A Multivariate Investigation of the Motivational, Academic, and Well-Being Characteristics of First-Generation and Continuing-Generation College Students

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Abstract

Prior research has noted differences in motivational, academic, and well-being factors between first-generation and continuing-education students. However, past investigations have primarily overlooked the interactive influence of protective and risk factors when comparing the characteristics of first-generation and continuing-education students. Thus, the current study adopted a multivariate approach to gain a more nuanced understanding of the influence of generational status on students' self-regulated learning capabilities, academic anxiety, sense of belonging, academic barriers, mental health concerns, and satisfaction with life. University students ($N = 432$, 67.46% Caucasian, 87.55% female, $\bar{X}_{\text{Age}} = 28.10 \pm 9.46$) completed the Cognitive Test Anxiety Scale-2nd Edition, Satisfaction with Life Scale, Sense of Belonging items, the learning strategies section of the Motivated Strategies for Learning Questionnaire, DASS-21, and BARRIERS Scale. Using Multivariate Analysis of Variance, we determined that first and continuing-generation students differed in satisfaction with life, cognitive test anxiety, psychological distress, use of elaborative rehearsal, critical thinking capabilities, efforts to manage time and study environment, and maintaining attention when working on academic tasks. Our discussion focuses on practical methods that can be used to help first-generation students navigate barriers to academic success.

Keywords: MANOVA, cognitive test anxiety, first-generation students, learning strategies

Introduction

Transitioning from high school to college is often associated with numerous changes and can be difficult for many students. For instance, college students face separation from their family and home, changes in friendships, restructuring responsibilities and activities, and academic challenges (Conley et al., 2020; Jackson et al., 2000). Although college provides unique opportunities for students, academic, familial, and social stressors can challenge various factors of psychosocial adjustment, including social well-being, psychological functioning, and

cognitive-affective strategies (e.g., coping skills). While research shows students face numerous challenges following the transition to university, the interactive influence of ecological dimensions such as pre-university education, university context, and the broader social environment place specific student subpopulations at an increased risk for unwanted academic outcomes (Kroshus et al., 2021).

Evidence suggests that first-generation college students experience more risk factors contributing to academic underperformance and university attrition than their continuing-generation peers (Kroshus et al., 2021; Padgett et al., 2012). For example, when compared to their continuing-generation students, first-generation students feel less connected to the campus community, have lower standardized test scores, are less likely to be prepared for college entry, rely on less effective learning and self-regulation strategies, and experience increased anxiety, stress, and depression (Antonelli et al., 2020; Padgett et al., 2012; Stebleton et al., 2014). However, most prior work has yet to consider affective experiences and non-cognitive predictors of success simultaneously, which can interfere with our ability to reach definitive conclusions regarding differences between first-generation and continuing-generation students. Thus, the current study examines how much first-generation and continuing-generation students differ regarding self-regulated learning capability, mental distress, cognitive test anxiety, sense of belonging, and perceived barriers to academic success.

First-Generation College Students

Students who are the first person in their families to attend college are considered first-generation college students and may face financial, educational, social, and cultural challenges going to and succeeding in college (Toutkoushian et al., 2018). Statistically, first-generation college students are more likely to come from low-income families, be nonnative English speakers, and have racially minoritized identities (e.g., different race, sexuality, nation of origin), which can all be associated with adverse academic outcomes (Ives & Castillo-Montoya, 2020). Compared to continuing-generation students, their first-generation peers are more likely to live off-campus, have lower levels of interactions with peers, and engage in fewer extracurricular or volunteer activities on campus (Padgett et al., 2012). Additionally, first-generation college

students report needing more resources to help with the demands of academic courses. Compared to students with college-educated parents, many first-generation college students do not feel prepared to navigate college because of a lack of insider knowledge of unspoken expectations or hidden rules (Long-Grice et al., 2016).

Some first-generation college students, who leave their homes to attend college, feel uncertain about their decision because their families and friends may not understand their decision to leave (Azmitia et al., 2018). Sometimes these students feel overwhelmed by their responsibilities at home and school and feel like anomalies in both places. First-generation college students can also feel lonely and homesick; and, in turn, consider dropping out. According to Azmitia and colleagues (2018), 30 – 50% of all first-generation college students drop out after their first year. Students who drop out reported financial difficulty and feeling unprepared academically, discrimination, guilt for leaving their family and not fulfilling their family obligations, and not feeling welcomed on campus. Additionally, first-generation college students may struggle with typical measures of academic success, such as having a high-grade point average (Ives & Castillo-Montoya, 2020). However, Ives and Castillo-Montoya (2020) found a small body of literature involving first-generation college students showing that when connected to academic content, they can exhibit self-efficacy and resiliency and are capable of academic success.

The best predictor of whether a first-generation college student drops out after their first year or continues is having a sense of belonging and finding peers with similar backgrounds where they feel accepted. According to Strayhorn (2012), a sense of belonging refers to students' perceptions of social support on campus and feelings of connectedness. Students have a sense of belonging when they feel cared about, accepted, valued, respected, and essential to the campus, peers, and faculty. When students feel like they belong, achievement and retention increase. Additionally, family support is associated with better academic and psychological outcomes (e.g., lower depressive symptoms; Jimenez et al., 2021).

The motivation of first-generation college students is another major challenge (Petty, 2014). Petty defines motivation as having goal-oriented behaviors which can be attributed to

both intrinsic and extrinsic factors. It can be challenging for first-generation college students to be motivated enough to devote enough time to studying to achieve academic success and college completion. Motivation is particularly complicated when first-generation college students face numerous challenges. Understanding more about first-generation college students as learners is crucial to understand how to support them in their academic goals. Previous studies have looked at the challenges or barriers of first-generation college students (e.g., Padgett et al., 2012). Other studies have examined stress, well-being, and self-compassion and their impact on college transition (e.g., Kroshus et al., 2021). To our knowledge, no study has included cognitive test anxiety, satisfaction with life, sense of belonging, mental health concerns, and learning and study strategy combined within investigations of potential differences between first-generation and continuing-generation college students. As noted in the educational and psychological literature, developing a fully realized understanding of the determinants of student success require investigators to adopt a multivariate approach that considers the interactive influence of risk and protective factors (Thomas et al., 2017; Thomas & Zolkoski, 2020).

Current Study

The primary aim of the current study is to expand our understanding of the impact of students' generational status on cognitive test anxiety, satisfaction with life, sense of belonging, mental health concerns, and learning and study strategy use. We generated the following hypotheses based on our understanding of the literature.

> **H1:** We hypothesize that first-generation and continuing-generation students will differ in their use of learning and metacognitive strategies. Specifically, we hypothesize that first-generation students will report relying on shallow learning strategies in their university courses.

> **H2:** We hypothesize that first-generation students will report higher levels of cognitive test anxiety than continuing-generation students.

> **H3:** We hypothesize that first-generation students will report lower satisfaction with life than continuing-generation students.

H4: We hypothesize that first-generation students will report more mental health-related concerns than continuing-generation students.

H5: We hypothesize that first-generation students will report a lower sense of belonging than continuing-generation students.

H6: We hypothesize that first-generation students will report experiencing more barriers to academic success than continuing-generation students.

Method

Participants

The sample consisted of 498 undergraduate and graduate students (436 female, 61 male, & 1 non-binary) attending a midsized public university in the Southern United States. The self-reported ethnic backgrounds of these students were as follows: White ($n = 336$), Hispanic or Latino ($n = 89$), Black or African American ($n = 40$), Asian or Pacific Islander ($n = 17$), and Native American or American Indian ($n = 2$). Additionally, some participants reported alternative ethnic backgrounds not captured on the demographic form ($n = 9$; i.e., two or races, Arabic & Lebanese), and those who preferred not to share information about their ethnic background ($n = 4$). Participants had a mean age of 28.1 ($SD = 9.46$).

Measures

Cognitive Test Anxiety

Cognitive test anxiety was assessed using the 24-item Cognitive Test Anxiety Scale – 2nd Edition (Thomas et al., 2018). This instrument assesses the severity of self-focused cognitive reactions that interfere with effective information processing during evaluative situations. Sample items include the following: "I get distracted from studying for tests by thoughts of failing" and "I tend to freeze up on things like intelligence tests and final exams." Participants responded to each item using a 4-point Likert-type scale (1 = *Not typical at all*, 2 = *Somewhat typical of me*, 3 = *Quite typical of me*, 4 = *Very typical of me*). Recent research has demonstrated the validity of the questionnaire when administered in university settings (Cassady & Finch, 2015; Thomas et al., 2018). The reliability analysis results indicated that the Cognitive Test

Anxiety Scale – 2nd Edition demonstrated excellent internal consistency in the current investigation (Cronbach's α = .97, McDonald's ω = .97).

Satisfaction with Life

Participants' satisfaction with life was measured using the 5-item Satisfaction with Life Scale (Diener et al., 1985). Satisfaction with Life is a sub-dimension of subjective well-being and refers to the extent to which individuals believe their current circumstances align with self-imposed life quality standards. Sample items include "In most ways, my life is close to my ideal" and "I am satisfied with my life." Participants responded to Satisfaction with Life Scale items using a 7-point Likert-type scale (1 = *Strongly Disagree*, 4 = *Neither agree nor disagree,* 7 = *Strongly agree*). Much empirical evidence supports the measurement tool's structural, concurrent, and predictive validity within clinical and non-clinical samples (Diener et al., 1985; Pavot et al., 1991; Post et al., 2012). Further, the Satisfaction with Life Scale demonstrated excellent internal consistency in the current study (Cronbach's α = .90, McDonald's ω = .91).

Sense of Belonging

We measured participants' sense of belonging using five self-report items developed by Johnson and colleagues (2007). Specifically, this instrument is designed to assess the extent to which students feel they are valued members of the larger campus community. Sample items include "I feel that I am a member of the campus community" and "I feel comfortable on campus." Participants responded to the items using a 5-point Likert-type scale (1 = *Not well at all*, 2 = *Slightly well,* 3 = *Moderately well,* 4 = *Very well,* 5 = *Extremely well*). The construct validity of the sense of belonging items has been demonstrated in past investigations of university student success (Johnson et al., 2007). Further, the instrument demonstrated acceptable internal consistency when applied to our university student sample (Cronbach's α = .88, McDonald's ω = .88)

Learning Strategy Use

We evaluated students' use of various learning strategies using select subscales from the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich et al., 1991). Specifically, MSLQ items were used to estimate the extent to which students use the following strategies in

their university courses: Rehearsal (e.g., "When I study for this class, I practice saying the materials to myself over and over"), Elaboration (e.g., "When reading for this class, I try to related the material to what I already know"), Organization (e.g., "When I study for this course, I go over my class notes and make an outline of important concepts"), Critical Thinking (e.g., I often find myself questioning things I hear or read in this course to decide if I find them convincing"), Metacognitive Self-Regulation (e.g., "When I am reading for this course, I make up questions to focus my reading"), Time and Study Environment (e.g., "I usually study is a place where I can concentrate on my coursework"), Effort Regulation (e.g., "I work hard to do well in this class even if I don't like what we are doing"), Peer Learning ("I try to work with other students from this class to complete course assignments"), and Help-Seeking (e.g., "I ask the instructor to clarify concepts I don't understand well"). The structural validity of the learning strategies subscales has been established in past work using the instrument (Pintrich et al., 1991). The results of a reliability analysis indicated the Rehearsal (Cronbach's α = .77, McDonald's ω = .78), Elaboration (Cronbach's α = .80, McDonald's ω = .84), Critical Thinking (Cronbach's α = .73, McDonald's ω = .75), Self-Regulation (Cronbach's α = .79, McDonald's ω = .81), Time and Study Environment (Cronbach's α = .82, McDonald's ω = .83), Effort Regulation (Cronbach's α = .74, McDonald's ω = .74), and Peer Learning (Cronbach's α = .79, McDonald's ω = .80) demonstrated acceptable internal consistency in the current examination. However, internal consistency estimates for the Organization (Cronbach's α = .59, McDonald's ω = .62) and Help-Seeking (Cronbach's α = .65, McDonald's ω = .69) subscales fell below acceptable limits (α < .70; Nunnally, 1978). Thus, these subscales were removed from subsequent analyses.

DASS 21 – General Distress Score

The 21-item Depression, Anxiety, and Stress Scale (DASS-12; Lovibond & Lovibond, 1995) was used to assess generalized psychological distress. Researchers can use DASS-21 items can be used to estimate depression (e.g., "I could not seem to experience any positive feeling at all"), anxiety (e.g., "I was worried about situations in which I might panic and make a fool of myself"), and stress (e.g., "I found it hard to wind down") levels. Participants reported how much

each statement applied to them over the past week using a 4-point Likert-type scale (0 = *Did not apply to me at all*, 1 = *Applied to me some degree or some of the time*, 2 = *Applied to me a considerable degree or a good part of the time*, 3 = *Applied to me very much or most of the time*). Although the instrument was designed to assess the three distinct constructs described above, recent work has demonstrated that the factor structure of the DASS-21 is best represented by a bi-factor model including anxiety, depression, and stress factors as well as a broad general distress factor (Zanon et al., 2021). Thus, we calculated a general psychological distress score by averaging responses to the instrument for use in the current study. The reliability analysis results indicated that our measure of general psychological distress exhibited excellent internal consistency (Cronbach's α = .94, McDonald's ω = .94).

Academic Barriers

We assessed how personal, familial, and contextual factors interfere with academic success using the 9-item Background and Achievement-Related Risk-factors that Impact the Education and Retention of Students (BARRIERS) Scale (Heller & Cassady, 2017). Specifically, participants reported the likelihood that the following factors would be a barrier to their overall academic success: transportation problems, lack of support system, family responsibility, childcare issues, personal health issues, health issues of a dependent, financial barriers, work conflict, and academic difficulties. Participants responded to each item using a 5-point Likert-type scale (1 = *Not likely*, 3 = *Somewhat likely,* 5 = *Very likely*). The content validity of the instrument was established through discussions with content experts (e.g., university faculty and higher education administrators) focused on common educational barriers experienced by post-secondary students (Heller & Cassady, 2017). The BARRIERS demonstrated acceptable levels of internal consistency in the current investigation (Cronbach's α = .82, McDonald's ω = .82).

First Generation Status

Although there are varying definitions of what constitutes a first-generation college student, for this paper, a first-generation college student is based on the student being the first person in their family to attend college and is based only on students' reports of parental education. This approach to determining generational status is commonly used within empirical

investigations focused on the characteristics of first-generation students and by federal agencies when determining access to specialized funding and educational opportunities (Peralta & Klonowski, 2017; Stebleton et al., 2014). Using this criterion, 297 students were classified as first-generation, and 199 were classified as continuing education. Two participants were not classified due to missing data.

Procedure

All participants were recruited from a research pool of undergraduate and graduate students enrolled in education courses at the University of Texas at Tyler. Participants completed the study materials using Qualtrics (Qualtrics, Provo, UT) at a chosen time and location. The University of Texas at Tyler Institutional Review Board (IRB) approved the current study, and all participants provided informed consent before completing the online instruments. The data presented in this manuscript are taken from a more considerable investigation focused on the determinants of university student success.

Analytic Plan

Differences in cognitive test anxiety, sense of belonging, psychological distress, life satisfaction, academic barriers, and learning strategies used between first and continuing-generation students were assessed using Multivariate Analysis of Variance (MANOVA). MANOVA is a multivariate technique that allows researchers to test the significance of group differences across a series of dependent variables (Tabachnick & Fidell, 2013). It is believed that including multiple outcomes of interest allows researchers to gain a more nuanced and complete understanding of the topic under investigation (Mertler & Vannatta, 2010). We evaluated the magnitude of the multivariate effect using partial eta-squared values. Partial eta squared is an effect size index that provides researchers with an estimate of insight into the amount of variance in an outcome of interest that can be attributed to individual MANOVA effects – including the amount of variance that participants' group membership can explain (Tabachnick, & Fidell, 2013). Consistent with past research, small, moderate, and large effects were determined using the following criteria: negligible effect, $\eta^2_p < 0.01$; small effect, $\eta^2_p = 0.01$ to 0.05; moderate effect, $\eta^2_p = 0.06$ to 0.13; large effect, $\eta^2_p \geq 0.14$ (Cohen, 1988).

Significant MANOVA effects were examined using descriptive discriminant function analysis (Enders, 2003). In the context of MANOVA, discriminant analysis allows researchers to determine which of their dependent variables led to a meaningful separation among groups included in the analyses. Stated another way, a discriminant analysis will enable researchers to identify the dependent variables on which the groups differed (Mertler & Vannatta, 2010). Consistent with best practices, we identified the variables contributing to the group differences detected in the omnibus MANOVA by evaluating discriminant loading values. Variables with a structure loading exceeding .33 were considered to contribute meaningfully to group differences (Tabachnick & Fidell, 2013). All analyses were conducted using the SPSS 24 statistical software package.

Results

Descriptive Statistics and Correlational Analyses

The means and standard deviation values of the primary constructs of interest for the total sample, first-generation and continuing-generation students, are presented in Table 1. Further, bivariate correlations are presented in Table 2.

Multivariate Analysis of Variance

The results of the assumption checks indicated that the assumption of homogeneity of variance-covariance matrices was violated, with Box's M = 128.37, F (78,575867.44) = 1.60, p = .001. Thus, multivariate effects were evaluated using Pillai's criterion – a statistic robust to the homogeneity of variance-covariance issues (Tabachnick & Fidell, 2013). Our evaluation of statistical assumptions also indicated that the assumption of multivariate normality was violated, as indicated by a statistically significant Shapiro-Wilk multivariate normality test (W = 0.97, p <.001). Although the assumption of multivariate was violated, investigations have demonstrated that MANOVA is robust to normality issues when the total sample size exceeds 40 participants (Seo et al., 1995). Each cell of the analysis contains at least 20 participants (Mardia, 1971). These conductions were met in the current investigation, and thus, it was determined that our MANOVA would be robust to multivariate normality issues.

The results of the MANOVA analysis indicated there was a significant multivariate main effect of students' generational status, with Pillai's V = 0.43, F (12, 480) = 1.81, p = .04, η^2_p = .04. The effect size measure indicates that the magnitude of the group difference was small according to the guidelines outlined by Cohen (1988), with approximately 4% of the variance in the dependent variables being attributable to group membership.

The results of the post hoc discriminant analysis revealed one statistically significant discriminant function, Wilks' λ = .95, χ^2 (12) = 21.48, p = .04, R_c = .20. An examination of the discriminant loading values indicated that first and continuing-generation students differed in self-reported satisfaction with life, cognitive test anxiety, general psychological distress, time and study environment, critical thinking, elaboration, and effort regulation. Our results indicated that first-generation students reported lower satisfaction with life, higher cognitive test anxiety, higher general psychological distress, lower use of study methods involving elaborative rehearsal, reduced critical thinking capabilities, fewer attempts to manage time and study environment, and reduced ability to maintain attention and effort when confronted with academic challenges than their continuing-generation peers. Mean and standard division values for the outcomes of interest for the total sample and disaggregated by generational status are presented in Table 1. Discriminant loading values are presented in Table 3.

Discussion

As noted in the empirical literature, individuals with post-secondary credentials experience numerous financial and psychological benefits and are well-positioned to navigate the demands of the 21st-century workplace (Chan, 2016). As such, governmental agencies and higher education institutions across the globe have implemented initiatives focused on improving educational access (Housel & Harvey, 2009). However, although the number of students seeking post-secondary education has increased in recent decades, there continue to be student subgroups who need help navigating the demands of the higher education learning environment and are at an increased risk of non-completion. For instance, evidence suggests that first-generation students experience financial, educational, social, and cultural challenges that undermine their academic success (Stebleton et al., 2014; Zou et al., 2018). Thus, the current study was designed

to expand our understanding of the characteristics of first-generation students using a multivariate analytic approach.

In partial support of our H1, we found that first-generation and continuing-generation students differed in using high-impact learning practices. As noted above, our data suggest that first-generation students struggle to (1) use study methods involving elaborative rehearsal, (2) manage their time and study environment in a manner that supports academic success, and (3) maintain attention when distractions are present in the learning environment. This pattern of results is consistent with prior work noting that first-generation students often experience academic difficulty because they enter university settings with underdeveloped study skills and struggle with key aspects of metacognitive self-regulation (Atonelli et al., 2020; Stebleton & Soria, 2012). One potential explanation for the study skill deficits noted among first-generation learners emphasizes differences in academic preparation among subgroups of learners. For instance, Ricks and Warren (2021) found that first-generation learners are less likely to complete rigorous high school coursework than their continuing-generation peers. Practically, this means that first-generation students are not exposed to academic content beyond the core curriculum, including advanced placement and other college preparatory courses (Stebleton & Soria, 2012). Unfortunately, the existing structure of the high school core curriculum contributes to learners graduating with content knowledge deficits, underdeveloped academic skills, such as writing and reading, and gaps in understanding regarding effective study and learning practices (López et al., 2023; Wright, 2019).

In support of our H2, first-generation students in the current study reported higher levels of cognitive test anxiety than continuing-generation students. This finding is consistent with a growing body of literature noting that students' generational status can influence achievement emotions experienced within various learning events – including testing situations (Janke et al., 2017). We believe the differences noted in this study can be explained by the proposed contribution of study skill deficits to test-anxious responses. As highlighted in a series of influential studies conducted by Naveh-Benjamin and colleagues (1981; 1987), for some students, test anxiety and associated performance deficits follow from the use of ineffective

study strategies which prevent them from developing a robust understanding of to-be-learned content. Stated another way, some students have difficulty learning course content due to using shallow learning strategies and realize they do not have the skills and knowledge needed to meet performance expectations. The realization that one does not possess the knowledge necessary to succeed has been shown to elicit test anxiety and maladaptive cognitive processing that further undermines academic performance.

Further, our results provide support for H3 and H4. Specifically, our data indicate that first-generation students reported lower satisfaction with life and higher general distress than continuing-generation students. As noted in the literature, students experience numerous financial, educational, social, and cultural challenges while transitioning from high school to college (Conley et al., 2020; Jackson et al., 2000). Although these challenges are likely to contribute to elevated stress for all college students, first-generation learners often need more social capital to navigate these barriers successfully. For instance, educational researchers have consistently found that first-generation students often experience a lack of family support which can cause learners to feel alienated from a vital source of social support (López et al., 2023). Additionally, first-generation students do not have the same level of access to generational knowledge – or knowledge of the college environment, and expectations passed down by peers and family members – as continuing-generation students (Atherton, 2014). Issues related to familial support and generational knowledge make first-generation learners more susceptible to academic stress, which can reduce psychological well-being and overall life satisfaction (Zuo et al., 2017).

Finally, it is essential to note that our data did not support our H5 and H6. Specifically, we found that first and continuing-generation learners in the current study reported a different sense of belonging or the presence of academic barriers. Although inconsistent with prior work (Stebleton et al., 2014; Zou et al., 2017), this pattern of findings highlights the potential value of adopting a multivariate approach within educational research. As noted in the literature, the failure to consider the inter-related nature of constructs of interest can lead to findings that overestimate the magnitude of group differences or associations (Tabachnick & Fidell, 2013;

Thomas et al., 2017; Thomas & Zolkoski, 2020). Therefore, we encourage researchers to expand on this work by considering additional individual differences factors to develop a more accurate assessment of differences between first and continuing-generation learners.

Limitations

There are several potential limitations concerning the results of this study. One limitation of this study is that we relied on a departmental research pool for participant recruitment. As a result, students who volunteered in this research may differ in important ways from members of the broader campus community, which limits our ability to draw definitive conclusions regarding differences between first and continuing-generation students (Galloway, 2005). Future work can overcome this limitation using probability sampling methodologies during participant recruitment. Another potential limitation is the underrepresentation of males and individuals with other gender identities in the current work. Although the sample characteristics are consistent with the university's, the gender imbalance does interfere with our ability to conclude the characteristics of specific subgroups of first and continuing-generation students.

Future Direction and Concluding Thoughts

It has been well established that first-year college students, particularly first-generation college students, experience challenges. Identifying approaches to best support first-generation college students is extremely important. College institutions are critical in motivating students (Petty, 2014). Post-secondary institutions must understand intrinsic and extrinsic factors motivating students to remain in college. Moreover, first-generation college students need to feel welcome and like they belong to their campus (Azmitia et al., 2018). A sense of belonging contributes to students' academic success. Relationships with others who can help guide students through academic challenges and increase students' confidence in managing challenges are crucial (Means & Pyne, 2017). Relationships with faculty members are of particular importance. Faculty who are helpful and friendly and encourage class participation contribute to students' sense of belonging and academic success.

Additionally, college campuses can have programs designed to support all students to succeed and graduate. Supportive networks can provide tutoring and access to food, computers,

and printing. Azmitia et al. (2013) found the most common sources of belonging to residential colleges, academic departments, peer groups, ethnic student organizations, student government, sports teams, and on-campus volunteer organizations.

Understanding how to mitigate declines in overall well-being during students' first year of college is crucial because lower well-being is associated with school dropout. One approach that can help students manage their challenges in their first year of college is self-compassion (Gunnell et al., 2017). Self-compassion can help students during times of setbacks and involves understanding and supporting the self. Gunner and colleagues found that increases in self-compassion were associated with increased psychological needs satisfaction (i.e., competence, autonomy, and relatedness). Programs seeking to foster self-compassion while also limiting chronic stressors should be offered to support students entering college (Kroshus et al., 2021). Campus-wide initiatives can be initiated to increase self-compassion in students. Administrators, educators, resident leaders, support staff, and counselors can work to increase students' self-compassion through various workshops and exercises.

Research consistently shows the optimistic influence advisors can have on student retention (Long-Grice et al., 2016). Advisor-advisee meetings can positively impact student persistence and motivation by providing effective retention strategies for students considering dropping out. Institutions can offer professional development opportunities for advisors on how best to meet the unique needs of first-generation college students. Advisors working with first-generation college students can be deliberate in helping students make responsible decisions and avoid potential crises. As more first-generation students seek college degrees, it is vital to support and guide them as they enter college and progress to graduation.

References

American College Health Association. (2019). *American College Health Association: National College Health Assessment II: Undergraduate student reference group data report spring 2019.* https://www.acha.org/NCHA/ACHA-NCHA_Data/Publications_and_Reports/NCHA/Data/Reports_ACHA-NCHAIIc.aspx

Antonelli, J., Jones, S. J., Burridge, A. B., & Hawkins, J. (2020). Understanding the self-regulated learning characteristics of first-generation college students. *Journal of College Student Development*, *61*(1), 67–83. https://doi.org/10.1353/csd.2020.0004

Atherton, M.C. (2014). Academic preparedness of first-generation college students: Different perspectives. *Journal of College Student Development, 55*(8), 824–829. Retrieved from: https://doi.org/10.1353/csd.2014.0081

Azmitia, M. Sumabat-Estrada, G., Cheong, Y., & Covarrubias, R. (2018). "Dropping out is not an option": How educationally resilient first-generation students see the future. In C. R. Cooper & R. Seginer (Eds.), *Navigating Pathways in Multicultural Nations: Identities, Future Orientation, Schooling, and Careers. New Directions for Child and Adolescent Development,160*, 89–100.

Azmitia, M., Syed, M., & Radmacher, K. (2013). Finding your niche: Identity and emotional support in emerging adults' adjustment to the transition to college. *Journal of Research on Adolescence, 23*(4), 744-761. doi: 10.1111/jora.12037

Cassady, J. C., & Finch, W. H. (2015). Using factor mixture modeling to identify dimensions of cognitive test anxiety. *Learning and Individual Differences, pp. 41*, 14 – 20. https://doi.org/10.1016/j.lindif.2015.06.002

Chan, R. Y. (2016). Understanding the purpose of higher education: An analysis of the economic and social benefits of completing a college degree. *Journal of Education Policy, Planning, and Administration*, *6*(5), 1–40.

Cohen J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. Routledge Academic.

Conley, C. S., Shapiro, J. B., Huguenel, B. M., & Kirsch, A. C. (2020). Navigating the college years: Developmental trajectories and gender differences in psychological functioning, cognitive-affective strategies, and social well-being. *Emerging Adulthood, 8(2),* 103-117. doi: 10.1177/2167696818791603

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49,* 71 – 75. https://doi.org/10.1207/s15327752jpa4901_13

Enders, C. K. (2003). Performing multivariate group differences following a statistically
significant MANOVA. *Measurement and Evaluation in Counseling and Development,
pp. 36*, 40 – 56. https://doi.org/10.1080/07481756.2003.12069079

Galloway, A. (2005). Non-probability sampling. In K. Kempf-Leonard (Ed.) Encyclopedia of
Social Measurement (pp 859 – 864). Elsevier

Gunnell, K. E., Mosewich, A. D., McEwen, C. E., Eklund, R. C., & Crocker, P. R. E. (2017).
Don't be so hard on yourself! Changes in self-compassion during the first year of
university are associated with changes in well-being. *Personality and Individual
Differences, 107*, 43-48. http://dx.doi.org/10.1016/j.paid.2016.11.0320191-8869

Heller, M. L., & Cassady, J. C. (2017). The impact of perceived barriers, academic anxiety, and
resource management strategies on achievement in first-year community college
students. *Journal of The First-Year Experience & Students in Transition*, *29*(1), 9–32.

Housel, T. H., & Harvey, V. L. (2009). *The invisibility factor: Administrators and faculty reach
out to first-generation college students.* Universal-Publishers.

Ives, J., & Castillo-Montoya, M. (2020). First-generation college students as academic learners:
A systematic review. *Review of Educational Research*, *90*(2), 139-178.
https://doi.org/10.3102/0034654319899707

Jackson, L. M., Pancer, S. M., Pratt, M. W., & Hunsberger, B. E. (2000). Great expectations: The
relation between expectancies and adjustment during the transition to university. *Journal
of Applied Social Psychology, 30(10),* 2100–2125. https://doi.org/10.1111/j.1559-
1816.2000.tb02427.x

Janke, S., Rudert, S. C., Marksteiner, T., & Dickhauser, O. (2017). Knowing one's place:
Parental educational background influences social identification with academia, test
anxiety, and satisfaction with studying at university. *Frontiers in Psychology, 8*:1326

Jimenez, A., Pina-Watson, B., & Manzo, G. (2021). Resilience through family: Family support
as an academic and psychological protective resource for Mexican descent first-
generation college students. *Journal of Hispanic Higher Education, 00*(0), 1-12. doi:
10.1177/1538192720987103

Johnson, D. R., Soldner, M., Leonard, J. B., Alvarez, P., Inkelas, K. K., Rowan-Kenyon, H. T.,
    & Longerbeam, S. D. (2007). Examining the sense of belonging among first-year
    undergraduates from different racial/ethnic groups. *Journal of College Student
    Development*, *48*(5), 525–542. 10.1353/csd.2007.0054

Kroshus, E., Hawrilenko, M., & Browning, A. (2021). Stress, self-compassion, and well-being
    during the transition to college, *Social Science & Medicine, 269*, 1–10.
    https://doi.org/10.1016/j.socscimed.2020.113514

López, M. J., Santelices, M. V., Taveras, C. M. (2023). Academic performance and adjustment
    of first-generation students to higher education: A systematic review. *Cogent Education,
    10*(1), 1-26. https://doi.org/10.1080/2331186X.2023.2209484

Longwell-Grice, Zervas Adsitt, N., M., K., & Serrata, W. (2016). The first ones: Three studies on
    first-generation college students. *NACADA Journal, 36*(2), 34-46.

Lovibond, P. F., & Lovibond, S. H. (1995). *Manual for the Depression Anxiety Stress Scales*
    (2nd ed.). Psychology Foundation of Australia.

Mardia, K. V. (1971). The effect of nonnormality on some multivariate tests and robustness to
    nonnormality in the linear model. *Biometrika*, *58*(1), 105-121.

Means, D. R., & Pyne, K. B. (2017). Finding my way: Perceptions of institutional support and
    belonging in low-income first-generation, first-year college students. *Journal of College
    Student Development, 58*(6), 907–924.

Mertler, C. A., & Vannatta, R. A. (2010). Advanced and multivariate statistical methods (4th ed).
    Pyrczak.

Naveh-Benjamin, M., McKeachie, W. J., Lin, Y.-G., & Hollinger, D. P. (1981). Test anxiety:
    Deficits in information processing. *Journal of Educational Psychology, 73*(6), 816–
    824. https://doi.org/10.1037/0022-0663.73.6.816

Naveh-Benjamin, M., McKeachie, W. J., & Lin, Y. (1987). Two types of test-anxious students:
    Support for an information processing model. *Journal of Educational Psychology, 79*(2),
    131–136. https://doi.org/10.1037/0022-0663.79.2.131

Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). McGraw-Hill.

Padgett, R. D., Johnson, M. P., & Pascarella, E. T. (2012). First-generation undergraduate students and the impacts of the first year of college: Additional evidence. *Journal of College Student Development, 53(2),* 243-266. https://doi.org/10.1353/csd.2012.0032

Pavot, W., Diener, E. D., Colvin, C. R., & Sandvik, E. (1991). Further validation of the Satisfaction with Life Scale: Evidence for the cross-method convergence of well-being measures. *Journal of personality assessment, 57(1),* 149-161. https://doi.org/10.1207/s15327752jpa5701_17

Peralta, K. J., & Klonowsi, M. (2017). Examining conceptual and operational definitions of first-generation college students in research on retention. *Journal of College Student Development, 58,* 630 – 636. https://doi.org/10.1353/csd.2017.0048

Petty, T. (2014). Motivating first-generation students to academic success and college completion. *College Student Journal, 48*(1), 133–140.

Pintrich, P. R., Smith, D. A. F., Garcia, T. G., & McKeachie, W. J. (1991). A manual for the use of the Motivated Strategies for Learning Questionnaire (MSLQ). Ann Arbor, MI: National Center for Research to Improve Post-secondary Teaching.

Post, M. W., Van Leeuwen, C. M., Van Koppenhagen, C. F., & De Groot, S. (2012). Validity of the life satisfaction questions, the life satisfaction questionnaire, and the satisfaction with life scale in persons with spinal cord injury. Archives of physical medicine and rehabilitation, 93(10), 1832-1837. https://doi.org/10.1016/j.apmr.2012.03.025

Ricks, J. R., & Warren, J. M. (2021). Transitioning to college: Experiences of successful first-generation college students. *Journal of Educational Research & Practice, 11*(1), 1–15. doi: 10.5590/JERAP.2021.11.1.01

Rosenthal, B. S., & Schreiner, A. C. (2000). Prevalence of psychological symptoms among undergraduate students in an ethnically diverse urban public college. *Journal of American College Health*, *49*(1), 12–18. https://doi.org/10.1080/07448480009596277

Seo, T., Kanda, T., & Fujikoshi, Y. (1995). The effects of nonnormality on tests for dimensionality in canonical correlation and MANOVA models. *Journal of Multivariate Analysis,* 52, 325 – 337.

Stebleton, M. J., & Soria, K. M. (2012). Breaking down barriers: Academic obstacles of first-generation students at research universities. *The Learning Assistance Review, 17*(2), 7-19.

Stebleton, M. J., Soria, K. M., & Huesman Jr, R. L. (2014). First-generation students' sense of belonging, mental health, and use of counseling services at public research universities. *Journal of College Counseling*, *17*(1), 6–20. DOI: 10.1002/j.2161-1882.2014.00044.x

Strayhorn, T. L. (2012). *College students' sense of belonging: A key to educational success for all students.* Routledge.

Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Pearson.

Thomas, C. L., Cassady, J. C., & Finch, W. H. (2018). Identifying severity standards on the cognitive test anxiety scale: Cut score determination using latent class and cluster analysis. *Journal of Psychoeducational Assessment*, *pp. 36,* 492 – 508. https://doi.org/10.1177/0734282916686004

Thomas, C. L., Cassady, J. C., & Heller, M. L. (2017). The influence of emotional intelligence, cognitive test anxiety, and coping strategies on undergraduate academic performance. *Learning and Individual Differences, pp. 55,* 40 – 48. doi:10.1016/j.lindif.2017.03.001

Thomas, C. L, & Zolkoski, S. (2020). Preventing stress among undergraduate learners: The importance of emotional intelligence, resilience, and emotion regulation. *Frontiers in Education. https://doi.org/10.3389/feduc.2020.00094*

Toutkoushian, R. K., Stollberg, R. A., & Slaton K. A. (2018). Talking 'bout my generation: Defining "first-generation college students" in higher education research. *Teachers College Record, 120*(4), 1-38. https://doi.org/10.1177/016146811812000407

Wright, B. (2019). Supportive campuses and first-generations-student learning outcomes. *Information Discovery and Delivery. 47*(2), 84–95. https://doi.org/10.1108/IDD-09-2018-0042

Zanon, C., Brenner, R. E., Baptista, M. N., Vogel, D. L., Rubin, M., Al-Darmaki, F. R., ... & Zlati, A. (2021). Examining the dimensionality, reliability, and invariance of the

Depression, Anxiety, and Stress Scale–21(DASS-21) across eight
countries. *Assessment*, *28*(6), 1531-1544. https://doi.org/10.1177/1073191119887449

Zuo, C., Mulfinger, E., Oswald, F. L., & Casillas, A. (2018). First-generation college student
success. In R. S. Feldman (Ed.), *The first year of college: Research, theory, and practice
on improving the student experience and increasing retention* (p. 55–89). Cambridge
University Press.

Table 1

Descriptive Information for the Primary Constructs of Interest

Variable	Total Sample		First-Generation		Continuing-Generation	
	Mean Score	*SD*	*Mean Score*	*SD*	*Mean Score*	*SD*
Cognitive Test Anxiety	51.94	19.19	53.56	19.12	49.56	19.09
General Distress	1.84	0.68	1.90	0.68	1.76	0.67
Satisfaction with Life	4.98	1.28	4.86	1.36	5.17	1.13
Sense of Belonging	3.38	0.98	3.39	1.02	3.38	0.93
Barriers	2.31	0.85	2.32	0.87	2.30	0.83
Rehearsal	4.62	1.30	4.67	1.25	4.55	1.36
Elaboration	5.11	1.09	5.05	1.11	5.21	1.06
Critical Thinking	4.29	1.15	4.22	1.11	4.39	1.20
Self-Regulation	4.72	0.92	4.67	0.91	4.79	0.92
Time and Study Environment	5.23	1.07	5.16	1.05	5.34	1.09
Effort Regulation	5.60	1.12	5.53	1.17	5.69	1.03
Peer Learning	3.21	1.62	3.21	1.64	3.20	1.59

Table 2

Descriptive Information for the Primary Constructs of Interest

Variable	1	2	3	4	5	6	7	8	9	10	
1 - Cognitive Test Anxiety	-										
2 - General Distress	.48*	-									
3 - Satisfaction with Life	-.22*	-.46*	-								
4 - Sense of Belonging	-.04	-.28*	.37*	-							
5 - Barriers	.21*	.39*	-.16*	-.18*	-						
6 - Rehearsal	.10*	.01	.11*	.22*	-.06	-					
7 - Elaboration	-.09*	-.08	.21*	.21*	-.02	.59*	-				
8 - Critical Thinking	.03	.06	.12*	.13*	.05	.50*	.59*	-			
9 - Self-Regulation	-.11*	-.12*	.21*	.26*	-.12*	.66*	.73*	.64*	-		
10 - Time and Study Environment	-.27*	-.33*	.31*	.30*	-.25*	.43*	.62*	.24*	.61*	-	
11 - Effort Regulation	-.34*	-.33*	.28*	.19*	-.23*	.25*	.47*	.12*	.47*	.74*	
12 - Peer Learning	.21*	.14*	-.01	.13*	.05	.37*	.20*	.42*	.31*	-.04	-.

Note. $p < .05$

Table 3

Structure Loadings for the Primary Constructs of Interest

Variable	r_s
Satisfaction with Life	.57
Cognitive Test Anxiety	-.48
General Distress	-.45
Time and Study Environment	.38
Critical Thinking	.35
Elaboration	.34

Effort Regulation	.33
Metacognitive Self-Regulation	.28
Rehearsal	-.22
Barriers	-.04
Sense of Belonging	-.01
Peer Learning	-.01

Note: A variable was considered to contribute to group differences when the associated discriminant loading $\geq$ .33