Graduate student burnout: Substance use, mental health, and the moderating role of advisor satisfaction

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Abstract

Substance use and mental health problems are associated with academic difficulties among high school and undergraduate students, but little research has been conducted on these relationships among graduate students. The sample consisted of 2,683 graduate students attending two large, public universities. Standard measures were used to collect data on demographic and program characteristics, mental health, substance use, advisor satisfaction, and burnout (i.e., exhaustion, cynicism, and inefficacy). Linear regression models evaluated relationships between each mental health and substance use variable with burnout, as well as the moderating role of advisor satisfaction. Students with a greater number of substance use and mental health problems had higher levels of exhaustion, cynicism, and inefficacy. No statistically significant relationships between substance use and burnout were found. High levels of stress, moderate or severe anxiety symptoms, and moderate or severe depressive symptoms were associated with increased levels of burnout. Advisor support moderated the relationships between stress and both cynicism and inefficacy such that the effects of stress on these dimensions of burnout were lower among those who were satisfied with their advisor. Graduate students with mental health problems might be at increased risk for burnout; however, having a supportive advisor might buffer this association.

Keywords

Mental health; substance use; graduate students; advisor satisfaction; burnout

Introduction

An increasing number of young adults are choosing to pursue a graduate degree, and the current estimate of almost three million graduate students in the United States is projected

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to increase to 3.3 million students by 2026 (McFarland et al., 2017). Only 50% to 75% of graduate students complete their degree (Ali & Kohun, 2006; Baum & Steele, 2017; Lovitts & Nelson, 2000), highlighting the importance of understanding the factors that contribute to the high prevalence of graduate student attrition.

Burnout among graduate students has the potential to act as a marker for poor academic achievement and attrition. The concept of burnout has been extensively studied and is typically defined by three dimensions (Maslach & Jackson, 1981; Schaufeli, Martinez, & Pinto, 2002; Schaufeli & Salanova, 2007). The first dimension, exhaustion, refers to fatigue that occurs when a person has been depleted of their emotional resources. The second dimension, cynicism, is the development of negative or indifferent attitudes related to the validity of a person's work. Finally, inefficacy refers to feelings of incompetency and a lack of personal accomplishment. Studies have found high levels of burnout among graduate students (Boren, 2013; Cornér, Löfström, & Pyhältö, 2017; Dyrbye et al., 2008; Kovach Clark, Murdock, & Koetting, 2009; Kurtz & Tangari, 2007), and there is evidence of an association between burnout and intentions to drop out of school among both undergraduate and graduate student populations (Cornér et al., 2017; Law & Patil, 2015; Moneta, 2011).

Existing theoretical models of student retention in higher education [e.g., the Undergraduate Dropout Process Model (Spady, 1970, 1971), the Institutional Departure Model (Tinto, 1975, 1993), the Student Attrition Model (Bean, 1980, 1982), and the Student-Faculty Informal Contact Model (Pascarella, 1980)] have focused mostly on undergraduate student attrition and included the influence of individual factors (e.g., demographic characteristics, external commitments, and personal goals), academic factors (e.g., grade performance and skills and abilities), institutional factors (e.g., organizational structure and administrative policies), and social factors [e.g., social integration and faculty/staff interactions (Aljohani, 2016)]. Few models of student retention have included the influence of health status and behaviors, including mental health and substance use, as potential factors that might contribute to student dropout. Research is needed on how mental health and substance use might directly affect burnout and attrition as well as interact with other existing factors to influence academic success, particularly among graduate students.

Alcohol use, marijuana use, and nonmedical use of prescription drugs have all been linked to poor academic performance and attrition among high school and undergraduate students (Arria et al., 2008; Arria et al., 2013a; Arria et al., 2013b; Arria, Caldeira, Bugbee, Vincent, & O'Grady, 2015; Bray, Zarkin, Ringwalt, & Qi, 2000; D'Amico et al., 2016; Kelly et al., 2015; Maggs et al., 2015; Meier, Hill, Small, & Luthar, 2015; Silins et al., 2014; Suerken et al., 2016). Some studies of graduate students from health disciplines suggest a similar inverse relationship between substance use and academic performance, including lower grades, falling behind in academic work, and other academic consequences (English, Rey, & Schlesselman, 2011; Kernan, Bogart, & Wheat, 2011).

Only a few studies have examined academic outcomes related to mental health among graduate students, but the results suggest that mental health problems could negatively impact academic achievement. For example, 27% of graduate students reported that feeling stressed negatively impacted their academic performance (Kernan et al., 2011). Eisenberg

et al. (2009) found a significant association between depression and lower graduate student GPA, and Kernan et al. (2011) found that 44% of graduate students who reported depression or anxiety during the past year faced academic hardship due to their mental health problems. When asked about the effects of mental health on academic performance, graduate students report that depression and anxiety lead to lower grades, incomplete or dropped courses, and disruption in thesis, dissertation, or practicum work (Wyatt & Oswalt, 2013).

Given the hypothesized negative relationship between substance use and mental health problems with the academic achievement of graduate students, it is worth exploring additional factors that might influence the magnitude of this relationship. Research has shown that professional support, particularly advisor support, has a positive association with graduate student success. Positive relationships with a faculty advisor are associated with improved mental health (Hyun, Quinn, Madon, & Lustig, 2006), decreased stress (Nelson, Dell'Oliver, Koch, & Buckler, 2001), and less emotional exhaustion among graduate students (Hunter & Devine, 2016). Studies have found that graduate students rank having a knowledgeable and supportive advisor as one of the most important contributors to their academic success (Bain, Fedynich, & Knight, 2011; Golde, 2005; Sverdlik, Hall, McAlpine, & Hubbard, 2018). Given these research findings on the benefits of a positive student/advisor relationship, the potential for advisor satisfaction to mitigate the associations between substance use and mental health problems with burnout among graduate students is an important area of research.

These prior research studies on the mental health and substance use of graduate students have largely utilized samples from a single academic discipline, and the combined effects of advisor satisfaction, substance use, and mental health problems on academic underachievement/burnout among graduate students have been understudied. Our knowledge of these relationships primarily comes from theory and research using high school and undergraduate student samples, despite graduate school typically occurring during a developmentally different time and under different circumstances than high school and college. Increasing our knowledge of the associations between mental health, substance use, and burnout among this unique student population might have important implications for preventing graduate student attrition.

Accordingly, among a large, diverse sample of graduate students, this study has the following aims: (1) document burnout and advisor satisfaction; (2) assess the relationships between mental health problems, substance use, advisor satisfaction, and burnout; and 3) examine whether or not advisor satisfaction moderates the relationships between mental health problems, substance use, and burnout. We hypothesize that mental health problems and substance use will be positively associated with burnout in this sample, and that satisfaction with an advisor will lessen the effects of mental health problems and substance use on burnout.

Methods

Study Sample

All currently enrolled graduate students at two large, public universities in the Mid-Atlantic U.S. were invited to participate in the study. Students were eligible for participation in the study if they were: 1) 18 years old or older, and 2) currently enrolled in a graduate degree program at the master's- or doctorate-level at either university.

Data Collection Procedures

A web-based survey was sent to all currently enrolled graduate students at both universities (n=16,775) in the middle of the Fall 2017 semester. Of the n=4,318 students who consented to participate, n=643 did not meet eligibility criteria and were excluded, mostly because they were enrolled in graduate certificate programs or majority online degree programs. The study yielded an overall response rate of 23%. Participants were further excluded if they did not make it to the end of the survey, regardless of skipping individual questions throughout. The final analytic sample consisted of n=2,683 graduate students.

Data collection was open for one month, and three reminder emails were sent weekly after the initial recruitment email. Participants could choose to enter themselves into a raffle, and 350 participants were randomly selected to receive a $10 gift card. Each participant provided informed consent, and approval was obtained by the Institutional Review Boards at both participating universities.

Measures

Demographic characteristics.—Standard questions were used to collect data on age, sex, race/ethnicity, international student status, employment status, marital status, combined annual household income, and number of children currently living at home.

Degree type.—Participants indicated if they were seeking a master's degree, academic doctoral degree (e.g., Ph.D.), or a professional doctoral degree (e.g., M.D., J.D.).

Time enrolled.—Participants indicated how many semesters they had been enrolled in their graduate degree program, including the current semester, using the standard definition of an academic semester lasting 15 to 18 weeks. This variable was recoded into a three-level categorical variable with response options of less than a year, 1 to 2 years, and more than two years.

Academic discipline.—Participants chose from a list of 20 academic disciplines. Responses were recoded into a four-level categorical variable: 1) natural-pure (agriculture and natural resources and computer, mathematical, and natural sciences); 2) natural-applied (engineering, dentistry, health sciences, medicine, nursing, pharmacy, and physical therapy); 3) social-pure (behavioral and social sciences and arts and humanities); and 4) social-applied (business, education, law, architecture, public health, public policy, information studies, journalism, and social work). This characterization of academic discipline is based on the dimensions of academic areas as defined by Biglan (1973).

Full-time student status.—Participants indicated whether or not they were currently enrolled in their graduate program full- or part-time.

Anticipated program length.—Participants were asked to indicate the expected number of years for completion of their graduate degree. Responses were recoded into a three-level categorical variable: 1 to 2 years, 3 to 5 years, and six or more years.

Lifetime diagnosis of anxiety disorder.—Anxiety disorder was assessed by asking participants to indicate whether or not they had ever been diagnosed with an anxiety disorder by a health professional during their lifetime.

Anxiety symptoms.—The Beck Anxiety Inventory [BAI (Beck, Epstein, Brown, & Steer, 1988)] was used to assess current levels of anxiety. The scale consists of 21 symptoms of anxiety, and participants rank how much each symptom has bothered them during the past week using a four-point scale ranging from 0 (not at all) to 3 (severely, can barely stand it). Possible scores range from 0 to 63, with higher scores indicating higher levels of anxiety. Based on existing clinical cutoffs (Beck & Steer, 1993), BAI scores were classified as no (0 to 7), mild (8 to 15), moderate (16 to 25), or severe (26 or higher) anxiety symptoms. Anxiety symptoms were analyzed as a dichotomous variable representing presence of moderate or severe anxiety symptoms.

Lifetime diagnosis of depression.—Depression was assessed by asking participants to indicate whether or not they had ever been diagnosed with depression by a health professional during their lifetime.

Depressive symptoms.—The Beck Depression Inventory [BDI (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961)] was used to assess current levels of depressive symptoms using a series of 21 statements about how participants have been feeling during the past few days. Possible scores range from 0 to 63, with higher scores indicating increased depressive symptoms. Based on existing clinical cutoffs (Beck, Steer, & Brown, 1996), BDI scores were classified as minimal (0 to 13), mild (14 to 19), moderate (20 to 28), or severe (29 or higher) depressive symptoms. Depressive symptoms were analyzed as a dichotomous variable representing presence of moderate or severe depressive symptoms.

Perceived stress.—Perceived stress was assessed using the Perceived Stress Scale [PSS (Cohen, Kamarck, & Mermelstein, 1983)]. The scale consists of 10 items rated on a 5-point Likert type-scale, ranging from never (0) to very often (4). Scores range from 0 to 40, with higher scores indicating higher levels of stress. Due to non-normality, stress was analyzed as a dichotomous variable. PSS scores were divided into approximate quartiles, with scores of 24 and higher (the upper quartile) classified as high levels of stress.

High-risk alcohol use.—The frequency of alcohol use was measured by the number of days during the past 12 months when alcohol was consumed. Participants who had at least one drink during the past 12 months were asked how many alcoholic drinks they consumed on a typical day that they drank during the past 12 months. A dichotomous variable was computed to represent high-risk alcohol use during the past 12 months. High-risk drinkers

drank at least once a month during the past 12 months with a typical quantity of five drinks or more for men and four drinks or more for women, which is an adaptation of the definition of binge drinking from the National Survey on Drug Use and Health (Center for Behavioral Health Statistics and Quality, 2017).

Marijuana use.—The frequency of marijuana use was assessed by the number of days participants had used marijuana during the past 12 months. Marijuana use was analyzed as a dichotomous variable to represent use/non-use during the past 12 months.

Nonmedical use of prescription drugs.—Four classes of prescription drugs were of interest—prescription stimulants, analgesics, tranquilizers, and sedatives. Participants were provided with the definition of nonmedical use as the intentional use of prescription drugs without a prescription, in a way other than prescribed, or for the experience or feeling it causes (National Institute on Drug Abuse, 2018). The frequency of nonmedical use of prescription drugs was assessed by the number of days participants had used each of the four classes of prescription drugs nonmedically during the past 12 months. A dichotomous variable was computed to assess nonmedical use/non-use of any class of prescription drug during the past 12 months.

Number of substance use and mental health problems.—A count variable was computed to represent number of substance use and mental health problems, ranging from 0 to 8 (lifetime anxiety diagnosis, lifetime depression diagnosis, high stress level, moderate/ severe anxiety symptoms, moderate/severe depressive symptoms, high-risk alcohol use, marijuana use, and nonmedical use of prescription drugs). This variable had five categories, including 0, 1, 2, 3, and 4+ substance use and mental health problems.

Advisor satisfaction.—A single item was used to assess level of satisfaction with a faculty advisor, and five response options ranged from very dissatisfied to very satisfied. For moderation purposes, advisor satisfaction was recoded into a dichotomous variable including "very dissatisfied/dissatisfied/neither satisfied nor dissatisfied" and "very satisfied/satisfied".

Burnout.—Burnout was measured by using three subscale scores of the Maslach Burnout Inventory-Student Survey [MBI-SS (Schaufeli et al., 2002; Schaufeli & Salanova, 2007)]. The MBI-SS consists of 15 items that are grouped into three scales: exhaustion (five items), cynicism (four items), and inefficacy (six items). Each item is scored on a 7-point scale ranging from never to always, with higher scores indicating higher levels of burnout. Prior studies have used the MBI-SS for populations of both undergraduate and graduate students (Capri, Ozkendir, Ozkurt, & Karakus, 2012; Rigg, Day, & Adler, 2013; Salanova, Schaufeli, Martínez, & Bresó, 2010; Schaufeli et al., 2002).

Statistical Analyses

Twenty-eight percent of the sample (*n*=754) were missing data on at least one variable of interest, and comparisons between complete and non-complete cases revealed that the data were not missing completely at random. Missing data was handled using multiple

imputation of five complete datasets in SPSS Version 24.0, incorporating all study variables, and statistics were obtained by averaging the results across all imputed datasets.

Multivariate linear regression models for the three dimensions of burnout (i.e., exhaustion, cynicism, and inefficacy) were fit that included all demographic characteristics, program characteristics, mental health variables, substance use variables, and advisor satisfaction. Final multivariate linear regression models included all demographic and program characteristics regardless of significance after adjusting for other variables, as well as any predictor variable that was significant after adjusting for all other variables. The R^2 value was used to examine the fit of each final model in explaining the variation in exhaustion, cynicism, and inefficacy.

To determine whether or not the relationship between mental health/substance use and burnout was moderated by advisor satisfaction, all potential interaction effects between the mental health/substance use variables and advisor satisfaction were entered separately into the final models predicting burnout and assessed for statistical significance.

SPSS Version 24.0 was used for all analyses, and the alpha level was set at 0.05.

Results

Sample Characteristics

The characteristics of the sample (n=2,683) are presented in Table 1. Table 2 describes the results related to mental health and substance use. About one in five students (21%) had been diagnosed with an anxiety disorder during their lifetime, and 20% had been diagnosed with depression. A quarter of the sample were classified as having high stress levels. Based on BAI and BDI scores, 23% and 13% of participants were classified as having moderate/severe anxiety symptoms and moderate/severe depressive symptoms, respectively.

The majority of the sample (85%) consumed alcohol during the past 12 months, with a mean frequency of 71 days and a mean typical quantity of two drinks per drinking occasion among drinkers (data not shown). Twenty percent of the sample used marijuana during the past 12 months, with a median frequency of six days among users. High-risk alcohol use and nonmedical use of prescription drugs were not highly prevalent among this sample, with only about 7% of students engaging in each behavior during the past 12 months.

Forty-one percent of graduate students had no substance use or mental health problems. According to the computed count variable, 23% had one substance use or mental health problem, 15% had two problems, 11% had three problems, and 10% had four or more problems.

Advisor Satisfaction and Burnout

Two-thirds of students were satisfied with their advisor, about a quarter were neither satisfied nor dissatisfied, and 10% were dissatisfied (see Table 2). Students were more likely to report higher levels of exhaustion as compared with cynicism or inefficacy, with mean scores of 2.72, 1.91, and 1.59, respectively, on the three dimensions of burnout.

Relationships between Mental Health, Substance Use, Advisor Satisfaction, and Burnout

As seen in Figure 1, bivariate analyses revealed that levels of exhaustion, cynicism, and inefficacy increased as the number of substance use and mental health problems increased. After statistical adjustment for demographic and program characteristics and all other predictor variables (see Table 3), high stress levels, moderate/severe anxiety symptoms, and moderate/severe depressive symptoms had significant, positive associations with exhaustion, cynicism, and inefficacy. Lifetime diagnosis of an anxiety disorder had a significant, negative association with inefficacy, but this relationship was no longer significant when added to the final model and was therefore excluded. Students satisfied with their advisor had lower levels of all three dimensions of burnout when compared with students who were dissatisfied with their advisor or neither satisfied or dissatisfied with their advisor.

Final regression models including all significant predictors and all demographic and program characteristics, regardless of statistical significance, were fit for each dimension of burnout. The final models for exhaustion, cynicism, and inefficacy had R^2 values of 0.388, 0.325, and 0.304, respectively.

While all demographic and program variables were included as control variables in the final adjusted models, relationships between these control variables and burnout are not shown in a table. Exhaustion was significantly higher among women, domestic students, professional doctoral degree students, students enrolled for more than a year, full-time students, and students enrolled in programs in the natural-applied disciplines. Cynicism was significantly higher among students who had never been married, students enrolled for more than a year, and students enrolled in programs in the natural-pure and natural-applied disciplines. Inefficacy was significantly higher among younger students ages 20 to 25 years old, students enrolled for more than a year, and students enrolled in programs in the natural-pure, natural-applied, and social-pure disciplines.

Moderation by Advisor Satisfaction

Advisor satisfaction significantly moderated the relationships between stress and both cynicism and inefficacy in the adjusted regression models. While no interaction effects were significant in the models predicting exhaustion, the interaction between high levels of stress and advisor satisfaction was significant when added individually to the models predicting cynicism (β=−0.23; p=0.04) and inefficacy (β=−0.22; p=0.01; data not shown in a table). The association between high levels of stress and both cynicism and inefficacy was weaker among those who were satisfied with their advisor in comparison with those who were dissatisfied or neither satisfied nor dissatisfied with their advisor.

Discussion

This study examined the relationships between mental health problems, substance use, advisor satisfaction, and burnout among a highly diverse sample of graduate students. Three dimensions of burnout were examined that captured students' level of exhaustion from the demands of a graduate program, their cynical attitudes regarding their studies, and their feelings of incompetence or inefficacy. Because few studies have explored burnout among

graduate students, it is difficult to say how the levels of burnout observed in this study compare with other samples. Higher levels of exhaustion, as measured by the MBI-SS, were found in a study by Rigg et al. (2013). When compared with the current study; however, this difference might be explained by demographic differences between the two study samples.

As hypothesized, higher levels of stress, anxiety symptoms, and depressive symptoms were associated with higher levels of burnout, which is consistent with prior work among graduate students suggesting a relationship between poor mental health and decreased academic success (Eisenberg et al., 2009; Kernan et al., 2011; Wyatt & Oswalt, 2013). However, no relationships were found between substance use and burnout, failing to support our hypothesis that students might utilize substance use as a means to cope with the challenges of graduate school. This finding might be due to the low prevalence of substance use among this study sample, particularly high-risk alcohol use and nonmedical use of prescription drugs.

Advisor satisfaction was significantly associated with all three dimensions of burnout. This is consistent with the findings from a recent meta-analysis by Kim et al. (2018) on the relationship between social support and burnout among both undergraduate and graduate student samples. Synthesizing results from 19 studies, the authors concluded that social support is negatively correlated with exhaustion, cynicism, and inefficacy. Rigg et al. (2013) examined the association between social support from family, friends, spouses, and advisors with exhaustion and found that only advisor support had a significant, negative relationship with exhaustion, highlighting the importance of the graduate student relationship with their advisor and other faculty in their department. A positive advisor relationship has also been shown to be related to degree completion, decreased time to graduation, decreased intent to leave a graduate program, and overall program satisfaction and success among graduate students (Cornér et al., 2017; Jairam & Kahl, 2012; Kurtz & Tangari, 2007; Pyhältö, Vekkaila, & Keskinen, 2015; Wao & Onwuegbuzie, 2011). An interesting area of future research would be to explore whether or not the type of advisor support provided (e.g., intellectual, emotional, and/or fiscal support) influences the relationship between advisor satisfaction and burnout.

Advisor satisfaction moderated the relationship between stress and both cynicism and inefficacy. These results are consistent with prior research that has found that social support acts as a buffer between stress and self-confidence in an academic setting (Rees & Freeman, 2007) and that cynicism and inefficacy are more strongly related to social support than exhaustion (Kim et al., 2018). In comparison with exhaustion, cynicism and inefficacy might be more modifiable states of mind, in that an advisor can bolster a student's skills and abilities and make them feel more confident and in control when facing the academic rigor of a graduate program. An earlier study by Koeske and Koeske (1991) also did not find a buffering effect of advisor support on the relationship between graduate student stress and exhaustion, consistent with the findings from the current study. However, it is possible that other types of social support not examined in this study, such as support from friends, family, and peers, might moderate the relationship between mental health and the exhaustion dimension of burnout.

If replicated, the findings of this study support making assessments of mental health problems more common during graduate school. Assessing and intervening with students who are experiencing high levels of burnout might help prevent graduate school attrition. This study identified groups that might be at increased risk for burnout and therefore could be the target of such screening and intervention efforts. Results showed that exhaustion was higher among female graduate students when compared with male graduate students, which might be explained by gender discrimination in educational and professional settings, high rates of interpersonal stressors, and increased likelihood of mood and anxiety disorders among women (Riecher-Rössler, 2017). Exhaustion was also highest among students enrolled in professional degree programs and those in the natural-applied disciplines, suggesting that graduate students in these programs might be at increased risk for dropping out of their program. Burnout also appeared to increase throughout the duration of a degree program, with students enrolled for more than a year reporting higher levels of exhaustion, cynicism, and inefficacy than newly enrolled students. Academic pressure and demands might increase as students move through their program, calling for increased resources for graduate students at later stages of graduate study.

One of the major limitations of this study is its cross-sectional design. This study only assessed students at one point in their graduate school career and did not allow for analysis of the potential influence of mental health, substance use, and advisor satisfaction on the long-term burnout and retention of graduate students. However, graduate school dropout might be a consequence of the three dimensions of burnout (exhaustion, cynicism, and inefficacy) measured in this study, and prior research among both undergraduate and graduate students has shown an association between burnout and intentions to drop out of school (Cornér et al., 2017; Law & Patil, 2015; Moneta, 2011). Future prospective studies are needed to clarify the directionality of the association and understand whether or not interventions can mitigate academic difficulties.

Other limitations of this study should be taken into consideration when interpreting the study findings. The study sample included graduate students from only two universities, so results might not be generalizable to other graduate student populations. In addition, comparing these data with national graduate school enrollment data, this sample had a similar breakdown by sex but was less racially and ethnically diverse and had a much higher proportion of doctoral students (Okahana & Zhou, 2017). Future studies should also measure gender identity in addition to sex, as research has shown that adults who identify as gender minorities experience increased physical and mental health problems when compared to their cisgender peers (Streed, McCarthy, & Haas, 2017). Additionally, this study sample had a higher prevalence of anxiety, depression, and marijuana use (Bidwal, Ip, Shah, & Serino, 2015; Shah, Bazargan-Hejazi, Lindstrom, & Wolf, 2009; Wyatt & Oswalt, 2013) and lower prevalence of risky alcohol use than other graduate student samples (Bidwal et al., 2015; Cranford, Eisenberg, & Serras, 2009; Rutledge, Bestrashniy, & Nelson, 2016). With a response rate of 23%, there might have been unknown differences between responders and non-responders on demographic characteristics, program characteristics, and health variables of interest.

There are three main implications of the current study in regards to higher education practice and policy. First, graduate students should be encouraged to utilize existing mental health and academic support resources on campus. Graduate students might be unaware that services such as the student health center or academic and career services are available for their use, as the availability of these resources might be more commonly advertised to the undergraduate student population. Upon entrance into a graduate program, students should be given information regarding existing resources, perhaps during a university, college, or department orientation program. Second, campus resources should be updated to better serve the unique needs of the graduate student population. Graduate students might require different types of support than undergraduate students because of unique personal and program-related experiences and circumstances. In particular, graduate students are often older and have competing outside employment and family responsibilities, and graduate programs differ from undergraduate programs in terms of structure, length, and rigor. Third, faculty members working as graduate student advisors or mentors should receive specialized training from the university in how to effectively assist graduate students in navigating both the academic and personal stressors of a graduate program. Advisors should be trained in recognizing the signs of both mental health and academic problems among graduate students, and they should understand the process for how to refer students to the appropriate resources on campus.

These findings provide further evidence that mental health is closely associated with the functioning of graduate students. While burnout was assessed as the dependent variable in this study, experiencing exhaustion, cynicism, and inefficacy might exacerbate underlying mental health conditions or increase substance use. The potentially mediating effect of burnout on the relationship between mental health problems and graduate student attrition is also of interest and should be a topic for future longitudinal research. Further, this research highlights the need for universities to focus on ways to buffer the effects of mental health problems on graduate student burnout, particularly by encouraging a supportive department culture that fosters a sense of community between faculty, staff, and students.

Acknowledgments:

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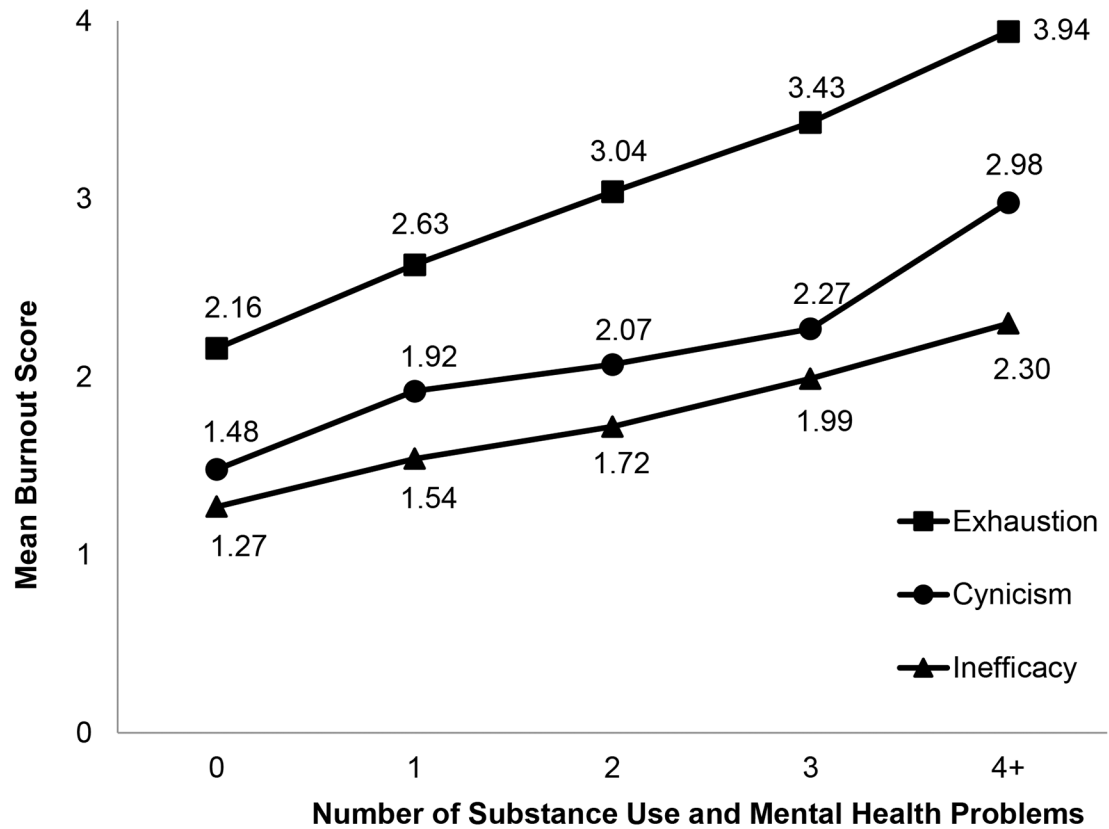
Fig. 1.
Burnout of graduate students, by number of substance use and mental health problems
(*n*=2,683)
Figure Note. Possible substance use and mental health problems include lifetime
anxiety diagnosis, lifetime depression diagnosis, high stress level, moderate/severe anxiety
symptoms, moderate/severe depressive symptoms, high-risk alcohol use, marijuana use, or
nonmedical use of prescription drugs. Results are bivariate.

Table 1

Sample characteristics (n=2,683)

	Total Sample
	n (Column %)
Age	
20–25 years old	1,148 (42.8)
26+ years old	1,535 (57.2)
Sex	
Male	1,005 (37.5)
Female	1,678 (62.5)
Race/Ethnicity	
Non-Hispanic white	1,572 (58.6)
Non-Hispanic other race	850 (31.7)
Hispanic/Latino	131 (4.9)
More than one race/ethnicity	130 (4.8)
International Student	
Yes	481 (17.9)
No	2,202 (82.1)
Employment Status	
Not currently employed	582 (21.7)
Employed part-time	423 (15.8)
Employed full-time	508 (18.9)
University assistantship	1,169 (43.6)
Marital Status	
Never married	1,950 (72.7)
Married	668 (24.9)
Widowed/divorced/separated	65 (2.4)
Household Income	
Less than $25,000	1,184 (44.1)
$25,000-$50,000	654 (24.4)
$50,000-$100,000	489 (18.2)
More than $100,000	355 (13.2)
Children	
Yes	289 (10.8)
No	2,394 (89.2)
Degree Type	
Master's degree	1,187 (44.2)
Academic doctoral degree	1,039 (38.7)
Professional doctoral degree	457 (17.0)
Time Enrolled	
Less than a year	793 (29.6)
1–2 years	1,165 (43.4)

	Total Sample
More than 2 years	725 (27.0)
Academic Discipline	
Natural-Pure	403 (15.0)
Natural-Applied	725 (27.0)
Social-Pure	459 (17.1)
Social-Applied	1,096 (40.8)
Student Status	
Full-time	2,279 (84.9)
Part-time	404 (15.1)
Anticipated Program Length	
1–2 years	899 (33.5)
3–5 years	1,339 (49.9)
6+ years	445 (16.6)

Ns and percentages might not add up to sample totals due to the rounding of pooled estimates.

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Table 2

Mental health problems, substance use, advisor satisfaction, and burnout among graduate students (*n*=2,683)

		Total Sample
		n (Column %)
Mental Health Problems	Lifetime Anxiety Diagnosis	558 (20.8)
	Lifetime Depression Diagnosis	536 (20.0)
	High Stress Level	661 (24.6)
	Moderate/Severe Anxiety Symptoms	606 (22.6)
	Moderate/Severe Depressive Symptoms	345 (12.9)
	High-Risk Alcohol Use	181 (6.7)
Substance Use	Marijuana Use	545 (20.3)
	Nonmedical Use of Prescription Drugs	190 (7.1)
Number of Substance Use and Mental Health Problems	0 problems	1,094 (40.8)
	1 problem	627 (23.4)
	2 problems	395 (14.7)
	3 problems	290 (10.8)
	4+ problems	277 (10.3)
Advisor Satisfaction	Very Satisfied/Satisfied with Advisor	1,766 (65.8)
	Neither Satisfied nor Dissatisfied	639 (23.8)
	Very Dissatisfied/Dissatisfied	278 (10.4)
Burnout	Exhaustion (0–6)	2.72 ± 1.4
	Cynicism (0–6)	1.91 ± 1.4
	Inefficacy (0–6)	1.59 ± 1.0

*N*s and percentages might not add up to sample totals due to the rounding of pooled estimates.

High Stress Level is defined as a score of 24 or higher on the Perceived Stress Scale; Moderate/Severe Anxiety Symptoms is defined as a score of 16 or higher on the Beck Anxiety Inventory; Moderate/Severe Depressive Symptoms is defined as a score of 20 or higher on the Beck Depression Inventory.

All substance use variables are for use during the past 12 months.

High-Risk drinkers drank alcohol at least once a month during the past 12 months and had a typical quantity of five or more drinks (for men) or four or more drinks (for women). Nonmedical use of prescription drugs includes nonmedical use of prescription stimulants, analgesics, tranquilizers, or sedatives.

For the number of substance use and mental health problems, possible problems include lifetime anxiety diagnosis, lifetime depression diagnosis, high stress level, moderate/severe anxiety symptoms, moderate/severe depressive symptoms, high-risk alcohol use, marijuana use, or nonmedical use of prescription drugs.

Table 3

Linear regression models examining the main effects of mental health problems, substance use, and academic support on the burnout of graduate students (*n*=2,683)

		Exhaustion		Cynicism		Inefficacy	
		Multivariate Associations	Final Adjusted Model	Multivariate Associations	Final Adjusted Model	Multivariate Associations	Final Adjusted Model
		β (95% CI)	β (95% CI)	β (95% CI)	β (95% CI)	β (95% CI)	β (95% CI)
Mental Health Problems	Lifetime Anxiety Diagnosis	0.03 (−0.09, 0.15)	-	−0.09 (−0.21, 0.05)	-	−0.10 (−0.19, 0.00) *	-
	Lifetime Depression Diagnosis	−0.03 (−0.15, 0.09)	-	−0.01 (−0.14, 0.12)	-	0.04 (−0.06, 0.13)	-
	High Stress Level	1.05 (0.93, 1.16) *	1.05 (0.93, 1.16) *	0.71 (0.58, 0.83) *	0.71 (0.58, 0.83) *	0.59 (0.50, 0.68) *	0.59 (0.50, 0.68) *
	Moderate/Severe Anxiety Symptoms	0.35 (0.24, 0.47) *	0.36 (0.25, 0.48) *	0.20 (0.07, 0.33) *	0.19 (0.06, 0.32)	0.18 (0.09, 0.27) *	0.17 (0.08, 0.26) *
	Moderate/Severe Depressive Symptoms	0.67 (0.53, 0.82) *	0.68 (0.54, 0.83) *	0.93 (0.77, 1.09) *	0.91 (0.75, 1.07) *	0.72 (0.60, 0.83) *	0.71 (0.59, 0.82) *
Substance Use	High-Risk Alcohol Use	0.17 (−0.01, 0.34)	-	−0.07 (−0.25, 0.12)	-	−0.09 (−0.22, 0.05)	-
	Marijuana Use	−0.02 (−0.13, 0.09)	-	−0.06 (−0.18, 0.06)	-	−0.04 (−0.12, 0.05)	-
	Nonmedical Use of Prescription Drugs	0.07 (−0.10, 0.23)	-	0.09 (−0.09, 0.28)	-	0.08 (−0.05, 0.21)	-
Advisor Satisfaction	Satisfied with Advisor	−0.45 (−0.54, −0.35) *	−0.45 (−0.54, −0.35) *	−0.63 (−0.73, −0.54) *	−0.64 (−0.74, −0.54) *	−0.39 (−0.47, −0.32) *	−0.40 (−0.47, −0.32) *
R²		0.389	0.388	0.326	0.325	0.306	0.304

*
p < 0.05

CI=Confidence Interval.

High Stress Level is defined as a score of 24 or higher on the Perceived Stress Scale; Moderate/Severe Anxiety Symptoms is defined as a score of 16 or higher on the Beck Anxiety Inventory; Moderate/Severe Depressive Symptoms is defined as a score of 20 or higher on the Beck Depression Inventory.

All substance use variables are for use during the past 12 months.

High-Risk drinkers drank alcohol at least once a month during the past 12 months and had a typical quantity of five or more drinks (for men) or four or more drinks (for women). Nonmedical use of prescription drugs includes nonmedical use of prescription stimulants, analgesics, tranquilizers, or sedatives.

Adjusted estimates control for all other predictor variables, as well as demographic and program variables, regardless of unadjusted significance.