used, participants rated 10 statements about negative impacts from substance use on a 5-point Likert scale, which were then averaged to get a total substance use score. Eight of the statements were reversed scored because they were negatively worded. As WOWCAT is a measure of college adjustment, higher scores indicated that students reported doing well or were having fewer issues as a result of their use of drugs and alcohol.

College adjustment. Taken from the same assessment measure of college substance use, participants reported on nine other WOWCAT subscales measuring myriad aspects of college adjustment: Friendships/Social Life, Living Arrangements, Extracurricular Involvement, Academic Performance/Study Habits, College-Specific Anxiety, College-Specific Depression, Family Relationships/Support Network, Learning to Be Independent, and Coping/Knowledge of Campus Resources. Also rated on a 5-point Likert scale, higher scores on each subscale indicate better adjustment. Each subscale consisted of 10 statements, with negatively worded items reverse-scored. Each of the nine other WOWCAT domains with the current sample had strong internal consistency with estimates that are satisfactory for research purposes ($.801 < \alpha < .909$).

Self-Esteem. Self-esteem was assessed using the Rosenberg Self-Esteem Scale (Rosenberg, 1965). This scale consists of 10 statements, rated on a 4-point Likert scale. Half of the statements are reverse scored; thus, a higher score notes higher self-esteem. The Rosenberg Self-Esteem Scale showed very strong internal consistency with the current sample ($\alpha = .912$).

Spirituality. Spirituality among students was assessed using the Spiritual Well-Being Scale (Ellison, 1983). Internal consistency was strong for the current sample ($\alpha = .946$). This scale consists of 20 statements (9 reverse scored) regarding personal experience(s) with spirituality. Items are rated on a 6-point Likert scale, with a higher score indicating greater spirituality.

Mood. The Positive and Negative Affectivity Schedule (Watson et al., 1988) self-report measure consists of 20 words describing different emotions and feelings, such as “enthusiastic” or “hostile.” Half of the terms assess positive affect, and half denote negative affect. Items are ranked on a scale of 1 (*very slightly or not at all*) to 5 (*extremely*). Scores are totaled by finding the sum of the positive items ($\alpha = .892$, current sample) and a separate sum for negative items ($\alpha = .872$, current sample).

Demographic questions. Participants completed demographic questions such as age, gender, ethnicity, and sexual orientation. They also indicated their campus location (urbanicity) and year in college.

PROCEDURE

This study was approved by the Georgia Southern University’s institutional review Board (protocol #H19245). Participants were recruited from March 2019 to October 2021 via two convenience samples: the SONA student research pool ($n = 739$) and word of mouth, email, and social media ($n = 197$). A hyperlink sent participants to the web-based platform (Qualtrics), where they provided informed consent before completing the survey items. Following survey completion, participants were debriefed with the contact information for the primary investigator and for campus counseling centers in case they reported distress. Students in the research pool received research participation credits; other participants received no compensation.

Results

Table 1 presents a correlation matrix of all continuous variables. Spearman correlations were used because some of the variables were not normally distributed. Because college adjustment factors have not been addressed frequently in theory or research, we used a stepwise regression to explore which variables would be significant predictors of substance misuse. Variables used as predictors included the college adjustment factors, student demographic variables, and other individual difference factors (e.g., spirituality, self-esteem, positive and negative affect). Eleven unique predictors resulted in a significant predictive model, $R^2 = .21$, $F(1, 853) = 4.40$, $p = .04$, each adding to the incremental validity and producing a significant R^2 change (see Table 2). Of the nine WOWCAT college adjustment factors, five were significant predictors. Students at greater risk for substance use problems indicated higher rates of depression, anxiety, and academic troubles and lower rates of social adjustment and knowledge of campus resources (coping).

Table 1*Correlation Matrix of all Continuous Variables Potentially Predicting Substance Abuse Problems*

	M	SD	WOODNA	WOOSOC	WOOHOU	WOOINV	WOOACAD	WOOANX	WOODEP	WOOFAM	WOOIND	WOOKNOW	RSE	POSAFF	NEGAFF	SWB	Age
WOODNA	4.1118	.733	—														
WOOSOC	3.6627	.676	.012	—													
WOOHOU	3.6860	.649	.043	.447**	—												
WOOINV	3.0938	.705	.065*	.505**	.220**	—											
WOOACAD	3.2657	.709	.227**	.159**	.207**	.244**	—										
WOOANX	2.9499	.833	.102**	.349**	.295**	.274**	.512**	—									
WOODEP	3.6803	.896	.261**	.473**	.337**	.374**	.437**	.629**	—								
WOOFAM	3.8959	.740	.232**	.423**	.303**	.299**	.300**	.316**	.596**	—							
WOOIND	3.6514	.712	.162**	.246**	.243**	.244**	.577**	.504**	.470**	.271**	—						
WOOKNOW	3.5907	.736	.222**	.509**	.361**	.383**	.360**	.376**	.570**	.571**	.406**	—					
RSE	2.9159	.643	.119**	.367**	.268**	.277**	.352**	.463**	.699**	.492**	.438**	.477**	—				
POSAFF	34.7037	7.799	.130**	.432**	.348**	.395**	.364**	.403**	.589**	.413**	.433**	.472**	.560**	—			
NEGAFF	23.4871	7.890	-.216**	-.273**	-.205**	-.240**	-.373**	-.564**	-.586**	-.398**	-.427**	-.415**	-.531**	-.299**	—		
SWB	4.3305	1.092	.223**	.365**	.274**	.372**	.219**	.274**	.552**	.509**	.251**	.425**	.501**	.492**	-.363**	—	
Age	20.37	4.540	-.106**	-.019	-.003	.081*	.124**	.048	-.003	-.038	.147**	.012	.012	.040	-.007	-.040	—

Note. Sample size for this correlation ranges from 845 to 936. WOODNA = Substance Abuse; WOOSOC = Friendships/Social Life; WOOHOU = Living Arrangements; WOOINV = Extracurricular Involvement; WOOACAD = Academic Performance/Study Habits; WOOIND = Learning to Be Independent; WOOANX = College-Specific Anxiety; WOODEP = College-Specific Depression; WOOFAM = Family Relationships/Support Network; WOOKNOW = Coping/Knowledge of Campus Resources; RSE = Rosenberg Self-Esteem Scale; POSAFF = Positive Affect; NEGAFF = Negative Affect; SWB = Spiritual Well-Being Scale.

* $p < .05$. ** $p < .01$.

Table 2*Regression Model Predicting Substance Abuse Problems from Student Demographics, Individual Difference, and Other College Adjustment Subscales*

Variable	Model 1			Model 2			Model 3			Model 4			Model 5			Model 6			Model 7			Model 8			Model 9			Model 10			Model 11			
	B	SE (B)	β	B	SE (B)	β	B	SE (B)	β	B	SE (B)	β	B	SE (B)	β	B	SE (B)	β	B	SE (B)	β	B	SE (B)	β	B	SE (B)	β	B	SE (B)	β				
WOODEP	.225	.027	.273	.236	.027	.286	.252	.027	.305	.250	.026	.303	.199	.029	.242	.283	.034	.343	.36	.04	.43	.326	.042	.396	.342	.04	.415	.311	.044	.377	.291	.045	.353	
Ethnicity				-.138	.028	-.159	-.133	.028	-.153	-.139	.028	-.160	-.143	.028	-.165	-.156	.027	-.180	-.165	.027	-.190	-.170	.02	-.196	-.160	.027	-.184	-.151	.028	-.174	-.149	.028	-.172	
Campus							-.114	.024	-.152	-.132	.025	-.176	-.125	.025	-.166	-.120	.024	-.159	-.118	.024	-.157	-.119	.02	-.157	-.112	.024	-.149	-.117	.024	-.155	-.116	.024	-.155	
Credit hours										-.074	.021	-.114	-.085	.021	-.321	-.088	.021	-.136	-.087	.021	-.135	-.086	.021	-.133	-.080	.021	-.123	-.082	.021	-.126	-.080	.021	-.124	
WOOACAD													.143	.037	.138	.209	.039	.202	.218	.039	.211	.204	.039	.197	.187	.039	.181	.188	.039	.182	.184	.039	.178	
WOOANX																-.182	.03	-.205	-.177	.038	-.199	-.178	.038	-.199	-.161	.03	-.181	-.150	.039	-.169	-.172	.040	-.193	
RSE																				-.176	.048	-.152	-.191	.048	-.166	-.192	.048	-.167	-.211	.049	-.183	-.227	.049	-.196
WOCKNOW																						.100	.039	.099	.144	.042	.14	.133	.042	.132	.124	.042	.123	
WOOSOC																										-.114	.043	-.104	-.123	.043	-.113	-.118	.043	-.108
SWB																												.059	.027	.088	.059	.027	.087	
NEGAFF																														-.008	.004	-.087		
R ²			.073		.097			.119			.134			.144			.165			.177			.183			.183			.183			.183		
F for change in R ²			69.29		23.939			22.939			12.206			22.59			13.422			6.580			7.102			7.102			7.102			7.102		

Note. Forward selection stepwise regression was used, with output showing significant predictors to the model. Traditional asterisks for significance are not necessary because of the nature of stepwise regression. WOODEP = College-Specific Depression; WOOACAD = Academic Performance/Study Habits; WOOANX = College-Specific Anxiety; RSE = Rosenberg Self-Esteem Scale; WOCKNOW = Coping/Knowledge of Campus Resources; WOOSOC = Friendships/Social Life; SWB = Spiritual Well-Being Scale; NEGAFF = Negative Affect.

Three of the six demographic factors added unique variance in the stepwise regression because of their significant beta weights. Follow-up one-way between-groups analyses of variance investigated categorical predictors further, with Scheffé post-hoc tests. Regarding ethnicity, White students indicated significantly more substance misuse than Black or other ethnic minority students, $F(2, 935) = 7.81, p < .001, h^2 = .02$. For class year, juniors reported significantly more problems than first-year students, $F(4, 932) = 5.05, p = .001, h^2 = .02$. Last, students who attended the large rural campus indicated significantly greater substance misuse than students at the smaller, more urban, primarily commuter campus, $F(2, 931) = 8.67, p < .001, h^2 = .02$.

Three of the four individual difference factors were significant predictors of substance misuse. Students at greater risk for problematic substance use also tended to indicate lower self-esteem, higher negative affect, and lower spiritual well-being.

Discussion

As previously established, college students can be vulnerable to developing problematic use of substances. We identified risks for substance misuse in a college population by using a novel combination of college adjustment, individual difference, and demographic variables. Our results establish a pattern where the at-risk student struggling with substance misuse in our study tended to be exhibiting difficulties with academics, depression, anxiety, social relationships, and knowledge of campus resources; to indicate lower self-esteem, less spiritual well-being, and greater negative affect; and to be White, in their junior year of their coursework, and attending a large rural campus. These results help set the stage for data-driven campus programming and potential resources that can be made on college campuses to aid retention by encouraging college coping strategies besides substance use.

Studying college substance use through the lens of college adjustment allows for a more complete insight into risk and protective factors for collegiate substance misuse. Of the nine WOWCAT college adjustment factors used to predict problematic substance use in college students, five emerged as significant predictors. The significant impacts of college-related depression and anxiety are commensurate with previous literature. According to the most recent results published by the American College Health Association (2018) National College Health Assessment, stress, depression, and anxiety represent the most significant impediments to academic performance. Given that substance use can be a coping mechanism for mental health challenges, and with adjacent reports of college-related depression and anxiety rising (BlackDeer et al., 2021), our findings emphasize and build on the need for campus mental health resources.

Additionally, our results indicated poor academic adjustment as a significant predictor of substance misuse, a finding that is well documented in the extant literature. Our findings are commensurate with previous studies, notably a longitudinal study by Wilhite et al. (2017), who found that marijuana use and binge drinking predicted delayed college graduation, and McCabe et al.'s (2017) work finding nonprescription stimulant use as a risk factor for SUD and lower degree attainment. For those looking to assist student success through campus resources, we highlight the cyclical relationship between academic achievement and problematic substance use, noting also that both of these are very multifaceted constructs. Our results could help inform intervention-based risk assessments: Academic advisors working with struggling students might probe about substance use, and counselors who are addressing students with SUDs and mental health concerns would do well to also check in on degree progress. On the primary and secondary prevention side, campuses should provide substance abuse awareness programs for both students in general and those struggling with academic attainment (Afuseh et al., 2020). Moreover, workshops on learning-based strategies have been shown to be more effective for academic retention of first-year students than academic socialization training or no workshops (Ryan & Glenn, 2014). Perhaps more didactic approaches to studying and learning strategies could also have an indirect effect on substance abuse through greater academic achievement.

The last of our significant college adjustment variables were social factors: lower rates of social adjustment and lesser knowledge of campus resources. Social life is a huge element of the college experience, and students who are away from home for the first time are particularly at risk for social isolation (Smith et al., 2006). Many colleges have begun to offer a course akin to a first-year seminar for incoming students to take during their first semester in order to orient them to campus itself and campus resources. Making these programs more interactive and comprehensive could provide students with knowledge of the resources at hand as well as a foundation for a social network and coping strategies that do not involve substances.

Given the significant results for college adjustment factors, our position that college adjustment indicators should be used as a measure to predict collegiate substance misuse has merit. Addressing these findings, we find there is a strong case for universities to develop a framework not just for comprehensive first-year adjustment programming but also for more robust student resources that encompass learning strategies and academic achievement, substance use, and student mental health and well-being. Our other four college adjustment variables—living arrangements, family relationships, learning to be independent, and extracurricular involvement—were not significant predictors of problematic substance abuse; however, given their connectivity with other college adjustment subscales, these variables could have

indirect effects. Future work with the WOWCAT could further evaluate the relationship between these college adjustment variables, giving more in-depth understanding of the nomological network of college adjustment.

In addition to using college adjustment as a novel predictor of substance misuse, we wanted to replicate previous findings in terms of demographic predictors. Results indicated that ethnicity significantly predicted substance, with additional analysis showing that White students indicate more substance misuse than do Black or other students of color, which is commensurate with other studies on college adults (McCabe et al., 2007; SAMHSA, 2023). Data for this study were collected at a Primarily White Institution where 60.8% of participants and 58.5% of the total institution student population identify as White. As a result of low sample size of ethnic group individuals apart from White or Black (5.3% Hispanic/Latinx, 5% Multiracial, 3.7% Asian, 0.4% Native American, and 0.8% other, respectively), data were categorized into a comprehensive third ethnic group category for analysis. Although this strategy allowed all ethnic groups to be included, it is far from ideal, masking potential differences across smaller groups. In replication studies it would be important to recruit greater ethnic representation.

A common mythos of college students is of the binge-drinking first-year student. Our results showed that in terms of class year, juniors reported significantly more problems in terms of substance use than did first-year students. Most U.S. juniors who started college immediately after high school are either turning 21 or already 21, the legal drinking age in the United States. Thus, alcohol becomes easier to access at that time in this cultural context. By junior year, students also have more broadly established social networks, often including fraternities, sororities, and other opportunities for social substance use, which could snowball into problematic use. Further research should investigate more specifically the interconnectedness between social life, extracurriculars, class year, and substance misuse.

Many college campuses in the United States fall into one of two categories: large universities within a rural area (creating the phenomena of “college towns”) or campuses that are located within a developed metropolitan area. Although past studies have looked at the urbanicity of students, few studies have looked at the geographic location of the college itself as a substance use predictor. Our findings indicated that urbanicity of the campus indeed can be used as a predictor, with students attending a large campus in a more rural area/college town reporting significantly more substance misuse than students at the smaller, primarily commuter campus in a city. Other studies have found differences in substance-type use by geographic background (Derefinko et al., 2018); however, continued research is needed in this area.

Contrary to previous studies, gender, age, and sexual orientation were not significant predictors when a comprehensive model was used. College campus culture could indeed play an important role in college adjustment as it relates to substance misuse, a concept that could be considered for further analysis. Of our four individual difference variables, three (self-esteem, spirituality, negative affect) were found to significantly predict substance misuse, which is in line with previous research (Russell et al., 2020). High self-esteem and spirituality can be protective against substance use (Gerrard et al., 2000; Prosek et al., 2017). Self-esteem is an aspect of student mental well-being, and by having campus mental health resources accessible and comprehensive, there is a clear path toward addressing not only self-esteem in relation to substance use but also other mental health aspects, such as anxiety and depression. Previous literature has established connections between negative affect, substance use, and feelings of shame and guilt. Substance use can provide a sense of escapism from negative feelings, which could explain the relationship between negative affect and collegiate substance use. The relationship between negative affect and substance use is multidimensional and deserves further examination. These results build on other findings, reinforcing the need not only for improved student well-being and mental health resources on college campuses (Watkins et al., 2011) but also for strategic campus efforts on disseminating knowledge about how to access mental health and related resources (Yorgason et al., 2010).

Regarding other limitations, data from this study were obtained from a single Primarily White Institution with multiple campuses in the southeastern United States. The culture of this geographic area is likely to have played a contributory role. Future studies should consider administration across various geographic areas and in schools with different ethnic concentrations, such as Historically Black Colleges and Universities, Hispanic-serving institutions, and Tribal Colleges. Institution type could also be important, as this study examines adjustment at a doctoral university with high research focus (R2). An expanded scope could examine differences in substance misuse from a college adjustment lens at various kinds of institutions of higher learning.

Although substance misuse is an incredibly complex and concerning issue, this research provides insight into how college campuses can better allocate their resources to intervene in the best and safest way possible to support student success, health, and retention. Information gained from this study can form the foundation of problematic substance use prevention and intervention programs on college campuses, as well as provide evidence-based student resources addressing aspects of college adjustment. Additionally, results from this study can be translational, arming clinicians and counselors with knowledge when faced with college clients who are experiencing substance abuse issues and SUD.

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