

Precollege predictors of first year academic success and psychological adjustment in a
sample of ethnic minority college students: Implications of first-choice college

A THESIS
SUBMITTED TO THE FACULTY OF THE
UNIVERSITY OF MINNESOTA BY

Ummul-Kiram Kathawalla

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
MASTER OF ART

Moin Syed, Ph.D.

Advisor

March 2019

Acknowledgements

I would like to extend a thank you to my advisor, Dr. Moin Syed, for his support and help with this project. I would like to also thank my committee members, Dr. Patricia Frazier and Dr. Geoffrey Maruyama, for their comments and guidance.

I would also like to thank Dr. Carolyn Liebler for her emotional support and encouragement. Thank you to the members of the Narrative, Identity, Culture, and Education (NICE Lab). Special thank you to my research assistants, Brenisen Wheeler, Sarah Cava, and Elizabeth Lee, for providing another set of eyes for this work.

I have to extend a thank you to my parents and sister for their unwavering support, love, and faith in me. Thank you to my research support system, Tyler Maunu and Nilsu Atilgan, you both are always there to push me along.

Finally, thank you to the Office of Institutional Research for help with accessing the academic data and to the participants who took part in this project.

This material is based upon work supported by the National Science Foundation Graduate Research Fellowship Program under Grant No. (NSF 00039202).

Disclaimer: Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Abstract

Ethnic minority students experience additional challenges in higher education that may lead to negative adjustment during college. Academic success and psychological adjustment during the first year of college support college completion. Many scholars emphasize that college is a unique period of identity exploration, increased instability, possibilities, and self-focus. As college students explore and negotiate their sense of self as independent adults, students, and future employees, there may be specific factors that are especially important for academic success during the transition to college.

Understanding predictors of student adjustment helps policy makers and higher education institutions develop evidence-based policy aimed at supporting the success of minority college students. In this study, we explored a new potential predictor along with well-established predictors of academic success in a sample of ethnic minority first year college students ($n = 942$). We investigated the predictive contribution of first-choice college (i.e. students being at their first choice university) to student adjustment and if it may be a protective factor for first-generation college students' academic achievement. We also examined the associations between well-established predictors (e.g. past achievement, first-generation college student status, ethnic identity, depression, positive psychological adjustment, substance use, motivational factors, and personality traits) and academic success. Individuals at their first-choice college had significantly positive psychological adjustment than students not at their first-choice college. However, first-choice college was not associated with GPA, depressive symptoms, or substance use. Findings suggest, however, a significant, negative interaction where first-generation

college students at their first-choice college were performing worse academically than first-generation college students not at their first-choice college. In relation to other well-established predictors of academic success, results varied and explained 13-14% of the variance in academic success for ethnic minority college students. Although results were not consistent, overall, first-choice college did not increase the variance explained. Variation in results of well-established predictors demonstrate the importance of replication methods and samples with enough power to detect effects.

Table of Contents

List of Tables.....	v
List of Figures.....	vi
Thesis.....	1
References.....	63
Appendices	
A: Within College Size GPA and ACT score Distribution (n = 717)	72
B: Ethnic/Racial Group Differences in Standardized GPA Adjusting for Age, Gender, Parent Education Level and ACT Score (n = 654)	73
C: First-generation College Students Cohort 2011-2014 Bivariate Correlations (n = 145).....	74

List of Tables

Table 1: Descriptive Characteristics by Cohort and Full Combined Sample.....	44
Table 2: Cohort 2011 Means (SD), Cronbach's alpha, and Bivariate Correlations.....	45
Table 3: Cohort 2012 Means (SD), Cronbach's alpha, and Bivariate Correlations.....	46
Table 4: Cohort 2013 Means (SD), Cronbach's alpha, and Bivariate Correlations.....	47
Table 5: Cohort 2014 Means (SD), Cronbach's alpha, and Bivariate Correlations.....	48
Table 6: Combined Cohorts 2011-2014 Means (SD), Cronbach's alpha, and Bivariate Correlations.....	49
Table 7: Summary of First-choice College Predicting Standardized GPA.....	50
Table 8: Summary of First-choice College Predicting Depressive Symptoms.....	51
Table 9: Summary of First-choice College Predicting Substance Use.....	52
Table 10: Summary of First-choice College Predicting Positive Psychological Adjustment.	53
Table 11: Summary of First-choice College and First-generation Student Status Predicting Standardized GPA.....	54
Table 12: Summary of First-generation College Student Status, Depressive Symptoms, Ethnic Identity, Motivational Factors, and First-choice College Predicting Standardized GPA for Cohort 2011.....	55
Table 13: Summary of First-generation College Student Status, Depressive Symptoms, Ethnic Identity, Motivational Factors, and First-choice College Predicting Standardized GPA for Cohort 2012.....	56
Table 14: Summary of First-generation College Student Status, Depressive Symptoms, Ethnic Identity, Motivational Factors, and First-choice College Predicting Standardized GPA for Cohort 2011 & 2012.....	57
Table 15: Summary of First-generation College Student Status, Depressive Symptoms, Ethnic Identity, Personality Traits, and First-choice College Predicting Standardized GPA for Cohort 2013.....	58
Table 16: Summary of First-generation College Student Status, Depressive Symptoms, Ethnic Identity, Personality Traits, and First-choice College Predicting Standardized GPA for Cohort 2014.....	59
Table 17: Summary of First-generation College Student Status, Depressive Symptoms, Ethnic Identity, Personality Traits, and First-choice College Predicting Standardized GPA for Cohort 2013 & 2014.....	60

List of Figures

Figure 1: Standardized coefficients of Model 3.1-3.3.....61

Figure 2: Standardized coefficients of Model 3.4-3.6.....62

Understanding predictors of student adjustment in college helps policy makers and higher education institutions develop evidence-based policies and initiatives aimed to support the success of ethnic minority college students, decreasing the achievement gap, and improving the psychological and long-term outcomes for students. The first year of college is a unique developmental period involving identity exploration and increased instability; a time filled with possibilities and hopefully self-growth (Erikson, 1994; Arnett, 2000). The first year of college is a significant transitional period during which individuals undergo self-growth and adapt to new environments (Syed, 2017). In this study, we explored a new potential predictor along with well-established predictors of academic success during this important developmental stage in a sample of ethnic minority first year college students. We aimed to better understand what constructs are associated with academic success and if the new potential predictor would contribute over and beyond well-established predictors to academic achievement. We investigated the predictive contribution of first-choice college (i.e. students being at their first choice university) on student adjustment, and whether it may play a protective role for first-generation college students' academic achievement. We also examined the associations between well-established predictors (e.g. past academic performance, first-generation college student status, ethnic identity, depression, psychological adjustment, substance use, motivational factors, and personality traits) with academic success.

Ethnic minorities and higher education

Many ethnic minority students (Black, Latinx, Native American, Asian American, and Pacific Islander)¹, experience additional challenges in higher education compared to majority member peers, such as discrimination from peers and/or faculty, need for off-campus employment, and family obligations that lead them to be more susceptible to negative adjustment during college (Smith, Chesin, & Jeglic, 2014). The consequences of the achievement gap between White and ethnic minority² students in higher education have raised a number of concerns. Lower educational attainment leads to a lifetime of consequences, limiting opportunities for minority students for employment and income (Coleman et al., 1966, Adams Becker et al., 2017).

Academic success and psychological adjustment during the first year of college create foundations that support college completion (Yazedjian, Purswell, Sevin, & Toews, 2007). A study of predominantly White students that controlled for race found that students were more likely to drop out of college at the end of their first year and third year (Ishitani & DesJardins, 2002). The common measures of academic success are higher grade-point average (GPA) and college retention. Along with those measures, other psychological outcomes are important for student adjustment to college. Increased depressive symptoms not only decrease students' wellbeing, but also have been found to affect their academic achievement in a longitudinal study of 62% White undergraduate and graduate students (Eisenberg, Golberstein, & Hunt, 2009). With respect to substance

¹ We use Latinx as the gender-neutral word (see deOnís, 2017 for discussion). While Asian Americans are considered “model minorities,” the label includes individuals from diverse cultural backgrounds with different academic trajectories (Mizokawa & Rychman, 1990).

² We use ethnic minority as an umbrella term to include ethnic and racial minorities.

use, in a predominantly White sample of undergraduate students, less alcohol use is also associated with better academic outcomes and better overall health (DeBerard, Spielmans, & Julka, 2004). Even though alcohol use is a normative behavior among college students, a nationally representative study of US college aged students found heavy consumption was associated with negative psychiatric outcomes (Hingson, Zha, & Weitzman, 2009). Lower cannabis use, tobacco use, and substance use were also associated with better academic outcomes and better overall health (DeBerard et al., 2004; Masten et al., 2005). As noted, most studies focus on predominantly White samples; it was challenging to find research studies that investigate broader questions of student adjustment for ethnic minority students. There is a need for further investigation of predictors of academic adjustment for ethnic minority college students that examine more than race-based constructs (e.g. Levy, Heissel, Richeson, & Adam, 2016). Academic achievement, positive psychological adjustment, and lower substance use during the first year of college seem to be associated with students' success in higher education and there is a need to examine if these findings are consistent with ethnic minority college students as well.

Early identification of academically and psychologically at-risk students at college entry can inform programming to support first year college students. For example, first-generation college student status is associated with lower GPA and life satisfaction (Vuong, Brown-Welty, & Tracz, 2010; Allan, Garriott, & Keene, 2016). In terms of academic gains, first-generation college students were found to have lower reading comprehension gains during their first year of college, and lower science gains

after their second and third years of college compared to students with college educated parents (Terenzini, Springer, Taeger, Pascarella, & Nora, 1996; Pascarella, Pierson, Wolniak, & Terenzini, 2004). Additionally, first-generation college students were at higher risk for leaving college than students with college educated parents (Ishitani, 2006).

This body of research has led to the development of interventions to help first-generation college students achieve greater academic success and psychological wellbeing (Stephens, Hamedani, & Destin, 2014; Schwartz et al., 2018). Similar efforts should be extended to investigate risk and protective factors for at-risk ethnic minority first-year college students. By identifying indicators for students at-risk for having developmental challenges during their first year of college, higher education programs can create student success programming for those students. Moreover, college counselors can assess risk factors in intake forms to predict a student's potential challenges or presenting concerns and how to best support them.

Another potential risk factor that has some indirect support in the literature is *first-choice college*; that is, if college students are attending the university they most desired or not. First-choice college may be another predictor that is situated in the negotiation of a student's sense of self as a successful and capable student. Especially during the first-year of college, students are presented with multiple choices and pathways through identity development. Thus, first-choice college may be a basic indicator to identify students that may be experiencing extra challenges as they negotiate their sense of self as a student not at their first choice university.

To this end, academic outcomes is not an under-researched area; many researchers have investigated predictors of academic success and psychological adjustment in college students. Typically, studies focus on measuring specific indicators that contribute to academic success, but do not consider the unique developmental aspects of the first year of college and the role that attending their first-choice college may play. A developmental perspective takes on understanding how individuals make sense of their past, present, and future versions of self and experiences to create a coherent sense of self (Waterman, 2015). Investigating factors of academic success within the developmental context can be beneficial and first-choice college serves as a proxy to measure a student's need to negotiate past, present, and future expectations of his/herself along with expectations of their college experience. Nevertheless, factors such as first-generation college student status, ethnic identity, academic motivations, and personality traits are important and provide information for college success, even though they do not capture the unique developmental negotiation of students' concept of themselves that occurs during the first year of college. In the next sections, we briefly review some of the main risk and protective factors researchers have uncovered that contribute to variation in academic and psychological adjustment with the purpose of contextualizing first-choice college as a potential predictor.

Well-established predictors for student adjustment

We briefly review the literature for the association between well-established factors and student adjustment for (a) past academic performance, (b) psychological

adjustment, (c) ethnic identity, (d) academic motivational factors, (e) personality traits, and (f) first-generation college student status.

Past academic performance and demographic characteristics. Meta-analytic results of past academic performance indicators of high school GPA, SAT scores, ACT scores, and A level points (UCAS Tariff system) have positive, moderate associations with college GPA (Richardson, Abraham, & Bond, 2012). Thus, even with the current debate of the over reliance on indicators of past academic performance, it is still the most associated indicator of college GPA. Additionally, meta-analytic results of socioeconomic status and sex have small, positive associations with college GPA (Richardson et al., 2012). These indicators of past academic performance and demographic characteristics consistently demonstrate associations with college academic success.

Psychological adjustment. In terms of psychological adjustment, meta-analytic results, with combined, non-stratified samples of White and ethnic minority students found that depression has a small, negative correlation with GPA ($r = -0.10$) and self-esteem has a small, positive correlation with GPA ($r = 0.09$; Richardson et al., 2012). Thus, not only are depressive symptoms and self-esteem important considerations for a college student's wellbeing, but they are also potential contributing factors to academic success. A national epidemiological study found that almost half of college age individuals had a psychiatric disorder during the 12-month assessment, which showed that college-aged individuals are particularly vulnerable (Hingson et al., 2009).

Ethnic identity. Meta-analytic results demonstrated ethnic identity development as an important component during college due to its association with other academic, psychosocial and health outcomes (Rivas-Drake et al., 2014). Ethnic identity is a multidimensional construct that incorporates the beliefs of ethnic group membership (i.e. commitment) and the process by which these beliefs change and develop over time (i.e. exploration; Umaña-Taylor et al., 2014). Ethnic identity has been found to have a small, positive correlation (meta-analytic correlation $r = .09$) with academic achievement which is consistent with other literature that finds ethnic identity to be a protective factor for ethnic minorities (see Miller-Cotto & Byrnes, 2016). However, individual studies have varied results from positive to negative correlations that seem to be moderated by the context. The meta-analytic correlations across ethnic groups overlapped demonstrating there may not be group differences. However, ethnic identity is comprised of two main subscales - ethnic identity commitment/resolution and search/exploration - and these components have varied, small associations ($r = -.05$, *ns* and $r = .11$, $p < .01$ respectively) with academic outcomes (Miller-Cotto & Byrnes, 2016). In sum, meta-analytic results confirm a small, positive correlation between ethnic identity and academic achievement; however, there is variation across studies and ethnic identity subscales regarding coefficient direction and magnitude.

Academic motivational factors. Meta-analytic results demonstrate that motivational factors (i.e. academic self-efficacy and performance self-efficacy) have the largest associations with college GPA compared to other potential predictors (Richardson et al., 2012). Researchers have examined many different types of academic motivational

factors that have been shown to contribute to academic success (Robbins et al., 2004; Richardson et al., 2012; Honicke & Broadbent, 2016; Tracey & Sedlacek, 1987). Locus of control, or how a student attributes life outcomes to external vs. internal factors, has a small correlation with college GPA in a meta-analysis (Richardson et al., 2012). Another meta-analysis found that achievement motivation, or positive outlook on completing tasks for the purpose of achieving success, had a moderate correlation with college GPA (Robbins et al., 2004). Additionally, self-regulatory learning strategies, such as effort regulation, critical thinking, time/study management had small to moderate meta-analytic correlations with GPA (Richardson et al., 2012). There is evidence that academic self-discipline, or regulation of effort invested on academic tasks, is an important predictor and mediator of academic success (Jung, Zhou, & Lee., 2017). A recent meta-analysis replicated previous findings that academic self-efficacy is moderately correlated with academic performance (see Honicke & Broadbent, 2016). A recent meta-analysis that investigated the association of growth/fixed mindset and academic achievement found varied results, but evidence that growth mindset may be protective for certain groups (Sisk et al., 2018). In terms of retention, academic goals, institutional commitment, academic self-efficacy, and academic related skills are the most predictive factors (along with SES and high school GPA; Robbins et al., 2004). Taken together, multiple meta-analytic studies demonstrate the importance of academic motivational factors on academic achievement.

Personality traits. Meta-analytic results demonstrate that personality traits (i.e. procrastination and conscientiousness) have a moderate association with college GPA

(Richardson et al., 2012). Although there is meta-analytic evidence that agreeableness and openness are positively correlated with academic performance, conscientiousness consistently predicts academic performance with the inclusion of covariates and at various levels of education (Poropat, 2009). The relationship between personality and academic performance is not affected by controlling for intelligence, showing that personality traits seem to be a unique predictor of academic success (Poropat, 2009). Specifically, conscientiousness positively predicted first year GPA and extraversion negatively predicted first year GPA (Bauer & Liang, 2003; Trautwein, Ludtke, Roberts, Schnyder, & Niggli, 2009). Studies consistently demonstrate the predictive validity of conscientiousness even when controlling for other potential confounding factors.

First-generation college student status. First-generation college students are at risk for dropping out of college and attaining lower GPA (Pascarella et al., 2004; Ishitani, 2006). First-generation college students have different characteristics than non-first-generation college students as they tend to be ethnic minorities, come from socially disadvantaged families, and work more hours off-campus (Terezini et al., 1996; Stebleton, Soria, & Huseman, 2014). Research found they also experience feeling less connected to faculty and peers (Terezini et al., 1996; Pascarella et al., 2004). As mentioned above, first-generation college students were found to have lower overall GPA after their second and third years of college compared to students with college educated parents (Pascarella et al., 2004). However, there is evidence that college readiness (high school course-taking patterns and high school GPA) moderates the risk of attrition during college for lower income first-generation college students (DeAngelo & Franke, 2011). A

recent qualitative study of successful first-generation college students highlighted the importance of being involved with clubs/organizations and relationships with peers and faculty members as critical to the college experience (Demetriou, Meece, Eaker-Rich, & Powell, 2017). Additionally, participants reported actively reflecting on the role of a college student helped them feel a part of the college community (Demetriou et al., 2017). These differential findings demonstrate that the possible negative risks for first-generation college students can be mitigated.

New directions in predicting student adjustment

The current state of the literature provides a foundation for understanding predictors of academic outcomes. However, current predictors are interpreted as measurable attributes and not situated in a student's developmental milestones. In other words, there is a notion that if a student scores high on a certain characteristic, then no matter their developmental progress, they will have better academic outcomes. This approach neglects the impact of developmental tasks first year students need to negotiate for healthy development. Ethnic identity is an exemplar multidimensional predictor that is situated in important developmental tasks. It includes ethnic identity commitment or positive ethnic/racial affect, which can be considered more of a measurable attribute but also includes a second dimension of ethnic identity exploration, which is more securely situated in the developmental task of negotiating a sense of self. Ethnic identity tend to increase in college and have been found to be associated with major choice, psychological wellbeing, and academic outcomes (Miller-Cotto & Byrnes, 2016; Syed, 2010). Some predictors are notably contextually relevant to college (e.g. first-generation

college student, social support, college integration), but they do not focus on the process of developmental tasks during the first year of college.

Expanding on previous work, there is evidence that academic performance is predicted by early institutional commitment and school belonging (Woosely & Miller 2009; Demetriou et al., 2017). Meta-analytic results also suggest that institutional commitment and belonging have small associations with academic outcomes and retention (Richardson et al., 2012). Institutional commitment is defined by feeling confident about one's college choice while institutional belonging refers to feeling connected to students and faculty on campus. These findings are also seen in a sample of ethnic minorities where increased school belonging was associated with better psychological adjustment (Gummadam, Pittman, & Ioffe, 2016). These findings have theoretical basis from Tinto's (1975) model of higher education dropout decision-making which includes personal attributes, goal commitments, institutional commitment and systemic factors that interact and develop over time.

Building upon institutional commitment and belonging, there is a theoretical argument that students who attend the institutions they hoped to attend and believe is the best fit for them would have increased college retention, better psychological wellbeing, and higher academic outcomes (Hossler, Braxton, Coopersmith, 1989; Azmitia, Syed, Radmacher, 2013). One study that examined college students' mental health during their first year of college found that students who maintained positive mental health tended to be at their first-choice college (Azmitia et al., 2013). Another study found person-

environment fit to be related to better academic outcomes (Harms, Roberts, & Winter, 2006).

Overall, institutional commitment and belonging along with the additional task of identity negotiation may be roughly captured by a question regarding first-choice college. First-choice college is a theoretical component of institutional commitment, although most measures ask about current commitment not about whether it was their first-choice. First-choice college is a simple question that has the potential to help identify students who are at-risk and may need more support during their first year of college. Researchers have investigated students' college choice in the context of college access; they have sought to understand the process of deciding to attend college or not, type of college to apply to, and barriers to applying to college (see Perna, 2006; Hurtado, Inkelas, Briggs, & Rhee, 1997 for full discussion). However, in this study we are interested in the implications of the university being a student's first choice or not.

Developmentally, at college entrance, with multiple possibilities often comes confusion, leading to more identity development challenges (Azmitia, Syed, & Radmacher, 2008). Even in healthy development, some confusion is bound to occur as college students move toward a more mature understanding of their role in their new community and larger future global context. College selection is a major life choice and going to one's first-choice college would be consistent with one's future version of self that promotes healthy identity integration (Syed & McLean, 2016). Thus, if a student was not at their first-choice college, they may experience a threat to their identity and self-concept which may lead to challenges in the new academic context and, therefore, not

being at their first choice university may be an indicator of a period of confusion and added stress (Erikson, 1994). Moreover, first-choice college may be a protective factor for student's at risk, such as first-generation college students. This simple question can be an easier tool for institutions to identify students that may benefit from additional support during their first year.

As evident in the literature reviewed above, most studies investigate academic predictors in White college students or specific ethnically related predictors (e.g., ethnic identity) in specific ethnic groups. It is helpful to know what was found to be predictive in White samples, but it is also critical to examine if predictors in majority White samples predict similar outcomes in ethnic minority samples. There is evidence to suggest that academic performance may be associated with different processes for ethnic minority vs. White college students (Levy et al, 2016) Studies of academic achievement in specific ethnic groups is important for understanding potential characteristics of that group (when that is measured or asked) but studying one group does limit understanding the unique underlying characteristics of ethnic minorities as a united group. Additionally, specific ethnic group findings are limiting for higher education multicultural program development that serves diverse multicultural students. We believe there is value in understanding the shared experiences of minority students. Moreover, many studies focus on a range of years of college, which is not necessarily problematic, but the first year of college is a particularly unique period of transition and development that may lead to unique challenges than other years of college. Furthermore, there is value in including well-established predictors in a model together to examine their unique ability to predict

student adjustment. To address these limitations, in this study we (1) focused on the first year of college, (2) used a diverse group of ethnic minority students, (3) examined a combined model of well-established predictors, and (4) investigated a new potential predictor of academic success that is situated in the developmental perspective; namely, first-choice college.

Present study

The present study examines first-choice college as a new predictor of student adjustment. Student adjustment includes first year GPA, first year completion, positive psychological adjustment, and depressive symptoms. We investigated if first-choice college is a protective factor for first-generation college students' academic success in their first year of college. Furthermore, we tested well-established predictors of academic success in a sample of ethnically diverse first year college students. Academic success includes first year GPA and first year completion. We aimed to investigate if first-generation college student status, depressive symptoms, ethnic identity, motivational factors (i.e. fixed mindset, academic self-discipline, and locus of control), and personality traits replicate as predictors of student adjustment in a sample of ethnically diverse students. We control for past academic performance, age, gender and an indicator of socioeconomic status, parent education level. We examined the non-overlapping effects of well-established predictors in models of academic success by controlling for potentially overlapping predictors. Better understanding of what contributes to academic success above and beyond other factors can help institutions emphasize the most useful

programming and interventions. Moreover, investigating first-choice college may be a simple tool to target at-risk students.

We used cross-sectional data that included a large sample of ethnically diverse college students to investigate our research questions. In hopes of addressing calls by researchers to use replications to improve robustness and accuracy (Cumming, 2013), we tested our research questions using both combined sample and replication approaches across the cross-sectional data. We used the combined dataset to investigate the relation between predictive value first-choice college and student adjustment. We used the combined sample to investigate if first-choice college is a protective factor for first-generation college students' academic success. Next, we tested well-established predictors of student adjustment using four cohorts of data where we replicated findings across cohorts with the same measures and combined samples to increase power. Lastly again, for robustness and accuracy, we replicated the findings across cohorts to test if adding first-choice college increases the predictability of student adjustment. By using a combination of replication and combined samples in our analyses, we aimed to increase our power and statistical accuracy.

Across all these different models, we tested the following four hypotheses:

1. Students at their first-choice college will have higher academic performance and better psychological adjustment. We expected a positive, small to moderate effect of $\beta = .1$ to $.2$. (*Models 1.1 – 1.3*)
2. First-generation college students at their first-choice college will have higher academic performance than first-generation college students who

are not. We expected a positive, small to moderate effect of $\beta = .1$ to $.2$.

(Model 2)

3a. Models with other well-established predictors of academic outcomes will predict academic outcomes at the end of one year. We expected the predictors to have a small effect of $\beta = .1$ to $.2$. *(Models 3.1 - 3.4)*

3b. The addition of first-choice college will significantly increase the amount of variance explained in a model with other well-established predictors of academic outcomes (e.g. past academic performance, first-generation college status, depressive symptoms, psychological adjustment, substance use, ethnic identity, motivational factors, and personality traits). *(Models 3.1 - 3.4)*

Method

Participants and Procedure

Participants were incoming ethnic minority undergraduate students recruited as part of an orientation event for first-year students at a large, public Midwestern university. All incoming first year ethnic minority students were invited to participate in a multicultural orientation experience before college officially began. Approximately 25% of those invited attended in any given year. All students completed a survey on a computer in a computer lab in groups of 25-40 as part of the orientation and were able to actively consent for their data to be used for research purposes.

The current study employs data from four waves of data collection (2011-2014), resulting in a total sample of $n = 942$ across the four cohorts (2011, $n = 255$; 2012, $n =$

265; 2013, $n = 223$; 2014, $n = 199$). The Institutional Review Board approved the study titled “Becoming a College Student at the University of xxx” (IRB#1108S03028) for each year of the data collection (2011-2014). Non-first year and transfer students were excluded from the study. Additionally, due to the small number, individuals missing information on core predictor variables were excluded from the study based upon recommendations by McCartney, Burchinal, and Bub (2006; (5% of sample, $n = 56$ across all four cohorts). Table 1 displays the demographic characteristics by cohort as we conducted some analyses with the full aggregate sample and other analyses with a subsample with replication (see analysis plan below for full description). The average age across the four samples was 18, $SD = .43$. The sample was majority female at each wave of data collection (66% female across all cohorts). On average students’ parents completed between a high school degree and an associate’s degree. Students’ average ACT scores were 25.40 ($SD = 4.25$). In terms of ethnicity/race, participants self-reported their ethnicity/race via an open-ended question. We used an open-ended question in order to better capture a person’s ethnic-racial identification and experience (see Hughes, Camden, & Yaangchen, 2016, for discussion). Participant’s responses were then coded using a qualitative coding manual by a coding team of the primary author and undergraduate research assistants with 99% reliability. The aggregate sample ethnic/racial composition ($n = 942$) was largely comprised of 48% Asian American (predominantly South East Asian) and 18% Black or African American, followed by 17% of individuals identifying mixed race or multiple ethnicities, 8% identifying as Latinx or

Hispanic, 6% as South Asian (e.g. Indian, Pakistani), 1% as Middle Eastern, and 1% as Native American. The ethnic/racial composition by cohort is in Table 1.

Measures

Tables 2 through 5 include the summary statistics, *Cronbach's* α reliability coefficients, and bivariate correlations for each of the main predictor variables by year.

Past academic performance and demographic characteristics. Past academic performance was measured by ACT scores provided by the Office of Institutional Research. The demographic characteristics of gender, age and parent education level were measured by self-report. For individuals that reported level of education completed by both parents, parent education level was an average of both parents.

Motivational factors: Motivational factors were measured by the fixed mindset, academic self-discipline, and internal locus of control.

Fixed mindset. The Theory of Intelligence Scale (Dweck, 2000) was measured on a 5-point Likert scale from 1 (*Strongly disagree*) to 5 (*Strongly agree*). It included 6 items where low scores represent beliefs that intelligence can change and high scores represent beliefs that intelligence is fixed (Blackwell et al., 2007). The scale included three fixed mindset statements (e.g. “You have a certain amount of intelligence, and you really can’t do much to change it”); and three growth mindset statements (e.g. “You can always greatly change how intelligent you are”). Fixed mindset is measured by a global scale where the incremental theory or growth mindset items are reversed scored and then a mean score is calculated with all six items (range = 1 - 5). The Theory of Intelligence Scale had good reliability at each year of data collection with, *Cronbach's* $\alpha = .91 - .92$.

The Theory of Intelligence Scale has shown adequate test-retest reliability (Blackwell et al., 2007).

Academic self-discipline. Academic self-discipline is measured by 5-items measuring self-regulation behaviors in academic settings (Jung et al., 2017). Respondents responded to items, such as “I am a reliable and hardworking student,” on a 5-point Likert scale from 1 (*Strongly disagree*) to 5 (*Strongly agree*). Academic self-discipline was measured by a global scale where all items were averaged and demonstrated good reliability with, *Cronbach’s* $\alpha = .86$. The scale demonstrated good convergent reliability in another longitudinal study (Jung et al., 2017).

Internal locus of control. Internal locus of control included 5-items adapted from the Locus of Control Scale (Rotter, 1966) measured on a 5-point Likert scale from 1 (*Strongly disagree*) to 5 (*Strongly agree*) (Cote, 1997; *adapted version*). Internal locus of control measured a belief that an individual has the ability to influence outcomes. The scale included items such as “What happens is my own doing.” The internal locus of control items were averaged (note: only internal locus of control subscales items were included in this study). Although the items had lower reliability, with *Cronbach’s* $\alpha = .64$, the reliability was within the range pre-defined as acceptable (*Cronbach’s* $\alpha = .60$ and greater). The Locus of Control scale had similar reliability in another study (Cote, 1997).

Depressive symptoms. In the 2011 cohort, depressive symptoms were measured by the Center for Epidemiological Studies Short Depression Scale (CES-D; Cole, Rabin, Smith & Kaufman, 2004). In the 2012-2014 cohorts, depressive symptoms were

measured by the depression subscale of the Brief Symptoms Inventory-18 (BSI-18; Derogatis, 2001). Higher scores on both scales indicate more depressive symptoms. For full sample analyses, the two scales were linearly transformed to have a mean of zero and a standard deviation of 1 to create a standardized depression symptoms combined score.

The CES-D is a 10-item scale measuring symptoms of depression “during the past week”. Respondents responded to items, such as “During the past week... I felt lonely,” on a 4-point Likert scale from 1 (*Does not apply to me at all*) to 4 (*Applies quite well to me*). Depressive symptoms were measured by a global scale where all the items were averaged. The scale had good reliability in our sample with *Cronbach's* $\alpha = .72$. The CESD-10 has established good reliability and construct validity in multicultural populations (Bradley, Bagnell, & Brannen, 2010).

The BSI-18 is a shortened version of the Brief Symptoms Inventory (Derogatis & Melisaratos, 1983) developed to capture physical and emotional complaints. For the depression subscale, participants indicated whether they have experienced seven symptoms, such as “feeling lonely” and “feeling no interest in things,” in the last seven days on a 5-point Likert scale from 1 (*Strongly disagree*) to 5 (*Strongly agree*). Depressive symptoms were measured by a subscale of depressive symptoms where all the items were mean scored. The BSI-18 had good reliability across our samples with *Cronbach's* $\alpha = .77 - .89$. In other studies, the BSI-18 has also demonstrated high reliability in diverse populations (Constantine & Flores, 2006) and good construct validity with other measures of psychological distress (Meijer, de Vries, & van Bruggen, 2011).

Substance use. Substance use was measured by four questions that ask “Within the last month, how many times have you...,” (1) drunk alcohol; (2) drunk five or more drinks in one setting; (3) smoked marijuana/pot; (4) smoked tobacco/cigarettes. Participants responded to each item from 0 (*none*), 1 (*1-2 times*), 2 (*3-4 times*), 3 (*5-6 times*), 4 (*more than 7 times*). Substance use were calculated by a mean score of all four items. Substance use items had good internal reliability across samples with *Cronbach’s* $\alpha = .64 - .83$.

Positive psychological adjustment. In the 2011 cohort, positive psychological adjustment was measured by the Rosenberg (1965) Self-Esteem Scale. In the 2012-2014 cohorts, positive psychological adjustment was measured by the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). For full sample analyses, the two scales were linearly transformed to have a mean of zero and a standard deviation of 1 to create a standardized positive psychological adjustment combined score.

Rosenberg’s (1965) Self-Esteem Scale measured positive feelings about the self. The scale included items such as, “I am able to do things as well as most other people.” Respondents responded to the 10-items on a 4-point Likert scale rating from 1 (*Strongly disagree*) to 4 (*Strongly agree*). Self-esteem was measured by a global scale where all the items were averaged and the scale had good reliability with *Cronbach’s* $\alpha = .91$. The Rosenberg (1965) Self Esteem Scale has demonstrated adequate internal reliability and construct validity across diverse cultures (see Schmitt & Allik, 2005).

The SWLS (Diener et al., 1985) is a 5-item scale measuring individual’s positive feelings about their life. Participants rated their agreement to items such as “In most ways

my life is close to my ideal” on a 7-point Likert scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). SWLS was measured by a global scale where all the items were mean scored. The SWLS demonstrated good reliability across cohorts with *Cronbach's* $\alpha = .80 - .85$. The SWLS has established strong internal reliability in other samples and construct validity with an array of self-report measures and interviewer ratings (see Pavot & Diener, 1993).

Ethnic identity. Ethnic identity was measured using a 12-item version of the original 22-item Multigroup Ethnic Identity Measure developed by Phinney (1992) (MEIM; Roberts et al., 1999). Participants rated their agreement with a series of statements regarding exploration (e.g., “I think a lot about how my life will be affected by my ethnic group membership”) and affirmation/belonging (e.g., “I am happy that I am a member of the group I belong to.”). The items were rated on a four-point scale where 1 (*Strongly Disagree*) and 4 (*Strongly Agree*). Ethnic identity was measured by a global scale where all the items are mean scored. The global scale had good reliability with *Cronbach's* $\alpha = .83 - .89$. Exploration was measured by a 5-item subscale where all exploration items are mean scored and the subscale had adequate reliability with *Cronbach's* $\alpha = .65 - .76$. Affirmation/belonging was measured by a 7-item subscale where all affirmation/belonging items were mean scored and the subscale had good reliability with *Cronbach's* $\alpha = .85 - .89$. Structural and construct validity analysis of the MEIM reveals a two factor solution that is consistent across ethnically diverse groups and related with other measures such as psychological wellbeing, self-esteem, and depression in expected ways (Roberts et al., 1999).

Personality traits. We measured personality traits through 44 items from the Big Five Inventory (BFI; John & Srivastava, 1999). Respondents responded to how much items applied to them on a 5-point Likert scale from 1 (*Strongly disagree*) to 5 (*Strongly agree*). The BFI measures the Big Five traits. Conscientiousness was measured by 9 items such as, “Is a reliable worker,” or “Does a thorough job.” Extraversion was measured by 8 items such as “Is talkative.” Agreeableness was measured by 9 items such as “Is helpful and unselfish with others.” Neuroticism was measured by 8 items such as “Is depressed, blue.” Openness was measured by 10 items such as “Is original, comes up with new ideas.” The Big Five was measured by 5 subscales where all the items for each personality trait were mean scored. The personality traits demonstrated adequate to good reliability across cohorts with *Cronbach’s* $\alpha = .63 - .86$. Extraversion had good reliability with *Cronbach’s* $\alpha = .83$ and $.86$. Agreeableness had good reliability with *Cronbach’s* $\alpha = .75$ and $.77$. Conscientiousness had good reliability with *Cronbach’s* $\alpha = .78$ and $.80$. Neuroticism had good reliability with *Cronbach’s* $\alpha = .81$ and $.76$. Openness had good reliability with *Cronbach’s* $\alpha = .73$ and $.63$. The Big Five Inventory has demonstrated good construct validity with other measures of personality traits and reliable measurement in Black samples (John & Srivastava, 1999; Worrell & Cross, 2004).

First-generation college student. First generation college student status was measured by a single item, “Are you the first person in your family to go to college?”. Respondents answered *yes* or *no*. We cross checked students’ responses with parent education level as previous research has shown that first born students answer *yes* to this

question. Twenty-four participants were recoded due to one of their parents having a bachelor's degree or greater.

First-choice college. First choice college was measured by a single item, "Was the University of Minnesota your first choice of college?". Respondents answered *yes* or *no*. The variable was coded so that 1 = *yes* and 0 = *no*.

Sense of campus belonging. Sense of campus belonging included 3-items from the Perceived Cohesion scale measured on a 4-point Likert scale from 1 (*Strongly disagree*) to 4 (*Strongly agree*) (Bollen & Hoye, 1990). Sense of campus belonging measured both cognitive and affective beliefs about being a part of the group. The scale includes items such as "I feel I am a member of this university." Sense of campus belonging was measured by a subscale where the 3-items items were averaged (note: only sense of campus belonging subscales items were included in this study). Sense of campus belonging had good reliability with *Cronbach's* $\alpha = .88 - .91$ across cohorts. The scale has demonstrated adequate reliability and validity in multiple contexts (Salisbury, Carete, & Chidambaram, 2006; Chin, Salisbury, Pearson, & Stollak, 1999).

Academic success. Academic success was measured by end of first year GPA and completing the first year of college. Academic data were provided by the Office of Institutional Research. College GPA included both fall and spring semester and was the cumulative GPA of the first year of college. First year completion was measured by completing the first year of college (i.e. having a fall and spring GPA's and no withdrawals from all classes).

We standardized GPA within the seven different colleges: (1) business, (2) education/human development, (3) food, agriculture and natural resource sciences, (4) biological sciences, (5) design, (6) liberal arts, (7) science and engineering. We linearly transformed GPA to have a mean of zero and a standard deviation of 1 within each college. See Appendix A for college size and GPA distribution. The average college size ranged from 313 students in liberal arts to 17 students in design. The average GPA ranged from 3.37 (SD = .38) in biological sciences to 3.06 (SD = .35) in food, agriculture and natural resource sciences.

Results

Analysis plan

We tested our research questions following the analysis plan outlined in the pre-registration document submitted to the Open Science Framework on 03/12/2018. We encourage readers to view the pre-registration document and analysis script at https://osf.io/76gac/?view_only=59a2745542b44e059bde17da61170372. We will note if there were any deviations from the original plan in our results. Notably, we changed our outcome to standardized GPA within college as our primary outcome. Examining standardized GPA was not included in our pre-registration due to oversight. We learned that colleges within the university have different admission criteria and grade inflation norms that makes standardization important. Results from non-standardized GPA are available online on OSF. Secondly, we were unable to examine the predictors of first year persistence due to high persistence in the present sample (only $n = 13$ did not persist).

We tested research **hypothesis 1**—the association of first-choice college and student adjustment without other well-established predictors—using hierarchical multiple regression with full information maximum likelihood (FIML) using Stata Statistics. At Step 1 we entered all covariates: age, gender, parent education level, and ACT score. Then, in Step 2 we added first-choice college. We used the chi-squared difference test to examine if the change in R-squared was a significant change. Next, we tested **hypothesis 2**, the interaction between first-choice college and first-generation college student status by adding first-choice college (coded 0, 1 where 1 is first choice), first-generation student status (coded 0-1 where 1 is first-generation student), and the interaction term while adjusting for age, gender, parent education level and ACT score using a multiple regression model with FIML. To test **hypotheses 3a and 3b** we used hierarchical multiple regression analyses with FIML. In Step 1 we entered all the covariates and in Step 2, well-established predictors of academic success were added. Then, first-choice college was added at Step 3. We used the chi-squared difference test to examine if the change in R-squared was significant.

Unlike many studies that include minority students, we did not control for ethnicity/race for multiple reasons. We recognize that this approach is different from other studies of academic achievement and that other studies have discussed ethnic/racial differences in academic achievement. However, ethnicity/race is socially constructed, it does not provide a better understanding of academic success. We believe it is very problematic to use ethnicity/race to account for differences between people when it is not a measurable construct (Helms, Jernigan, & Mascher, 2005). Notably, there is theoretical

support for why age, gender (Sax, 2008), parent education level (indicator of SES), and ACT scores predict end of first year GPA, which is why they are included in our model. As we believe it is problematic to account for variation in academic outcomes by ethnic/racial categorization, we have instead included variables that may account for differences in academic outcomes.

Next, there was no significant difference in mean standardized GPA ($F(7,678) = 1.34, p = .23$) between ethnic/racial groups whilst adjusting for age, gender, parent education level, and ACT score (see Appendix B). A Tukey post hoc test revealed no significant group differences. Lastly, we did not have equal enough distribution across ethnic/racial groups to be able to conduct meaningful analysis about group level academic experiences.

Data imputation for dependent variables. We used the full information maximum likelihood (FIML) estimator to estimate missing academic outcome data in Stata Statistics. FIML has been found to be a superior estimator in multiple regression than other methods of handling missing data (e.g., listwise deletion, pairwise deletion, and mean imputation) with even 35% missing data (Enders, 2001). In the present study, a student's academic outcome data were missing due to not having two forms of correct and complete identification for the University's Office of Institutional Research to confirm their identity. As students provided two forms of identification in the survey, in 24% of cases, they either only provided one form of identification or there was a typo in their second form and they were unable to be matched. For all of our tests, we used both FIML and then also ran the analysis with the non-missing students. In general, the

magnitude and direction of coefficients were consistent across methods and we noted any major differences.

Main assumptions for hierarchical multiple regression were examined and upheld. However, examination of outliers and leverage highlighted a few observations with particularly high influence. We decided to keep those individuals in our analysis as there was nothing obviously problematic about the data points.

Preliminary analyses

The summary statistics and bivariate correlations for the study variables are presented in Tables 2 through 6. The average GPA was 3.24 ($SD = 0.45$) and 98% of students persisted to their second year. On average in the full sample and stable across samples, 60% of students were at their first-choice college. Twenty-two percent of students were first-generation students in the full sample. On average, students had low depressive symptoms and above average positive psychological adjustment. Students engaged in, on average, near to zero substance use. In the full sample, students were more engaged in ethnic identity commitment ($M = 3.15, SD = 0.51$) than ethnic identity exploration ($M = 2.86, SD = 0.53$). In general, the overall magnitude of the bivariate correlations were consistent, for the most part. However, the significance of the correlations and, in some cases, magnitude, varied across the four cohorts. Tables 2 to 6 highlight the results that were consistent across samples and then the bivariate correlations that did not replicated across samples 2011 to 2012 or 2013 to 2014.

First-choice college was not consistently significantly associated with any other variable across all samples. There was evidence of a significant association between first-

choice college and GPA ($r = -.08$), ACT score ($r = -.13$), standardized ACT score ($r = -.11$), parent education level ($r = -.09$), first-generation college student status ($r = .08$), and agreeableness ($r = .19$) in the full sample. To note, the bivariate correlation between first-choice college and campus belonging was positive, small, and not significant with $r = .07$.

Standardized GPA was significantly associated with ACT score ($r = .16$), standardized ACT score ($r = .23$), gender ($r = -.13$), parent education level ($r = .08$), fixed mindset ($r = .11$), and conscientiousness ($r = .12$). These results were consistent for non-standardized GPA.

H1: Students at their first-choice college will have higher academic performance and better psychological adjustment

Tables 7 through 10 presents the results of first-choice college predicting standardized GPA (*Model 1.1*), depressive symptoms (*Model 1.2*), substance use (*Model 1.3*), and positive psychological adjustment (*Model 1.4*) while adjusting for age, gender, parent education level, and standardized ACT score in the combined sample of $n = 942$ (Cohorts 2011 - 2014).

GPA. At Step 1 (*Model 1.1*), gender ($\beta = -.15$, $p = .001$, men lower) and standardized ACT scores ($\beta = .25$, $p < .001$) were significant and positive predictors of standardized GPA ($R^2 = .08$). At Step 2, the addition of first-choice college did not increase the variance explained ($\Delta R^2 = .00$; Table 7).

Depressive symptoms. At Step 1 of *Model 1.2*, no covariates significantly predicted depressive symptoms ($R^2 = .003$; Table 8). The addition of first-choice college

at Step 2 did not significantly increase the variance explained ($\Delta R^2 = .00$). First-choice college (where 1 = *yes first-choice college*) was nearing significance with a small, negative association with depressive symptoms ($\beta = -.06$, $p = 0.06$).

Substance use. At Step 1 (*Model 1.3*; Table 9), parent education level ($\beta = .10$, $p = 0.001$) was a significant and positive predictor of increased substance use ($R^2 = .02$). With the addition of first-choice college at Step 2, there was no increase in variance explained ($\Delta R^2 = .00$).

Positive psychological adjustment. At Step 1 of *Model 1.4*, none of the covariates were significantly associated with positive psychological adjustment ($R^2 = .00$; Table 10). The addition of first-choice college at Step 2 significantly increased the variance explained ($\beta = .08$, $p = 0.01$; $\Delta R^2 = .01$).

H2: First-generation college students at their first-choice college will have higher academic performance than first-generation college students who are not

Table 11 presents the results of *Model 2.1*, the interaction of first-choice college and first-generation college student status and end of first year standardized GPA while adjusting for covariates in the combined sample $n = 942$ (Cohorts 2011 – 2014). In the combined sample, $n = 206$ were first-generation college students and 67% of first-generation students were at their first-choice college. There was a significant, small, negative interaction effect between first-choice college and first-generation college student status ($\beta = -.14$, $p = .04$; $R^2 = .09$) where first-choice college and first-generation college student was coded as 1. The average GPA of first-generation college students at

their first-choice college was 3.16 while the average GPA of first-generation college students not at their first-choice college was 3.38.

H3: Well-established predictors of academic outcomes will predict academic outcomes and the addition of first-choice college will significantly increase the amount of variance explained. By including known predictors in one model, these analyses demonstrate the unique predictive power of known predictors with respect to each other. Additionally, we are able to examine the usefulness of first-choice college as an additional predictor compared to other known predictors. These analyses were conducted separately by cohort as not all items were asked across the years and we replicated our findings across cohorts when possible.

Motivational factors. Table 12 and Table 13 present the results from the *Model 3.1* and *Model 3.2* with first-generation college student status, depressive symptoms, positive psychological adjustment, substance use, ethnic identity, and motivational factors predicting end of first year standardized GPA while adjusting for covariates for the 2011 ($n = 255$) & 2012 ($n = 265$) cohort respectively. At Step 1, gender ($\beta = -.21$, $p = .003$, men lower) was a significant predictor and standardized ACT score ($\beta = .35$, $p = .001$) showed a significant, medium, positive, association with standardized GPA ($R^2 = .17$). With Step 2, the addition of first-generation college student status, depressive symptoms, positive psychological adjustment, substance use, ethnic identity, and motivational factors significantly increased the variance explained ($\Delta R^2 = .10$). Specifically, in Step 2, academic self-discipline ($\beta = .29$, $p = .001$), and fixed mindset ($\beta = .18$, $p = .01$)

significantly predicted end of first year standardized GPA ($R^2 = .27$). First-choice college added to *Model 3.1* at Step 3 did not increase the amount of variance explained in standardized GPA ($\Delta R^2 = .00$).

Replication. Table 13 presents the results from the conceptual replication *Model 3.2*. The second model with the 2012 cohort (*Model 3.2*) is not a direct replication of *Model 3.1* as academic self-efficacy and locus of control were not measured. Criteria for replication was met if the coefficient fell within the confidence interval of first model. Figure 1 presents the results of the standardized coefficients across *Models 3.1-3.3*. In summary, gender consistently replicated as a significant predictor of standardized GPA across samples. Age, parent education level, first-generation college student status, ethnic identity commitment, ethnic identity search, and first-choice college consistently did not predict standardized GPA across samples. Meanwhile, the findings for standardized ACT score, positive psychological adjustment, substance use, and fixed mindset did not replicate across samples.

At Step 1, gender ($\beta = -.15$, $p = .03$) was a significant predictor of academic success ($R^2 = .05$). At Step 2, the addition of the well-established predictors did not significantly increase the variance explained ($\Delta R^2 = .06$). Substance use ($\beta = -.23$, $p = .002$) was a significant predictor of academic success ($R^2 = .11$). First-choice college added in Step 3 did not increase the amount of variance explained ($\Delta R^2 = .00$).

Table 14 presents the results from *Model 3.3* which includes first-generation college student status, depressive symptoms, positive psychological adjustment, substance use, ethnic identity, and motivational factors predicting end of first year

standardized GPA whilst adjusting for covariates for the combined 2011 and 2012 cohorts ($n = 520$). This was not a pre-registered analysis, but due to the variations in the replication model (see Figure 1), we were interested in investigating the combined model. At Step 1, gender ($\beta = -.18$, $p = .001$, men lower) and standardized ACT score ($\beta = .24$, $p = .001$) were significant predictors of academic success. At Step 2, substance use ($\beta = -.14$, $p = .01$) significantly predicted standardized GPA, but did not significantly increase the amount of variance explained ($\Delta R^2 = .03$). Fixed mindset was nearing significance with a small association with standardized GPA ($\beta = .10$, $p = .06$). Adding first-choice college at Step 3 also did not significantly increase the amount of variance accounted for ($\Delta R^2 = .01$).

Personality traits. Table 15 and Table 16 present the results from *Model 3.4* and *Model 3.5* with first-generation college student status, depressive symptoms, positive psychological adjustment, substance use, ethnic identity, and personality traits predicting end of first year standardized GPA while adjusting for covariates for the 2013 ($n = 223$) and 2014 ($n = 199$) cohorts respectively. At Step 1, ACT score ($\beta = .24$, $p = .001$) was a significant predictor of standardized GPA ($R^2 = .08$). At Step 2, the addition of well-established predictors did not increase the variance explained ($\Delta R^2 = .05$). None of the predictors added at Step 2 had significant association with standardized GPA. With Step 3, first-choice college ($\beta = -.19$, $p = .01$) significantly increased the variance explained in *Model 3.4*, ($\Delta R^2 = .03$).

Replication. Table 16 presents the results the direct replication of *Model 3.4*. Criteria for replication was met if the coefficient fell within the confidence interval of

first model. Figure 2 presents the results of the standardized coefficients across *Models 3.4-3.6*. In summary, standardized ACT scores consistently replicated as a significant predictor of standardized GPA across samples. Age, gender, parent education level, first-generation college student status, depressive symptoms, positive psychological adjustment, substance use, ethnic identity search, agreeableness, conscientiousness, neuroticism, and openness consistently did not predict standardized GPA across samples. Meanwhile, the findings for ethnic identity commitment, extraversion, and first-choice college did not replicate across samples.

Model 3.5 is the direct replication of *Model 3.4*. In Step 1, standardized ACT score ($\beta = .27, p = .001$) had a small association with standardized GPA ($R^2 = .08$; Table 16). At Step 2, the addition of well-established predictors did not significantly increase the variance explained ($\Delta R^2 = .06$). First-choice college added at Step 3 did not increase the amount of variance explained ($\Delta R^2 = .00$).

Table 17 presents the results from *Model 3.6* which includes first-generation college student status, depressive symptoms, positive psychological adjustment, substance use, ethnic identity, and personality traits predicting end of first year standardized GPA whilst adjusting for covariates for the combined 2013 and 2014 cohorts ($n = 422$). This was not a pre-registered analysis, but due to the variations in the replication model (see Figure 2), we were interested in investigating the combined model. At Step 1, ACT score ($\beta = .26, p = .001$) is a significant predictor of academic success ($R^2 = .07$). At Step 2, other well-established predictors did not significantly increase the amount of variance explained ($\Delta R^2 = .04$). However, conscientiousness ($\beta = .16, p = .01$)

was a positive and significant predictor of standardized GPA. Adding first-choice college at Step 3 did not significantly increase the amount of variance accounted, but first-choice college had a small negative association that was nearing significance ($\beta = -.10$, $p = .06$; $\Delta R^2 = .01$).

Discussion

The purpose of this study was to investigate a potential new predictor of academic success, first-choice college, and examine well-established predictors of academic success in a diverse sample of minority first year students. We used hierarchical multiple regression and replicated our analyses in multiple samples and combined samples.

H1: Students at their first-choice college will have higher academic performance and better psychological adjustment

Hypothesis 1 was partially supported by our analyses. First-choice college was positively associated with positive psychological adjustment when controlling for age, gender, parent education level and standardized ACT score. However, first-choice college was not associated with college GPA, depressive symptoms, or substance use when controlling for age, gender, parent education level and standardized ACT score. Taken together, there seems to be no evidence that first-choice college alone is a predictive risk-factor for college GPA, depressive symptoms or substance use.

Instead, there is some evidence that first-choice college may be an indicator of students with positive wellbeing as they enter college, but this does not necessarily indicate academic success. Thus, the indicator of first-choice college may also be helpful in college counseling for counselors to understand being at your first-choice college and

positive wellbeing may not be associated with higher academic performance. It is not exactly clear what first-choice is capturing, but the simple indicator seems to measure something beyond campus belonging as the correlation between campus belonging and first-choice college is small and nonsignificant. This may also be because students were assessed immediately upon arrival to college, during a pre-orientation program, and thus have not been on campus yet.

We were unable to explore predictors of retention due to high persistence rates in our sample (98%). According to the National Student Clearinghouse Research Center, the persistence rate in 2016 of students in four-year public institutions was 82.3 percent indicating that the rate of persistence in this sample was higher than average. This may be due to students participating in the pre-orientation program for ethnic minority students. The program might help to create community and connections with peers, which has been found to improve retention and academic outcomes (Terezini et al., 1996; Dennis, Phinney, & Chuateco, 2005). Thus, some of the effects of first-choice college may have been attenuated by the multicultural programming and community.

H2: First-generation college students at their first-choice college will have higher academic performance than first-generation college students who are not at their first-choice college

Hypothesis 2 was not supported by our analysis. We hypothesized that first-choice college would be a protective factor for first-generation college students. Instead, our results indicate first-choice college may be an additional risk-factor for first-generation college students as it is associated with poorer academic performance for first-

generation college students. In sum, our hypothesis that first-choice college is a protective factor for first-generation college students was not supported, but the results suggest that first-generation students at their first choice college are academically performing worse. Now we ask, why might this be?

Bivariate correlations with the sample of first-generation college students, demonstrate that first-generation college students at their first-choice college have lower ACT scores and lower scores on fixed-mindset. Both of these factors were found to be associated with lower GPA (see Appendix C).

Alternatively, students who are at their first-choice college may feel that they have already reached their goal, which may in turn make them less motivated to invest in their school work. Better psychological adjustment may lead them to feel more of a desire to engage in other social aspects of college. On that note, they may be more invested in other aspects of the University experience that made the University their first choice school.

In attempts to understand non-first-choice attendees, it is possible for the students in which the college they attended was not their first choice, may have aimed for a higher ranked school. The large Midwest University where the data were collected is a top 30 public university and ranked in the high 60's in the national US College News & World Report rankings. Thus, they may have applied to more competitive schools and, therefore, these students might also want to transfer. However, there is less evidence for this theory as 98% of students persisted to their second year. Nevertheless, students not attending their first-choice college may be more determined and motivated to perform

high to attain acceptance to another school. This notion is further supported by a significant, negative, correlation between first-choice college and ACT score.

Additionally, students not at their first-choice college may feel that they failed at attaining their goal and feel a strong motivation to prove to themselves and others that they can be successful and thus increasing academic achievement. Their story may be redemptive or resilient in nature (McAdams, 2006). The negative psychological adjustment results uphold this theory as non-first-choice attendees have lower psychological wellbeing that may be motivating to prove themselves but also leading to less engagement in social aspects of college.

H3: Well-established predictors of academic outcomes will predict academic outcomes and the addition of first-choice college will significantly increase the amount of variance explained

Including all known predictors of academic success in the model removes the shared variance between the variables and therefore demonstrates the unique association of a specific construct with college GPA. The results for hypothesis 3 are largely varied across models. We, therefore, considered results replicated if the coefficient fell within the confidence interval of the other models. In term of p-value significant results, gender consistently predicted academic outcomes in the models with motivational factors and ACT score consistently predicted academic outcomes in the models with personality traits. The findings for standardized ACT score, positive psychological adjustment, substance use, and fixed mindset did not replicate across samples including motivational factors. The findings for ethnic identity commitment, extraversion, and first-choice college did not replicate across samples including personality

traits. Although there were some inconsistent findings regarding the predictor power of first-choice college, the coefficients were consistently small and, therefore, based upon these analyses there is not strong evidence of the predictive power of first-choice college for ethnic minority first year college outcomes.

Due to the lack of replication, we examined the magnitude of the coefficients. In terms of magnitude of the coefficients across the samples including motivational factors, ACT score has a small to moderate, positive association and gender as a small, negative association with academic outcomes. Then, there is varied evidence regarding the unique association of positive psychological adjustment (small, negative coefficient), substance use (small, negative coefficient), academic self-discipline (small to moderate, positive coefficient), and fixed mindset (small, positive coefficient). In terms of magnitude of the coefficients across the samples including personality traits, conscientiousness has a small to moderate, positive association with academic outcomes. Then, there is varied evidence regarding the unique association of ethnic identity commitment (small, negative coefficient), and neuroticism (small, positive coefficient).

Our varied results demonstrate some consistency with previous work. The predictors that demonstrated some predictive power for academic outcomes align with previous meta-analytic results that show ACT score, academic motivational factors, and personality have a larger association with GPA than other predictors (Miller-Cotto & Byrnes, 2016; Poropat, 2009; Richardson et al., 2012). In terms of motivational factors, surprisingly, fixed mindset had a consistently small, positive, but not always significant association with standardized GPA. Although other research shows that students with a growth mindset tend to be more resilient and have better academic outcomes (Yeager &

Dweck, 2012), one could argue that those with a fixed mindset may be more motivated to “prove” their intelligence or students may be succeeding because they decided they have high ability. As expected, academic self-discipline was found to have a small, positive, but nearing significant association with standardized GPA. Internal locus of control showed no association with GPA. Lastly, with respect to personality traits, conscientiousness had a small, positive, but variably significant, association with standardized GPA. Our results with respect to ethnic identity commitment and search align with meta-analytic results of ethnic identity show an overall small, positive association, but across samples associations vary from negative to positive (Miller-Cotto & Byrnes, 2016). In sum, our results suggest motivational factors, ethnic identity, and conscientiousness have the most consistent associations with academic outcomes adjusting for other predictors and covariates.

Replication methodology

The variable results highlight the importance of replication in different samples. The samples used in this study are students from the same school and there was a lot of variation in the magnitude, direction, and significance of the predictors. The variability also emphasizes the importance of considering the magnitude and direction of coefficients instead of solely focusing on significance (Hemphill, 2003; Rodgers, 2010). Additionally, some of these associations seem to be lower than expected based upon the current literature due to multicollinearity as our models included other well-established predictors, past academic performance, and other covariates that are correlated with each other. For example, almost all predictors are correlated with positive psychological

wellbeing and depressive symptoms. Our analytic attempts to detect the most influential predictors of academic success. Notably, the smaller associations may also be due to publication bias or non-reporting of non-significant findings. By replicating across samples and then examining the combined sample, we are able to highlight how varied results can be. In the context of the “replication crisis”, these analyses emphasize the variability of results and the benefit of replication in detecting the true effect (Nosek, Spies, & Motyl, 2012).

Limitations

There are some key limitations due to characteristics and qualities of the data used. This sample of ethnic minority college students may not be generalizable to all minority students on campus. Participants were already engaged in the University as they chose to attend the multicultural new student orientation. This is also apparent in the high retention and high ethnic identity commitment scores.

Although we employ a rich dataset, the dataset itself has limitations. We were unable to examine the association of other well-established academic motivational predictors due to scales not being included in the survey. For example, we did not include academic self-efficacy, which has been found to have moderate, positive associations with GPA. Additionally, we were missing academic data due to privacy constraints with needing two forms of student identification. Although FIML is a robust technique to handle missing data and we examined all of our analyses with and without the missing data, we acknowledge it is a limitation to our data. Furthermore, although the academic outcome data are longitudinal, participants did not complete the survey again at the end

of their first year. With longitudinal data, we would have been able to investigate change in psychological adjustment and campus belonging during the first year of college.

Future Directions

This study demonstrates the importance of how students can be happy, but not necessarily perform well academically. This is especially useful for college counselors that aim to help students with both academic and mental health factors. There may be a discrepancy between the two areas where first year students are happy at the beginning of the year, but their state of being does not contribute to academic success. For first-generation college students, there is evidence that first-choice college may be an indication for poorer outcomes. Thus, these findings can help counselors working with first-generation college students to provide additional support to those students who the university if their first choice school. Additionally, college counseling programs could do outreach for first-generation college students at their first-choice college to provide them additional academic counseling.

Higher education programming continuously develops new programs to serve ethnic minority students. These findings can assist in the development of college support programs for ethnic minority college students. For example, programs can use these results to expand programming to factors that may help students increase their success (e.g. programs that foster academic self-discipline)

In summary, there is limited evidence that first-choice college is significantly associated with college GPA, depression, or substance use in a sample of ethnic minority students. There is evidence that first-choice college is significantly associated with

positive psychological adjustment in a sample of ethnic minority first year students, but this is not related to academic outcomes. However, there is a significant negative interaction between first-generation student status and first-choice college where first-generation college students at their first-choice college are performing worse than first-generation college students not at their first-choice college. In terms of well-established predictors, there is varied evidence across all models, which demonstrates the importance of replication and increased sample size in data analysis.

Table 1
Descriptive Characteristics by Cohort and Full Combined Sample

	2011 (n = 255)		2012 (n = 265)		2013 (n = 223)		2014 (n = 199)		Full sample (n = 942)	
	n	M (SD)	n	M (SD)						
Age	255	18 (0.42)	265	18 (0.52)	223	18 (0.33)	199	18 (0.4)	942	18 (0.43)
Gender (% Male)	255	33	265	39	223	32	199	30	942	34
Parent Education Level	255	4.78 (2.01)	265	3.55 (1.97)	223	4.48 (2.08)	199	4.81 (1.92)	942	4.37 (2.06)
First generation college student	255	20	265	24	223	23	199	20	942	22
International student (%)	255	7	265	4	223	2	199	5	942	4
Refugee (%)	255	2	265	5	223	5	199	5	942	4
<i>Ethnicity (%)</i>										
Asian or Asian American	132	52	142	54	102	46	80	40	456	48
Black	36	14	47	18	46	21	45	23	174	18
Hispanic or Latinx	20	8	17	6	16	7	25	13	78	8
Mixed	55	22	42	16	34	15	29	15	160	17
Native American	3	1	1	0	1	0	2	1	7	1
Middle Eastern	3	1	3	1	6	3	1	1	13	1
Indian/Pakistani/South Asian	6	2	13	5	18	8	17	9	54	6
ACT score	144	25.38 (4.49)	181	25.57 (4.27)	179	25.15 (4.21)	151	25.51 (4.07)	655	25.4 (4.25)
GPA	167	3.2 (0.49)	196	3.26 (0.43)	189	3.21 (0.48)	164	3.27 (0.38)	716	3.24 (0.45)
Persisted to Year 2 (%)	166	99	191	97	184	97	163	99	704	98
First choice college (%)	255	58	265	61	223	61	199	60	942	60
<i>College distribution (%)</i>										
Carlson School of Management	13	8	10	5	15	8	7	4	45	6
Col of Educ/Human Development	33	20	42	21	46	24	31	19	152	21
Col of Food, Agr & Nat Res Sci	5	3	6	3	4	2	7	4	22	3
College of Biological Sciences	16	10	15	8	16	8	22	13	69	10
College of Design	3	2	4	2	5	3	5	3	17	2
College of Liberal Arts	74	44	89	45	76	40	74	45	313	44
College of Sci and Engineering	23	14	31	16	27	14	18	11	99	14

Table 2
Cohort 2011 Means (Standard deviations), Cronbach's alpha, and Bivariate Correlations

	M (SD) / %	Cronbach's α	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
(1) GPA	3.2 (0.49)		1																		
(2) Standardized GPA	-0.06 (1.08)		0.99*	1																	
(3) ACT score	25.38 (4.49)		0.26*	0.21*	1																
(4) Standardized ACT	-0.03 (1.15)		0.32*	0.33*	0.70*	1															
(5) Age	18 (0.42)		0.01	0.02	-0.17*	-0.16	1														
(6) Gender	33%		-0.17*	-0.19*	0.07	0.01	0.11	1													
(7) Parent Education Level	5 (2.01)		0.21*	0.19*	0.50*	0.38*	-0.15*	-0.12	1												
(8) First-generation College Student	20%		0.09	0.07	0	-0.04	0.07	0.02	-0.26*	1											
(9) First-choice College	58%		0.01	0	-0.09	-0.15	0.05	0.1	0.04	0.02	1										
(10) Campus Belonging	3.17 (0.59)	0.91	0.03	0.04	-0.04	-0.02	-0.13	-0.02	-0.02	0.06	0.07	1									
(11) Depressive Symptoms	1.01 (0.42)	0.72	0.1	0.13	0.02	0.06	-0.04	-0.09	0.03	-0.08	-0.02	-0.27*	1								
(12) Self-esteem	3.25 (0.53)	0.91	-0.14	-0.15*	-0.05	-0.07	0.04	0.08	0.04	-0.01	0.09	0.26*	-0.54*	1							
(13) Substance Use	0.18 (0.4)	0.64	-0.01	-0.01	0.15	0.15	0	0.09	0.06	-0.03	-0.13	-0.06	-0.01	0.02	1						
(14) Ethnic Identity	2.99 (0.44)	0.83	-0.09	-0.09	-0.1	-0.08	0.08	-0.06	0.02	-0.06	-0.03	0.06	-0.21*	0.36*	-0.05	1					
(15) Ethnic Identity Search	2.76 (0.52)	0.65	-0.01	-0.01	-0.07	0.01	0.07	-0.05	-0.03	-0.07	0	-0.01	-0.04	0.18*	-0.09	0.83*	1				
(16) Ethnic Identity Commitment	3.16 (0.5)	0.85	-0.13	-0.12	-0.11	-0.12	0.06	-0.06	0.05	-0.04	-0.04	0.09	-0.28*	0.42*	-0.01	0.91*	0.51*	1			
(17) Locus of Control	3.79 (0.58)	0.64	-0.01	-0.02	-0.11	-0.14	0.11	-0.19*	-0.04	-0.02	0.11	0.20*	-0.32*	0.29*	-0.07	0.14	0.09	0.15*	1		
(18) Academic Self Discipline	3.8 (0.73)	0.86	0.13	0.11	-0.1	-0.19*	0.11	-0.15	-0.02	0.03	0.11	0.19*	-0.32*	0.43*	-0.23*	0.24*	0.14	0.26*	0.46*	1	
(19) Fixed Mindset	2.18 (0.87)	0.92	0.23*	0.21*	0.11	0.06	0.02	0	0.13	-0.05	-0.14	-0.02	0.15	-0.21*	0.11	-0.27*	-0.19*	-0.27*	-0.07	-0.19*	1

* p <.05

+ Includes individuals with academic outcome data (n = 167)

Combined Samples
Current Sample
Replication Sample

Table 3
Cohort 2012 Means (Standard deviations), Cronbach's alpha, and Bivariate Correlations

	M (SD)	Cronbach's α	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
(1) GPA	3.26 (0.43)		1																
(2) Standardized GPA	0.05 (0.95)		0.99*	1															
(3) ACT score	25.57 (4.27)		0.26*	0.19*	1														
(4) Standardized ACT	0.07 (0.97)		0.12	0.12	0.68*	1													
(5) Age	18 (0.52)		-0.02	-0.01	-0.20*	-0.16*	1												
(6) Gender	39%		-0.07	-0.12	0.31*	0.18*	-0.01	1											
(7) Parent Education Level	4 (1.97)		0.21*	0.17*	0.54*	0.39*	-0.13	0.05	1										
(8) First-generation College Student	24%		-0.11	-0.09	-0.28*	-0.18*	0.08	-0.13	-0.35*	1									
(9) First-choice College	61%		-0.09	-0.07	-0.15*	-0.09	0.05	0.14*	-0.12	0.16*	1								
(10) Campus Belonging	3.28 (0.5)	0.88	-0.08	-0.08	0.02	0.03	-0.06	-0.04	0.08	0.03	-0.02	1							
(11) Depressive Symptoms	0.53 (0.57)	0.77	-0.08	-0.07	-0.06	0.01	0.25*	0.01	-0.12	0.1	0.09	-0.13	1						
(12) Self-esteem	3.59 (0.68)	0.8	0.05	0.05	0.03	-0.03	-0.02	-0.15*	0.06	-0.11	-0.04	0.33*	-0.31*	1					
(13) Substance Use	0.17 (0.42)	0.75	-0.22*	-0.20*	0.02	0.09	0.07	-0.06	-0.02	0.01	0.05	0.12	0.26*	0.09	1				
(14) Ethnic Identity	3.02 (0.47)	0.88	0.07	0.07	-0.12	-0.08	-0.08	-0.11	-0.01	0.09	-0.02	0.19*	-0.16*	0.20*	-0.15*	1			
(15) Ethnic Identity Search	2.83 (0.55)	0.74	0.03	0.03	-0.15*	-0.07	-0.04	-0.1	-0.07	0.06	0.02	0.22*	-0.05	0.08	-0.16*	0.86*	1		
(16) Ethnic Identity Commitment	3.15 (0.51)	0.89	0.08	0.09	-0.07	-0.08	-0.09	-0.1	0.04	0.09	-0.04	0.13	-0.22*	0.25*	-0.11	0.92*	0.60*	1	
(17) Fixed Mindset	2.32 (0.87)	0.91	0.04	0.02	-0.03	-0.06	0.17*	0	0	0.09	-0.04	-0.11	0.13	-0.23*	-0.05	-0.11	-0.09	-0.11	1

* $p < .05$

+ Includes individuals with academic outcome data (n = 197)

Table 4
 Cohort 2013 Means (Standard deviations), Cronbach's alpha, and Bivariate Correlations

	M(SD)	Cronbach's α	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
(1) GPA	3.21 (0.48)		1																				
(2) Standardized GPA	-0.06 (1.05)		0.99*	1																			
(3) ACT score	25.15 (4.21)		0.19*	0.12	1																		
(4) Standardized ACT	-0.04 (0.92)		0.23*	0.23*	0.63*	1																	
(5) Age	18 (0.33)		-0.1	-0.09	0.03	-0.05	1																
(6) Gender	32%		-0.12	-0.15*	0.20*	-0.01	0.17*	1															
(7) Parent Education Level	4 (2.08)		-0.01	-0.05	0.56*	0.23*	-0.08	0.09	1														
(8) First-generation College Student	23%		0.01	0.03	-0.23*	-0.16*	0	0	-0.27*	1													
(9) First-choice College	61%		-0.18*	-0.16*	-0.16*	-0.13	-0.15*	-0.17*	-0.13	0.02	1												
(10) Campus Belonging	3.25 (0.59)	0.91	-0.03	-0.03	0.08	0.06	-0.1	-0.08	0	-0.08	0.18*	1											
(11) Depressive Symptoms	0.57 (0.69)	0.85	0.02	0.02	-0.06	-0.03	-0.1	0.05	0.02	-0.02	-0.1	-0.31*	1										
(12) Self-esteem	3.66 (0.78)	0.85	0.03	0.04	0.04	0.02	0.09	-0.07	0.03	-0.04	0.15*	0.36*	-0.43*	1									
(13) Substance Use	0.18 (0.52)	0.83	-0.02	-0.04	0.17*	0.11	-0.01	-0.06	0.24*	-0.13	-0.03	-0.1	0.05	-0.14	1								
(14) Ethnic Identity	3.08 (0.48)	0.89	-0.11	-0.11	-0.12	-0.05	-0.12	-0.17*	-0.06	0.02	0.07	0.36*	-0.12	0.17*	-0.05	1							
(15) Ethnic Identity Search	2.94 (0.53)	0.76	-0.04	-0.04	-0.05	0.06	-0.09	-0.16*	-0.13	0.01	0.05	0.29*	-0.08	0.11	-0.03	0.88*	1						
(16) Ethnic Identity Commitment	3.18 (0.51)	0.88	-0.14	-0.14	-0.15*	-0.12	-0.13	-0.15*	0	0.02	0.07	0.36*	-0.13	0.19*	-0.07	0.94*	0.66*	1					
(17) Extraversion	3.24 (0.73)	0.86	0	0	0.11	0.12	-0.08	-0.02	0.11	-0.07	-0.04	0.25*	-0.24*	0.19*	0.15*	0.07	0.04	0.08	1				
(18) Agreeableness	3.83 (0.55)	0.75	-0.01	0	-0.07	-0.07	-0.06	-0.12	-0.09	-0.02	0.1	0.40*	-0.22*	0.31*	-0.02	0.26*	0.17*	0.28*	0.25*	1			
(19) Conscientiousness	3.52 (0.59)	0.78	0.1	0.12	-0.07	-0.02	-0.07	-0.13	-0.20*	0.1	0.03	0.16*	-0.21*	0.20*	-0.13	0.17*	0.17*	0.15*	0.06	0.38*	1		
(20) Neuroticism	2.88 (0.7)	0.81	0.06	0.09	-0.11	-0.03	-0.07	0.19*	0	0.04	-0.04	-0.24*	0.48*	-0.25*	-0.01	-0.09	-0.01	-0.14	0.25*	-0.31*	-0.28*	1	
(21) Openness	3.61 (0.52)	0.73	0.08	0.07	0.12	0.07	-0.04	-0.11	0.07	0.05	-0.02	0.09	0.01	0.02	0.04	0.14*	0.11	0.15*	0.13	0.1	0.18*	0.07	1

* p <.05

+ Includes individuals with academic outcome data (n = 189)

Combined Samples
 Current Sample
 Replication Sample

Table 5
Cohort 2014 Means (Standard deviations), Cronbach's alpha, and Bivariate Correlations

	M(SD)	Cronbach's α	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
(1) GPA	3.27 (0.38)		1																				
(2) Standardized GPA	0.08 (0.87)		0.98*	1																			
(3) ACT score	25.51 (4.07)		0.19*	0.1	1																		
(4) Standardized ACT	-0.01 (0.96)		0.23*	0.25*	0.64*	1																	
(5) Age	18 (0.4)		0.07	0.05	-0.11	-0.01	1																
(6) Gender	30%		0	-0.03	0.23*	0.11	0.17*	1															
(7) Parent Education Level	5 (1.92)		0.11	0.07	-0.48*	0.30*	-0.09	0.11	1														
(8) First-generation College Student	20%		-0.02	-0.02	-0.19*	-0.1	0	-0.09	-0.43*	1													
(9) First-choice College	60%		-0.06	-0.06	-0.13	-0.09	-0.06	0.03	-0.12	0.1	1												
(10) Campus Belonging	3.27 (0.55)	0.91	0.08	0.07	0.13	0.04	-0.05	0.28*	0.13	-0.08	0.03	1											
(11) Depressive Symptoms	0.64 (0.74)	0.86	-0.03	-0.03	0.08	0.16*	0.03	-0.06	0.02	-0.04	-0.15	-0.15	1										
(12) Self-esteem	3.63 (0.71)	0.81	0.06	0.05	0.03	-0.08	-0.13	-0.01	0.01	0.02	0.09	0.31*	-0.47*	1									
(13) Substance Use	0.17 (0.41)	0.77	0.02	0.04	0.02	0	0.05	0.12	0.13	-0.04	-0.07	0.03	0.14	-0.02	1								
(14) Ethnic Identity	3.04 (0.46)	0.89	-0.03	-0.03	-0.05	-0.13	-0.19*	-0.05	-0.1	0.18*	0	0.22*	-0.16*	0.22*	0.03	1							
(15) Ethnic Identity Search	2.92 (0.48)	0.73	-0.05	-0.04	0	-0.05	-0.18*	-0.08	-0.07	0.19*	0.03	0.18*	-0.1	0.18*	0.1	0.88*	1						
(16) Ethnic Identity Commitment	3.13 (0.51)	0.89	-0.01	-0.02	-0.08	-0.17*	-0.17*	-0.02	-0.1	0.15*	-0.02	0.22*	-0.18*	0.22*	-0.02	0.95*	0.68*	1					
(17) Extraversion	3.12 (0.67)	0.83	0.13	0.14	-0.08	0.02	0.06	0.06	0.11	-0.04	0.04	0.27*	-0.23*	0.19*	0.14	0.19*	0.14	0.19*	1				
(18) Agreeableness	3.85 (0.53)	0.77	-0.04	-0.02	-0.14	-0.01	-0.18*	-0.1	-0.05	0.1	0.30*	0.12	-0.21*	0.34*	0	0.23*	0.12	0.27*	0.16*	1			
(19) Conscientiousness	3.51 (0.57)	0.8	0.13	0.11	0.06	0.06	0	0.01	0.15*	-0.09	-0.01	0.22*	-0.23*	0.36*	-0.08	0.25*	0.18*	0.25*	0.17*	0.36*	1		
(20) Neuroticism	2.96 (0.62)	0.76	-0.01	0	0.04	0	-0.02	-0.20*	0.02	-0.03	-0.17*	-0.20*	0.49*	-0.39*	0.06	-0.24*	-0.21*	-0.23*	-0.37*	-0.34*	-0.37*	1	
(21) Openness	3.52 (0.44)	0.63	0.02	-0.02	0.23*	0.15	0.09	0.06	0.23*	-0.11	-0.07	0.19*	-0.06	0.13	0.07	0.21*	0.27*	0.15	0.14	0.04	0.16*	-0.12	1

* p <.05

+ Includes individuals with academic outcome data (n = 164)

Table 6
 Combined Cohorts 2011-2014 Means (Standard deviations), Cronbach's alpha, and Bivariate Correlations

	M (SD)	Cronbach's α	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
(1) GPA	3.24 (0.45)		1																								
(2) Standardized GPA	0 (1)		0.99*	1																							
(3) ACT score	25.4 (4.25)		0.23*	0.16*	1																						
(4) Standardized ACT	0 (1)		0.23*	0.23*	0.66*	1																					
(5) Age	18 (0.43)		-0.01	-0.01	-0.12*	-0.10*	1																				
(6) Gender	34%		-0.10*	-0.13*	0.20*	0.07	0.10*	1																			
(7) Parent Education Level	4 (2.06)		0.11*	0.08*	0.51*	0.31*	-0.13*	0.02	1																		
(8) First-generation College Student	22%		-0.01	0	-0.19*	-0.12*	0.05	-0.05	-0.33*	1																	
(9) First-choice College	60%		-0.08*	-0.07	-0.13*	-0.11*	-0.02	0.03	-0.09*	0.08*	1																
(10) Campus Belonging	3.24 (0.56)		0.9	0	0	0.05	0.03	-0.08*	0.02	0.03	-0.01	0.07	1														
(11) Depressive Symptoms (std)	0 (0.99)		0.01	0.02	-0.01	0.05	0.06	-0.02	-0.01	0	-0.04	-0.22*	1														
(12) Positive Psych Wellbeing (std)	-0.02 (1)		0	-0.01	0.02	-0.04	-0.01	-0.04	0.03	-0.04	0.07	0.32*	-0.43*	1													
(13) Substance Use	0.18 (0.44)		0.76	-0.05	-0.05	0.09*	0.09*	0.03	0.01	0.12*	-0.05	-0.04	-0.01	0.11*	-0.02	1											
(14) Ethnic Identity	3.03 (0.46)		0.88	-0.04	-0.04	-0.10*	-0.08*	-0.08*	-0.10*	-0.04	0.06	0.01	0.22*	-0.16*	0.23*	-0.06	1										
(15) Ethnic Identity Search	2.86 (0.53)		0.72	-0.02	-0.01	-0.08	-0.01	-0.05	-0.10*	-0.07	0.04	0.03	0.18*	-0.07	0.13*	-0.05	0.86*	1									
(16) Ethnic Identity Commitment	3.16 (0.51)		0.88	-0.06	-0.06	-0.10*	-0.12*	-0.08*	-0.08*	-0.01	0.06	-0.01	0.21*	-0.20*	0.27*	-0.06	0.93*	0.60*	1								
(17) Locus of Control	3.79 (0.58)		0.64	-0.01	-0.02	-0.11	-0.14	0.11	-0.19*	-0.04	-0.02	0.11	0.20*	-0.32*	0.29*	-0.07	0.14	0.09	0.15*	1							
(18) Academic Self Discipline	3.8 (0.73)		0.86	0.13	0.11	-0.1	-0.19*	0.11	-0.15	-0.02	0.03	0.11	0.19*	-0.32*	0.43*	-0.23*	0.24*	0.14	0.26*	0.46*	1						
(19) Fixed Mindset	2.25 (0.87)		0.91	0.14*	0.11*	0.03	0	0.11*	0	0.06	0.03	-0.09	-0.06	0.14*	-0.22*	0.02	-0.18*	-0.14*	-0.18*	-0.07	-0.19*	1					
(20) Extraversion	3.19 (0.71)		0.85	0.04	0.05	0.02	0.07	-0.01	0.02	0.1	-0.06	0	0.26*	-0.24*	0.20*	0.14*	0.13*	0.09	0.14*	.	.	.	1				
(21) Agreeableness	3.84 (0.54)		0.76	-0.02	-0.01	-0.11	-0.04	-0.12*	-0.11*	-0.07	0.04	0.19*	0.28*	-0.22*	0.33*	-0.01	0.24*	0.15*	0.27*	.	.	.	0.21*	1			
(22) Conscientiousness	3.51 (0.58)		0.79	0.11*	0.12*	-0.02	0.02	-0.03	-0.07	-0.04	0.02	0.01	0.18*	-0.22*	0.27*	-0.11*	0.20*	0.17*	0.20*	.	.	.	0.11*	0.37*	1		
(23) Neuroticism	2.92 (0.66)		0.79	0.05	0.06	-0.04	-0.01	-0.04	-0.19*	0.01	0.01	-0.1	-0.22*	0.49*	-0.31*	0.02	-0.16*	-0.09	-0.18*	.	.	.	-0.31*	-0.32*	-0.32*	1	
(24) Openness	3.57 (0.48)		0.7	0.05	0.03	0.16*	0.1	0.02	-0.03	0.13*	-0.01	-0.04	0.14*	-0.03	0.07	0.05	0.18*	0.17*	0.16*	.	.	.	0.15*	0.08	0.17*	-0.02	1

* p <.05

+ Includes individuals with academic outcome data (n = 717)

Table 7
Summary of First-choice College Predicting Standardized GPA

	<i>Model 1.1 (n = 941)</i>							
	Step 1				Step 2			
	<i>b</i>	<i>SE</i>	β	pvalue	<i>b</i>	<i>SE</i>	β	pvalue
Age	0.07	0.08	0.03	.36	0.07	0.08	0.03	.39
Gender	-0.32	0.08	-0.15	.00	-0.32	0.08	-0.15	.00
Parent education level	0.01	0.02	0.01	.74	0.00	0.02	0.01	.79
ACT score (std)	0.25	0.04	0.25	.00	0.24	0.04	0.24	.00
First-choice college					-0.08	0.07	-0.04	.29
<i>R-Squared</i>	.08				.08			
<i>Chi-squared difference test</i>					$\chi^2(1) = 1.37, p < .98$			

Bolded coefficients are significant at $p < .05$

Table 8
Summary of First-choice College Predicting Depressive Symptoms

<i>Model 1.2 (n = 942)</i>								
	Step 1				Step 2			
	<i>b</i>	<i>SE</i>	β	pvalue	<i>b</i>	<i>SE</i>	β	pvalue
Age	0.14	0.08	0.06	.06	0.14	0.08	0.06	.07
Gender	-0.12	0.07	-0.06	.09	-0.11	0.07	-0.05	.10
Parent education level	-0.01	0.02	-0.02	.59	-0.01	0.02	-0.02	.49
ACT score (std)	0.06	0.04	0.06	.15	0.06	0.04	0.06	.18
First-choice college					-0.13	0.07	-0.06	.06
<i>R-Squared</i>	.01				0.01			
<i>Chi-squared difference test</i>					$\chi^2(1) = 4.04, p < .05$			

Bolded coefficients are significant at $p < .05$

Table 9
Summary of First-choice College Predicting Substance Use

<i>Model 1.3 (n = 942)</i>									
	Step 1				Step 2				
	<i>b</i>	<i>SE</i>	β	pvalue	<i>b</i>	<i>SE</i>	β	pvalue	
Age	0.04	0.03	0.04	.19	0.04	0.03	0.04	.20	
Gender	0.01	0.03	0.01	.81	0.01	0.03	0.01	.79	
Parent education level	0.02	0.01	0.10	.00	0.02	0.01	0.10	.01	
ACT score (std)	0.03	0.02	0.06	.16	0.02	0.02	0.06	.17	
First-choice college					-0.03	0.03	-0.03	.33	
<i>R-Squared</i>	.02				.02				
<i>Chi-squared difference test</i>					$\chi^2(1) = 1.23, p < .98$				

Bolded coefficients are significant at $p < .05$

Table 10
Summary of First-choice College Predicting Positive Psychological Adjustment

<i>Model 1.4 (n = 942)</i>									
	Step 1				Step 2				
	<i>b</i>	<i>SE</i>	β	pvalue	<i>b</i>	<i>SE</i>	β	pvalue	
Age	-0.02	0.08	-0.01	.81	-0.01	0.08	-0.01	.87	
Gender	-0.06	0.07	-0.03	.38	-0.07	0.07	-0.03	.34	
Parent education level	0.02	0.02	0.05	.15	0.03	0.02	0.06	.10	
ACT score (std)	-0.04	0.04	-0.04	.30	-0.04	0.04	-0.04	.38	
First-choice college					0.17	0.07	0.08	.01	
<i>R-Squared</i>	.00				.01				
<i>Chi-squared difference test</i>					$\chi^2(1) = 6.63, p < .01$				

Bolded coefficients are significant at $p < .05$

Table 11

Summary of First-choice College and First-generation Student Status Predicting Standardized GPA

	<i>Model 2 (n = 942)</i>			
	<i>b</i>	<i>SE</i>	β	pvalue
Age	0.08	0.08	0.04	.31
Gender	-0.32	0.08	-0.15	.00
Parent education level	0.01	0.02	0.03	.52
ACT score (std)	0.24	0.04	0.24	.00
First-choice college	-0.01	0.08	-0.01	.88
First-generation college student	0.33	0.16	0.13	.05
First-choice college X First-gen	-0.41	0.20	-0.14	.04
<i>R-Squared</i>	.09			

Bolded coefficients are significant at $p < .05$

Table 12

Summary of First-generation College Student Status, Depressive Symptoms, Ethnic Identity, Motivational Factors, and First-choice College Predicting Standardized GPA for Cohort 2011

	<i>Model 3.1 (n = 255)</i>											
	Step 1				Step 2				Step 3			
	<i>b</i>	<i>SE</i>	β	pvalue	<i>b</i>	<i>SE</i>	β	pvalue	<i>b</i>	<i>SE</i>	β	pvalue
Age	0.28	0.18	0.11	.12	0.19	0.17	0.07	.29	0.18	0.17	0.07	.31
Gender	-0.48	0.16	-0.21	.00	-0.37	0.16	-0.16	.02	-0.40	0.16	-0.18	.01
Parent education level	0.02	0.04	0.05	.56	0.03	0.04	0.06	.45	0.02	0.04	0.05	.57
ACT score (std)	0.33	0.08	0.35	.00	0.34	0.08	0.36	.00	0.36	0.08	0.38	.00
First-generation college student					0.22	0.24	0.08	.36	0.23	0.24	0.08	.34
Depressive symptoms					0.07	0.21	0.03	.72	0.04	0.21	0.02	.84
Positive psychological adjustment					-0.19	0.10	-0.17	.06	-0.20	0.10	-0.19	.05
Substance use					0.00	0.19	0.00	.99	0.01	0.19	0.01	.94
Ethnic identity commitment					-0.12	0.19	-0.06	.51	-0.09	0.19	-0.04	.65
Ethnic identity search					0.10	0.16	0.05	.52	0.10	0.16	0.05	.56
Internal locus of control					-0.11	0.15	-0.06	.46	-0.12	0.15	-0.07	.40
Academic self-discipline					0.43	0.12	0.29	.00	0.43	0.12	0.29	.00
Fixed mindset					0.22	0.09	0.18	.01	0.24	0.09	0.19	.01
First-choice college									0.21	0.15	0.10	.18
<i>R-Squared</i>	.17				.27				.27			
<i>Chi-squared difference test</i>					$\chi^2(9) = 21.01, p < .02$				$\chi^2(1) = 1.89, p < .20$			

Bolded coefficients are significant at $p < .05$

Table 13

Summary of First-generation College Student Status, Depressive Symptoms, Ethnic Identity, Motivational Factors, and First-choice College Predicting Standardized GPA for Cohort 2012

	Model 3.2 (n = 265)											
	Step 1				Step 2				Step 3			
	b	SE	β	pvalue	b	SE	β	pvalue	b	SE	β	pvalue
Age	0.03	0.12	0.02	.78	0.07	0.12	0.04	.59	0.07	0.12	0.04	.59
Gender	-0.29	0.14	-0.15	.03	-0.32	0.14	-0.16	.02	-0.32	0.14	-0.16	.02
Parent education level	0.07	0.04	0.15	.05	0.06	0.04	0.12	.16	0.06	0.04	0.11	.16
ACT score (std)	0.09	0.08	0.09	.25	0.13	0.08	0.13	.10	0.13	0.08	0.14	.09
First-generation college student					-0.07	0.17	-0.03	.68	-0.07	0.17	-0.03	.68
Depressive symptoms					0.03	0.13	0.02	.82	0.03	0.13	0.02	.82
Positive psychological adjustment					0.03	0.07	0.03	.65	0.03	0.07	0.03	.65
Substance use					-0.54	0.18	-0.23	.00	-0.54	0.18	-0.24	.00
Ethnic identity commitment					0.17	0.17	0.09	.31	0.17	0.17	0.09	.31
Ethnic identity search					-0.09	0.15	-0.05	.56	-0.09	0.15	-0.05	.56
Internal locus of control					<i>not included</i>							
Academic self-discipline												
Fixed mindset					0.02	0.08	0.02	.79	0.02	0.08	0.02	.80
First-choice college									0.00	0.14	0.00	.98
R-Squared	.05				.11				.11			
Chi-squared difference test					$\chi^2(7) = 11.25, p < .20$				$\chi^2(1) = 0.08, p < .98$			

Bolded coefficients are significant at $p < .05$

Table 14

Summary of First-generation College Student Status, Depressive Symptoms, Ethnic Identity, Motivational Factors, and First-choice College Predicting Standardized GPA for Cohort 2011 & 2012

	<i>Model 3.3 Combined (n = 519)</i>											
	Step 1				Step 2				Step 3			
	<i>b</i>	<i>SE</i>	β	pvalue	<i>b</i>	<i>SE</i>	β	pvalue	<i>b</i>	<i>SE</i>	β	pvalue
Age	0.12	0.10	0.06	.24	0.11	0.10	0.05	.28	0.11	0.10	0.05	.28
Gender	-0.38	0.11	-0.18	.00	-0.38	0.11	-0.18	.00	-0.39	0.11	-0.18	.00
Parent education level	0.04	0.03	0.07	.18	0.04	0.03	0.07	.21	0.03	0.03	0.07	.23
ACT score (std)	0.23	0.06	0.24	.00	0.25	0.06	0.26	.00	0.25	0.06	0.26	.00
First-generation college student					0.05	0.13	0.02	.71	0.04	0.13	0.02	.75
Depressive symptoms					0.00	0.06	0.00	.98	0.00	0.06	0.00	.99
Positive psychological adjustment					-0.02	0.06	-0.02	.75	-0.02	0.06	-0.02	.72
Substance use					-0.35	0.13	-0.14	.01	-0.35	0.13	-0.14	.01
Ethnic identity commitment					0.01	0.13	0.00	.96	0.01	0.13	0.01	.92
Ethnic identity search					0.02	0.12	0.01	.86	0.02	0.12	0.01	.90
Internal locus of control					<i>not included</i>							
Academic self-discipline												
Fixed mindset					0.12	0.06	0.10	.06	0.12	0.06	0.10	.05
First-choice college									0.05	0.11	0.03	.60
<i>R-Squared</i>	.09				.12				.13			
<i>Chi-squared difference test</i>					$\chi^2(7) = 12.02, p < .10$				$\chi^2(1) = 0.57, p < .98$			

Bolded coefficients are significant at $p < .05$

Table 15

Summary of First-generation College Student Status, Depressive Symptoms, Ethnic Identity, Personality Traits, and First-choice College Predicting Standardized GPA for Cohort 2013

	<i>Model 3.4 (n = 223)</i>											
	Step 1				Step 2				Step 3			
	<i>b</i>	<i>SE</i>	β	pvalue	<i>b</i>	<i>SE</i>	β	pvalue	<i>b</i>	<i>SE</i>	β	pvalue
Age	-0.21	0.21	-0.07	.32	-0.24	0.21	-0.08	.26	-0.35	0.21	-0.11	.10
Gender	-0.28	0.16	-0.13	.08	-0.26	0.17	-0.12	.12	-0.32	0.17	-0.14	.05
Parent education level	-0.05	0.04	-0.11	.15	-0.04	0.04	-0.08	.34	-0.05	0.04	-0.10	.22
ACT score (std)	0.28	0.08	0.24	.00	0.25	0.09	0.21	.00	0.22	0.09	0.19	.01
First-generation college student					-0.02	0.20	-0.01	.90	0.00	0.20	0.00	.98
Depressive symptoms					0.03	0.14	0.02	.85	0.01	0.14	0.00	.96
Positive psychological adjustment					0.07	0.09	0.07	.41	0.10	0.09	0.10	.23
Substance use					-0.08	0.15	-0.04	.59	-0.07	0.15	-0.04	.63
Ethnic identity commitment					-0.33	0.21	-0.16	.11	-0.35	0.20	-0.17	.08
Ethnic identity search					-0.02	0.19	-0.01	.91	-0.01	0.19	-0.01	.94
Extraversion					-0.01	0.11	0.00	.96	-0.03	0.11	-0.02	.77
Agreeableness					0.00	0.16	0.00	1.00	0.02	0.16	0.01	.92
Conscientiousness					0.23	0.15	0.13	.12	0.19	0.14	0.11	.18
Neuroticism					0.14	0.13	0.09	.30	0.12	0.13	0.08	.36
Openness					0.11	0.16	0.05	.48	0.11	0.15	0.05	.48
First-choice college									-0.41	0.15	-0.19	.01
<i>R-Squared</i>	.08				.13				.16			
<i>Chi-squared difference test</i>					$\chi^2(11) = 9.19, p < .98$				$\chi^2(1) = 7.21, p < .01$			

Bolded coefficients are significant at $p < .05$

Table 16

Summary of First-generation College Student Status, Depressive Symptoms, Ethnic Identity, Personality Traits, and First-choice College Predicting Standardized GPA for Cohort 2014

	<i>Model 3.5 (n = 199)</i>											
	Step 1				Step 2				Step 3			
	<i>b</i>	<i>SE</i>	β	pvalue	<i>b</i>	<i>SE</i>	β	pvalue	<i>b</i>	<i>SE</i>	β	pvalue
Age	0.13	0.15	0.06	.41	0.09	0.16	0.04	.57	0.09	0.16	0.04	.58
Gender	-0.13	0.15	-0.07	.38	-0.13	0.15	-0.07	.38	-0.13	0.15	-0.07	.38
Parent education level	0.00	0.04	0.00	.97	-0.01	0.04	-0.03	.78	-0.01	0.04	-0.03	.77
ACT score (std)	0.25	0.08	0.27	.00	0.29	0.08	0.32	.00	0.29	0.08	0.32	.00
First-generation college student					0.12	0.20	0.05	.54	0.12	0.20	0.05	.54
Depressive symptoms					-0.08	0.10	-0.07	.41	-0.08	0.10	-0.07	.43
Positive psychological adjustment					0.04	0.08	0.04	.63	0.04	0.08	0.04	.63
Substance use					0.12	0.16	0.06	.43	0.13	0.16	0.06	.42
Ethnic identity commitment					0.11	0.18	0.07	.55	0.11	0.19	0.07	.54
Ethnic identity search					-0.17	0.20	-0.09	.40	-0.17	0.21	-0.10	.40
Extraversion					0.19	0.11	0.15	.07	0.19	0.11	0.15	.07
Agreeableness					-0.14	0.14	-0.08	.31	-0.14	0.14	-0.09	.33
Conscientiousness					0.21	0.14	0.14	.12	0.21	0.14	0.14	.12
Neuroticism					0.15	0.14	0.11	.28	0.15	0.14	0.11	.29
Openness					-0.17	0.17	-0.09	.30	-0.17	0.17	-0.09	.30
First-choice college									0.00	0.14	0.00	.99
<i>R-Squared</i>	.08				.14				.14			
<i>Chi-squared difference test</i>					$\chi^2(11) = 10.47, p < .98$				$\chi^2(1) = .0001, p < .995$			

Bolded coefficients are significant at $p < .05$

Table 17

Summary of First-generation College Student Status, Depressive Symptoms, Ethnic Identity, Personality Traits, and First-choice College Predicting Standardized GPA for Cohort 2013 & 2014

	Combined Model 3.6 (n = 422)											
	Step 1				Step 2				Step 3			
	<i>b</i>	<i>SE</i>	β	pvalue	<i>b</i>	<i>SE</i>	β	pvalue	<i>b</i>	<i>SE</i>	β	pvalue
Age	-0.01	0.13	0.00	.92	-0.04	0.13	-0.02	.73	-0.07	0.13	-0.03	.60
Gender	-0.22	0.11	-0.11	.05	-0.18	0.11	-0.08	.12	-0.19	0.11	-0.09	.10
Parent education level	-0.03	0.03	-0.06	.27	-0.03	0.03	-0.07	.26	-0.04	0.03	-0.07	.20
ACT score (std)	0.27	0.06	0.26	.00	0.26	0.06	0.25	.00	0.25	0.06	0.24	.00
First-generation college student					0.07	0.13	0.03	.60	0.07	0.13	0.03	.59
Depressive symptoms					-0.02	0.09	-0.02	.78	-0.03	0.09	-0.02	.70
Positive psychological adjustment					0.05	0.06	0.05	.41	0.05	0.06	0.05	.36
Substance use					0.01	0.11	0.00	.94	0.00	0.11	0.00	.97
Ethnic identity commitment					-0.12	0.14	-0.06	.40	-0.14	0.14	-0.07	.32
Ethnic identity search					-0.10	0.14	-0.05	.47	-0.09	0.14	-0.04	.53
Extraversion					0.10	0.08	0.07	.21	0.09	0.08	0.07	.25
Agreeableness					-0.07	0.11	-0.04	.48	-0.04	0.11	-0.02	.70
Conscientiousness					0.27	0.10	0.16	.01	0.25	0.10	0.15	.01
Neuroticism					0.17	0.10	0.12	.07	0.17	0.09	0.11	.08
Openness					-0.01	0.11	-0.01	.93	-0.01	0.11	-0.01	.91
First-choice college									-0.20	0.10	-0.10	.06
<i>R-Squared</i>	.07				.11				.12			
<i>Chi-squared difference test</i>					$\chi^2(11) = 14.14, p < .98$				$\chi^2(1) = 3.66, p < .10$			

Bolded coefficients are significant at $p < .05$

Figure 1
Standardized coefficients of Model 3.1-3.3

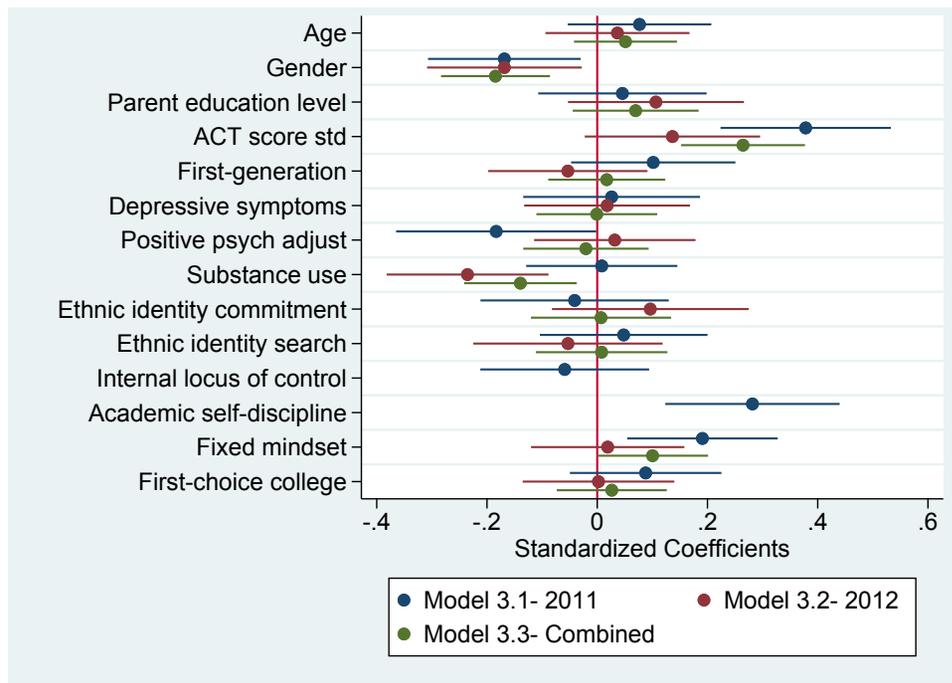
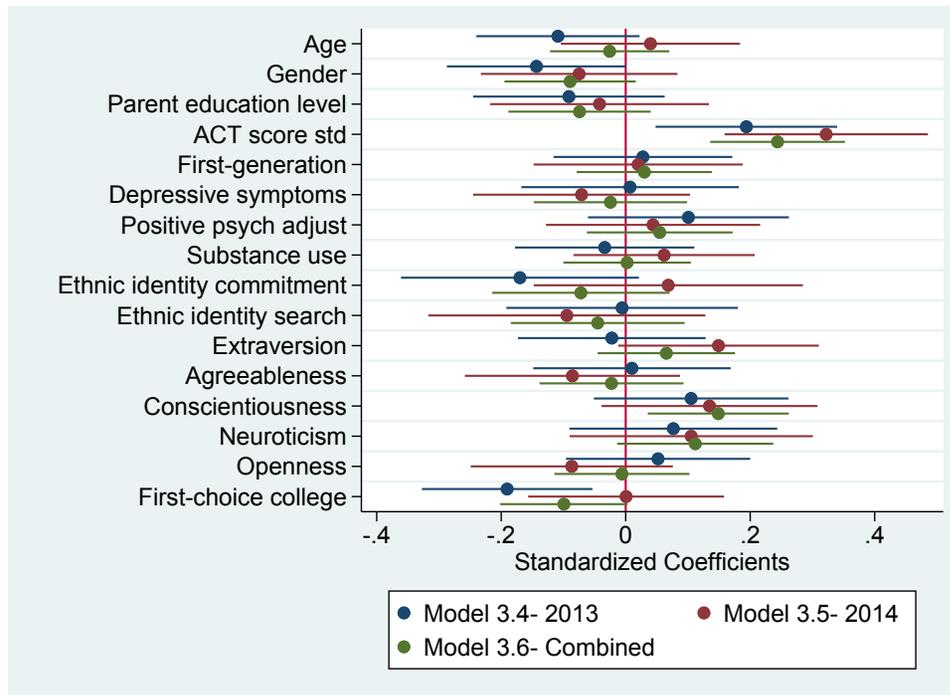


Figure 2
Standardized coefficients of Model 3.4-3.6



References

- Adams Becker, S., Cummins, M., Davis, A., Freeman, A., Hall Giesinger, C., & Ananthanarayanan, V. (2017). *NMC Horizon Report: 2017 Higher Education Edition*. Austin, Texas: The New Media Consortium.
- Allan, B. A., Garriott, P. O., & Keene, C. N. (2016). Outcomes of social class and classism in first- and continuing-generation college students. *Journal of counseling psychology, 63*(4), 487.
- Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American psychologist, 55*(5), 469.
- 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.
- Bauer, K. W., & Liang, Q. (2003). The effect of personality and precollege characteristics on first-year activities and academic performance. *Journal of college student Development, 44*(3), 277-290.
- Blackwell, L. S., Trzesniewski, K. H., & Dweck, C. S. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Child development, 78*(1), 246-263.
- Bollen, K. A., & Hoyle, R. H. (1990). Perceived cohesion: A conceptual and empirical examination. *Social forces, 69*(2), 479-504.
- Chin, W. W., Salisbury, W. D., Pearson, A. W., & Stollak, M. J. (1999). Perceived cohesion in small groups: Adapting and testing the perceived cohesion scale in a small-group setting. *Small group research, 30*(6), 751-766.
- Coleman, J. S. (1966). Equality of educational opportunity.

- Cole, J. C., Rabin, A. S., Smith, T. L., & Kaufman, A. S. (2004). Development and validation of a Rasch-derived CES-D short form. *Psychological assessment, 16*(4), 360.
- Côté, J. E. (1997). An empirical test of the identity capital model. *Journal of Adolescence, 20*(5), 577-597.
- Constantine, M. G., & Flores, L. Y. (2006). Psychological distress, perceived family conflict, and career development issues in college students of color. *Journal of Career Assessment, 14*(3), 354-369.
- Cumming, G. (2013). The new statistics: Why and how. *Psychological Science, 25*, 7-29.
- DeAngelo, L., & Franke, R. (2016). Social mobility and reproduction for whom? College readiness and first-year retention. *American Educational Research Journal, 53*(6), 1588-1625.
- DeBerard, M. S., Spielmans, G., & Julka, D. (2004). Predictors of academic achievement and retention among college freshmen: A longitudinal study. *College student journal, 38*(1), 66-80.
- Demetriou, C., Meece, J., Eaker-Rich, D., & Powell, C. (2017). The Activities, Roles, and Relationships of Successful First-Generation College Students. *Journal of College Student Development, 58*(1), 19-36.
- Dennis, J. M., Phinney, J. S., & Chuateco, L. I. (2005). The role of motivation, parental support, and peer support in the academic success of ethnic minority first-generation college students. *Journal of college student development, 46*(3), 223-236.
- Derogatis, L. R., & Melisaratos, N. (1983). The brief symptom inventory: an introductory report. *Psychological medicine, 13*(3), 595-605.
- Derogatis LR. (2001). BSI-18: Brief Symptom Inventory 18 - Administration, scoring, and procedures manual. Minneapolis: NCS Pearson.

- Dweck, C. S. (2000). *Self-theories: Their role in motivation, personality, and development*. Psychology Press.
- Enders, C. K. (2001). The performance of the full information maximum likelihood estimator in multiple regression models with missing data. *Educational and Psychological Measurement, 61*(5), 713-740.
- Erikson, E. H. (1994). *Identity and the life cycle*. WW Norton & Company.
- Eisenberg, D., Golberstein, E., & Hunt, J. B. (2009). Mental health and academic success in college. *The BE Journal of Economic Analysis & Policy, 9*(1).
- Gummadam, P., Pittman, L. D., & Ioffe, M. (2016). School belonging, ethnic identity, and psychological adjustment among ethnic minority college students. *The Journal of Experimental Education, 84*(2), 289-306.
- Harms, P. D., Roberts, B. W., & Winter, D. (2006). Becoming the Harvard man: Person-environment fit, personality development, and academic success. *Personality and Social Psychology Bulletin, 32*(7), 851-865.
- Hingson, R. W., Zha, W., & Weitzman, E. R. (2009). Magnitude of and trends in alcohol-related mortality and morbidity among US college students ages 18-24, 1998-2005. *Journal of Studies on Alcohol and Drugs, Supplement, (16)*, 12-20.
- Helms, J. E., Jernigan, M., & Mascher, J. (2005). The meaning of race in psychology and how to change it: A methodological perspective. *American Psychologist, 60*(1), 27-36.
- Hemphill, J. F. (2003). Interpreting the magnitudes of correlation coefficients. *American Psychologist, 58*(1), 78-79.

- Honicke, T., & Broadbent, J. (2016). The influence of academic self-efficacy on academic performance: A systematic review. *Educational Research Review, 17*, 63-84.
- Hossler, D., Braxton, J., & Coopersmith, G. (1989). Understanding student college choice. *Higher education: Handbook of theory and research, 5*, 231-288.
- Hughes, J. L., Camden, A. A., & Yangchen, T. (2016). Rethinking and updating demographic questions: Guidance to improve descriptions of research samples. *Psi Chi Journal of Psychological Research, 21*, 138-151.
- Hurtado, S., Inkelas, K. K., Briggs, C., & Rhee, B. S. (1997). Differences in college access and choice among racial/ethnic groups: Identifying continuing barriers. *Research in Higher Education, 38*(1), 43-75.
- Ishitani, T. T., & DesJardins, S. L. (2002). A longitudinal investigation of dropout from college in the United States. *Journal of college student retention: research, theory & Practice, 4*(2), 173-201.
- Ishitani, T. T. (2006). Studying attrition and degree completion behavior among first-generation college students in the United States. *The Journal of Higher Education, 77*(5), 861-885.
- John, O. P., & Srivastava, S. (1999). The Big Five trait taxonomy: History, measurement, and theoretical perspectives. *Handbook of personality: Theory and research, 2*(1999), 102-138.
- Jung, K. R., Zhou, A. Q., & Lee, R. M. (2017). Self-efficacy, self-discipline and academic performance: Testing a context-specific mediation model. *Learning and Individual Differences, 60*, 33-39.

- Levy, D. J., Heissel, J. A., Richeson, J. A., & Adam, E. K. (2016). Psychological and biological responses to race-based social stress as pathways to disparities in educational outcomes. *American Psychologist, 71*(6), 455. DOI: 10.1037/a0040322
- Masten, A. S., Roisman, G. I., Long, J. D., Burt, K. B., Obradović, J., Riley, J. R., ... & Tellegen, A. (2005). Developmental cascades: linking academic achievement and externalizing and internalizing symptoms over 20 years. *Developmental psychology, 41*(5), 733.
- McAdams, D. P. (2006). The role of narrative in personality psychology today. *Narrative Inquiry, 16*(1), 11-18.
- McCartney, K., Burchinal, M. R., & Bub, K. L. (2006). Best Practices in Quantitative Methods for Developmentalists. *W.F., Overton & A.W., Collins (Eds.). In Monographs of the Society for Research in Child Development. 71*(3).
- Meijer, R. R., de Vries, R. M., & van Bruggen, V. (2011). An evaluation of the Brief Symptom Inventory–18 using item response theory: Which items are most strongly related to psychological distress?. *Psychological assessment, 23*(1), 193.
- Miller-Cotto, D., & Byrnes, J. P. (2016). Ethnic/racial identity and academic achievement: A meta-analytic review. *Developmental Review, 41*, 51-70.
- National Student Clearinghouse Research Center. (May, 2016) Persistence & Retention- 2016. 2016, National, Persistence, Postsecondary, Snapshot Report. Retrieved <
<https://nscresearchcenter.org/snapshotreport-persistenceretention22/>>
- Nosek, B. A., Spies, J. R., & Motyl, M. (2012). Scientific utopia II. Restructuring incentives and practices to promote truth over publishability. *Perspectives on Psychological Science, 7*, 615-631.

- Pascarella, E. T., Pierson, C. T., Wolniak, G. C., & Terenzini, P. T. (2004). First-generation college students: Additional evidence on college experiences and outcomes. *The Journal of Higher Education, 75*(3), 249-284.
- Pavot, W., & Diener, E. (1993). Review of the satisfaction with life scale. *Psychological assessment, 5*(2), 164.
- Perna, L. W. (2006). Studying college access and choice: A proposed conceptual model. In *Higher Education: (pp. 99-157)*. Springer, Dordrecht.
- Phinney, J. S. (1992). The multigroup ethnic identity measure: A new scale for use with diverse groups. *Journal of adolescent research, 7*(2), 156-176.
- Poropat, A. E. (2009). A meta-analysis of the five-factor model of personality and academic performance. *Psychological Bulletin, 135*(2), 322-338. doi:10.1037/a0014996
- Richardson, M., Abraham, C., & Bond, R. (2012). Psychological correlates of university students' academic performance: a systematic review and meta-analysis. *Psychological bulletin, 138*(2), 353.
- Rivas-Drake, D., Seaton, E. K., Markstrom, C., Quintana, S., Syed, M., Lee, R. M., ... & Yip, T. (2014). Ethnic and racial identity in adolescence: Implications for psychosocial, academic, and health outcomes. *Child development, 85*(1), 40-57.
- Robbins, S. B., Lauver, K., Le, H., Davis, D., Langley, R., & Carlstrom, A. (2004). Do psychosocial and study skill factors predict college outcomes? A meta-analysis.
- Roberts, R. E., Phinney, J. S., Masse, L. C., Chen, Y. R., Roberts, C. R., & Romero, A. (1999). The structure of ethnic identity of young adolescents from diverse ethnocultural groups. *The Journal of Early Adolescence, 19*(3), 301-322.

- Rodgers, J. L. (2010). The epistemology of mathematical and statistical modeling: A quiet methodological revolution. *American Psychologist*, *65*(1), 1-12.
- Rosenberg, M. (1979). *Conceiving the Self*. New York: Basic Books.
- Salisbury, W. D., Carte, T. A., & Chidambaram, L. (2006). Cohesion in virtual teams: Validating the perceived cohesion scale in a distributed setting. *ACM SIGMIS Database: the DATABASE for Advances in Information Systems*, *37*(2-3), 147-155.
- Sax, L. J. (2008). *The gender gap in college: Maximizing the developmental potential of women and men*. Jossey-Bass.
- Schwartz, S. E., Kanchewa, S. S., Rhodes, J. E., Gowdy, G., Stark, A. M., Horn, J. P., ... & Spencer, R. (2018). "I'm Having a Little Struggle With This, Can You Help Me Out?": Examining Impacts and Processes of a Social Capital Intervention for First-Generation College Students. *American journal of community psychology*, *61*(1-2), 166-178.
- Schmitt, D. P., & Allik, J. (2005). Simultaneous administration of the Rosenberg Self-Esteem Scale in 53 nations: exploring the universal and culture-specific features of global self-esteem. *Journal of personality and social psychology*, *89*(4), 623.
- Sisk, V. F., Burgoyne, A. P., Sun, J., Butler, J. L., & Macnamara, B. N. (2018). To what extent and under which circumstances are growth mind-sets important to academic achievement? Two meta-analyses. *Psychological science*, *29*(4), 549-571. DOI: 10.1177/0956797617739704
- Smith, K. M., Chesin, M. S., & Jeglic, E. L. (2014). Minority college student mental health: Does majority status matter? Implications for college counseling services. *Journal of Multicultural counseling and development*, *42*(2), 77-92.

- Stebleton, M. J., Soria, K. M., & Huesman, 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.
- Stephens, N. M., Hamedani, M. G., & Destin, M. (2014). Closing the social-class achievement gap: A difference-education intervention improves first-generation students' academic performance and all students' college transition. *Psychological science, 25*(4), 943-953.
- Syed, M. (2010). Developing an integrated self: academic and ethnic identities among ethnically diverse college students. *Developmental psychology, 46*(6), 1590.
- Syed, M. (2017). Identity integration across cultural transitions: Bridging individual and societal change. *Journal of Psychology in Africa, 27*(2), 105-114.
- Syed, M., & McLean, K. C. (2016). Understanding identity integration: Theoretical, methodological, and applied issues. *Journal of adolescence, 47*, 109-118.
- Terenzini, P. T., Springer, L., Yaeger, P. M., Pascarella, E. T., & Nora, A. (1996). First-generation college students: Characteristics, experiences, and cognitive development. *Research in Higher education, 37*(1), 1-22.
- Tracey, T. J., & Sedlacek, W. E. (1987). A comparison of White and Black student academic success using noncognitive variables: A LISREL analysis. *Research in Higher Education, 27*(4), 333-348.
- Trautwein, U., Lüdtke, O., Roberts, B. W., Schnyder, I., & Niggli, A. (2009). Different forces, same consequence: Conscientiousness and competence beliefs are independent predictors of academic effort and achievement. *Journal of personality and social psychology, 97*(6), 1115.

- Umaña-Taylor, A. J., Quintana, S. M., Lee, R. M., Cross, W. E., Rivas-Drake, D., Schwartz, S. J., ... & Seaton, E. (2014). Ethnic and racial identity during adolescence and into young adulthood: An integrated conceptualization. *Child Development, 85*(1), 21-39.
- Vuong, M., Brown-Welty, S., & Tracz, S. (2010). The effects of self-efficacy on academic success of first-generation college sophomore students. *Journal of college student development, 51*(1), 50-64.
- Waterman, A. S. (2015). Identity as internal processes: How the “I” comes to define the “Me.” In K. C. McLean & M. Syed (Eds.), *The Oxford handbook of identity development*. Oxford, UK: Oxford University Press.
- Worrell, F. C., & Cross, W. E. (2004). The reliability and validity of Big Five Inventory scores with African American college students. *Journal of Multicultural Counseling and Development, 32*(1), 18-32.
- Woodsley, S. A., & Miller, A. L. (2009). Integration and institutional commitment as predictors of college student transition: Are third week indicators significant?. *College Student Journal, 43*(4), 1260-1272.
- Yazedjian, A., Purswell, K., Sevin, T., & Toews, M. (2007). Adjusting to the first year of college: Students' perceptions of the importance of parental, peer, and institutional support. *Journal of the First-Year Experience & Students in Transition, 19*(2), 29-46.
- Yeager, D. S., & Dweck, C. S. (2012). Mindsets that promote resilience: When students believe that personal characteristics can be developed. *Educational psychologist, 47*(4), 302-31

Appendix A

Table A.1
Within College Size GPA and ACT score Distribution (n = 717)

<i>College name</i>	<i>n</i>	<i>%</i>	<i>GPA</i>		<i>ACT score</i>	
			<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Business	45	6	3.22	0.51	27.75	3.46
Education/Human development	152	21	3.20	0.42	20.86	2.8
Food, Agriculture and Natural resource sciences	22	3	3.06	0.35	26.00	3.63
Biological sciences	69	10	3.37	0.38	29.09	2.09
Design	17	2	3.28	0.35	25.59	4.17
Liberal Arts	313	44	3.21	0.47	25.07	2.81
Science and Engineering	99	14	3.32	0.45	30.48	2.83

Appendix B

Table B.1

Ethnic/Racial Group Differences in Standardized GPA Adjusting for Age, Gender, Parent Education Level and ACT Score (n = 654)

	Partial SS	df	MS	F	Prob>F	Partial Eta-squared
Model	59.84	10.00	5.98	6.60	0.00	0.09
Age	0.02	1.00	0.02	0.02	0.89	0.00
Gender	15.34	1.00	15.34	16.93	0.00	0.03
Parent education level	0.13	1.00	0.13	0.15	0.70	0.00
ACT score	27.31	1.00	27.31	30.14	0.00	0.04
Ethnicity/race	8.92	6.00	1.49	1.64	0.13	0.02
Residual	582.64	643.00	0.91			

Note: Decreased sample size due to missing academic outcome data

Appendix C

Appendix C.1																									
<i>First-generation College Students Cohorts 2011-2014 Bivariate Correlations (n = 145)</i>																									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
(1) GPA	1																								
(2) Standardized GPA	0.99*	1																							
(3) ACT score	0.14	0.07	1																						
(4) Standardized ACT	0.14	0.14	0.65*	1																					
(5) Age	-0.09	-0.09	-0.22*	-0.23*	1																				
(6) Gender	-0.26*	-0.29*	0.16	0.04	0.15	1																			
(7) Parent Education Level	0.08	0.05	0.31*	0.17*	-0.21*	0.03	1																		
(8) First-generation College Student	1																	
(9) First-choice College	-0.24*	-0.22*	-0.26*	-0.17*	0.08	-0.01	0.1	.	1																
(10) Campus Belonging	-0.02	-0.02	0.01	0.01	0.05	-0.06	-0.02	.	0.14	1															
(11) Depressive Symptoms (std)	-0.06	-0.04	-0.05	-0.07	0.14	-0.05	-0.15	.	-0.05	-0.20*	1														
(12) Positive Psych Wellbeing (std)	0.02	0	0.11	0.03	-0.03	0.01	0.04	.	0.12	0.33*	-0.39*	1													
(13) Substance Use	-0.11	-0.1	0.14	0.14	-0.02	-0.02	-0.08	.	0.04	0.08	0.17*	0.03	1												
(14) Ethnic Identity	-0.02	0	-0.07	-0.03	-0.1	-0.06	0.08	.	-0.01	0.09	-0.07	0.12	-0.18*	1											
(15) Ethnic Identity Search	-0.07	-0.05	-0.06	0.07	-0.06	-0.12	0.02	.	0.03	0.08	-0.02	0.1	-0.14	0.87*	1										
(16) Ethnic Identity Commitment	0.02	0.04	-0.06	-0.1	-0.11	0	0.11	.	-0.03	0.08	-0.1	0.11	-0.18*	0.92*	0.61*	1									
(17) Locus of Control	-0.35	-0.40*	-0.23	-0.21	0.1	0.17	-0.08	.	0.35	0.22	-0.59*	0.65*	-0.05	0.03	0.1	-0.05	1								
(18) Academic Self Discipline	-0.26	-0.34	-0.12	-0.44*	-0.07	-0.08	0.13	.	0.24	0.23	-0.57*	0.64*	-0.44*	0.27	0.26	0.23	0.51*	1							
(19) Fixed Mindset	0.19	0.16	0.04	-0.06	0.12	0.03	-0.12	.	-0.32*	-0.03	0.03	-0.28*	-0.12	-0.2	-0.29*	-0.09	0.08	-0.14	1						
(20) Extraversion	-0.1	-0.09	-0.09	-0.02	0.04	-0.16	-0.05	.	0.02	0.28*	-0.41*	0.29*	0.07	0.08	0.06	0.08	.	.	.	1					
(21) Agreeableness	-0.02	-0.06	0.1	-0.02	-0.11	0.02	0.14	.	0.21	0.31*	-0.21	0.32*	-0.18	0.26*	0.17	0.29*	.	.	.	0.13	1				
(22) Conscientiousness	0.02	0.03	0.03	0.1	0.13	0.05	-0.16	.	-0.01	0.15	-0.25*	0.35*	-0.08	0.30*	0.22	0.33*	.	.	.	0.14	0.37*	1			
(23) Neuroticism	0.11	0.14	-0.06	-0.01	-0.04	-0.16	-0.03	.	-0.18	-0.27*	0.62*	-0.53*	0.16	-0.1	0.01	-0.17	.	.	.	-0.38*	-0.43*	-0.35*	1		
(24) Openness	0.06	0.05	0.15	0.21	-0.01	-0.25*	0.1	.	-0.12	0.11	-0.02	0.03	-0.16	0.32*	0.36*	0.24*	.	.	.	0.12	0.18	0.22	0.11	1	

* shows significance at the .05 level