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Emotional Fit, Emotional Accuracy, and Belonging Among First-Generation and Continuing-Generation University Students

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Emotional Fit, Emotional Accuracy, and Belonging

Among First-Generation and Continuing-Generation University Students

A dissertation submitted in partial satisfaction of the requirements for the degree Doctor of

Philosophy in Psychological and Brain Sciences

by

Smaranda Ioana Lawrie

Committee in charge:

Professor Heejung S. Kim, Chair

Professor Nancy Collins

Professor Karen Nylund-Gibson

Professor David Sherman

December 2020

The dissertation of Smaranda Ioana Lawrie is approved.

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Nancy Collins

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Karen Nylund-Gibson

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David Sherman

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Heejung S. Kim, Committee Chair

December 2020

ACKNOWLEDGEMENTS

To Four Generations of Family:

My Grandparents, and especially my Mica and Nicu,

My Parents,

My Husband,

And my Children,

Everything I do is for you.

I love you.

To my advisor Heejung, for being tough, fair, brilliant.

To my committee, for being patient.

VITA OF SMARANDA IOANA LAWRIE
December 2020

Education

Ph.D. in Psychological and Brain Sciences (Social Psychology) |2020|

University of California, Santa Barbara

> Dissertation: "Emotional fit, emotional accuracy, and belonging among first-generation and continuing-generation university students."
> Advisor: Heejung Kim
> Dissertation Committee: David Sherman, Nancy Collins, Karen Nylund-Gibson

Master of Arts in Psychological and Brain Sciences (Social Psychology) |2020|

University of California, Santa Barbara

> Thesis: "Cultural variability in the association between age and well-being: The role of uncertainty avoidance"
> Advisor: Heejung Kim

Master of Arts in Education, Emphasis in Quantitative Research Methods |2020|

Gevirtz Graduate School of Education, University of California, Santa Barbara

> Thesis: "Development and validation of the Convivial and Harmony Collectivism scale"
> Advisor: Karen Nylund-Gibson
> Thesis committee: Heejung Kim, Rebeca Rios

Master of Liberal Arts in International Affairs |2009|

University of Pennsylvania

Bachelor of Arts in Psychology |2004|

Yale University

Bachelor of Arts in Economics |2004|

Yale University

Awards and Fellowships

GSA Excellence in Teaching Award |2020|
> University of California, Santa Barbara campus-wide teaching award
> Also nominated in |2018, 2019|

University of California Graduate Research Fellowship |2017-2018|
> Merit-based, all University of California campuses
> $25,000 plus tuition

University of California Graduate Opportunity Fellowship |2014-2015|
> Merit and diversity based, all University of California campuses
> $24,000 plus tuition

Asia Pacific Leadership Program Fellow |2011|
> Merit-based, East West Center, Honolulu, Hawaii and Washington D.C.
> $25,000

Grants

University of California Undergraduate Research and Creative Activities Grant |2014, 2015, 2016, 2018|
   $750 x 4 = $3000
   For collaborative work with undergraduate research assistants on their own research projects

University of California Individualized Professional Skills (IPS) Grant |2019|
   $1,000
   For research in Denmark on happiness and parenting practices

Publications

Lawrie, S. I.*, Eom, K.*, Moza, D., Gavreliuc, A., & Kim, H. S. (2019). Cultural variability in the association between age and well-being: The role of uncertainty avoidance. *Psychological Science.*
   (* equal first authorship)

Kim, H. S., & **Lawrie, S. I** (2019). Culture and motivation. In D. Cohen & S. Kitayama (Eds.) Handbook of Cultural Psychology, 2nd Edition (pp. 268-291). NY: Guilford.

Lawrie, S. I. (2019). Cultural Psychology. In (Textbook) Spielman, R. M., Dumper, K., Jenkins, W., Lacombe A., Lovett, M., & Perlmutter, M. *Psychology. https://www.outlier.org/products/intro-to-psychology*

Lawrie, S. I. (2019) Lessons from cultural psychology for real world problems. *Sage Center, University of California Santa Barbara. https://psych.ucsb.edu/news-events/news/2019/sage-center-hosts-forum-lessons-cultural-psychology-real-world-problems*

Moza, D., **Lawrie, S. I,** Iacob, L., Gavreliuc, A., Kim, H. S., & Mojaverian, H. (2015). Laypeople's perceptions of the veracity of research findings regarding the differences in coping strategies between student samples from two cultures. *Romanian Journal of Experimental Applied Psychology*, 6, 65.

Manuscripts Under Review

Moza, D.*, **Lawrie, S. I.***, Maricuțoiu, L., Gavreliuc, A., & Kim, H. S. (*under review*). Not all forms of independence are created equal: Only being independent the "right way" is associated with self-esteem and life satisfaction. *Frontiers in Psychology.*
   (* equal first authorship)

Chan, M. M., Sharkey, J., **Lawrie, S. I**., Arch, D., & Nylund-Gibson, K. (*under review*). K-6 Teacher well-being at the beginning of school closures during COVID-19: How can we support teachers? *American Educational Research Journal.*

Nylund-Gibson, K., Garber, A., Carter, D., Simon, O., Arch, D., Chan, M., **Lawrie, S. I.** , Tartt, E. (*under review*). Ten Frequently Asked Questions about Latent Transition Analysis (LTA). *Psychological Methods.*

Manuscripts in Preparation

Lawrie, S.I., Carter, D., Nylund-Gibson, K. & Kim, H. S. (*in prep*). A tale of two belongings: Social and academic belonging differentially shape academic and psychological outcomes among students.

Lawrie, S.I., Nylund-Gibson, K., Chavez, J. E[+]., Campos, B., & Kim, H.S. (*in preparation*). Development and validation of the Convivial and Harmony Collectivism scale.
   ([+] *undergraduate research assistant and honor student*)

Conference Talks

Lawrie, S. I., Eom, K., Moza, D., Gavreliuc, A., & Kim, H. S. Socioemotional aging across cultures. Cultural Psychology Pre-conference Data Blitz. *Society for Personality and Social Psychology,* New Orleans, LA, 2020.

Lawrie, S.I., Eom, K., Moza, D., Gavreliuc, A., & Kim, H. S. Cultural variability in association between age and well-being: The role of uncertainty avoidance. *International Association for Cross-Cultural Psychology*, Warsaw, Poland, 2017.

Lawrie, S.I., Eom, K., & Kim, H. S. Culture and well-being across the life span. Happiness Symposium, *International Association for Cross-Cultural Psychology*, Nagoya, Japan, 2016.

Lawrie S.I., Eom, K., & Kim, H. S. Well-being across the lifespan: The role of aging, generations, and period effects. *International Association for Cross-Cultural Psychology*, Nagoya, Japan, 2016.

Conference Posters and Papers

Lawrie, S.I., Carter, D., Nylund-Gibson, K., & Kim, H.S. Not all forms of belonging are created equal: Social and academic belonging differentially shape outcomes among university students. *Society for Personality and Social Psychology,* virtual, 2021.

Chavez J. E[+]., **Lawrie, S.I.** & Kim, H.S. Measuring nuances within cultural collectivism: Harmony and Convivial collectivism scale. Society for Personality and Social Psychology, virtual, 2021. ([+] *undergraduate research assistant*)

Lawrie, S. I., Eom, K., Moza, D., Gavreliuc, A., & Kim, H. S. Socioemotional aging across cultures. *Society for Personality and Social Psychology,* New Orleans, LA, 2020.

Lawrie, S. I., Eom, K., Moza, D., Gavreliuc, A., & Kim, H. S. Cultural variability in the association between age and well-being: The role of uncertainty avoidance. *Society for Personality and Social Psychology,* Atlanta, GA, 2018.

Haumschild, S[+]. & **Lawrie, S. I.**, The effects of religiosity on binge drinking in first-generation and continuing-generation college freshman. *Society for Personality and Social Psychology*, Atlanta, GA, 2018. ([+]*undergraduate research assistant*)

Lawrie, S.I., Eom, K., & Kim, H. S., Culture's role in explaining mixed findings in the relationship between aging and well-being. *Association for Psychological Science*, San Francisco, CA, 2018.

Moza, D., **Lawrie, S.I.**, Gavreliuc, A., & Kim, H. S. The convergent validity of four self-construal measures in Romanian and American samples. *International Association for Cross-Cultural Psychology*, Warsaw, Poland, 2017.

Moza, D., **Lawrie, S.I.**, Gavreliuc, A., & Kim, H. S. Direct and indirect relationships between individual-level cultural factors, well-being, and the self. *International Convention of Psychological Science*, Vienna, Austria, 2017.

Moza, D., **Lawrie, S.I.**, Gavreliuc, A., & Kim, H. S. The mediating role of self-esteem in the relationship between multidimensional self-construal and well-being. *European Conference on Personality*, Timisoara, Romania, 2016.

Moza, D., **Lawrie, S.I.**, Gavreliuc, A., & Kim, H. S. An examination of the convergent validity of various self-construal measures on Romanian and American samples. *European Conference on Personality*, Timisoara, Romania, 2016.

Lawrie, S.I., Kim, H. S., Gavreliuc, A., & Moza, D. Culture and the role of emotions in relationships. *Society for Personality and Social Psychology*, Long Beach, CA, 2015.

Lawrie, S.I., Kim, H. S., Gavreliuc, A., & Moza, D. Culture and the role of emotions in relationships. *International Convention of Psychological Science*, Amsterdam, Holland, 2015.

Lawrie, S., Kim, H. S., Moza, D., & Gavreliuc, A. Well-being across the lifespan: The role of aging, generations, and period effects. *Society for Personality and Social Psychology*, San Diego, CA, 2015.

Lawrie, S., Mojaverian, T., Iacob, L., Moza, D., & Kim, H. S. Independent and interdependent self-construals manifest differently across cultures: USA and Romania. *Intl.l Association for Cross-Cultural Psychology*, Reims, France, 2014.

Birch, S., **Luca, S.**,*Frampton, K., Vauthier, S., & Bloom, P. Children's assessments of what others know: The effects of learning. *Society for Research in Child Development*, Atlanta, Georgia, 2005. (* Luca *is my maiden name*)

Invited Talks and Presentations

Lawrie, S. I. Positive Psychology lessons for living your best life during a global pandemic. Yale Alumni Association, New Haven, CT, 2020.

Lawrie, S. I. Workshop: Why Positive Psychology should be a part of your life (and everyone else's too). East West Center, Honolulu, HI, 2020.

Lawrie, S. I. Lessons in Positive Psychology for building better communities. Cook Islands Investment Corporation, Rarotonga, Cook Islands, 2020.

Lawrie, S. I. Wise psychological interventions for student success on campus. Center for Student Success, Westmont College, Montecito, CA., 2019.

Lawrie, S. I. Wise psychological interventions for student success on campus. Psychology Department Symposium, University of California, Santa Barbara, Santa Barbara, CA., 2019.

Lawrie, S.I. The Ever-Curious Series: A series of community workshops in Positive Psychology, Santa Barbara, California. Ongoing, multiple talks.

Lawrie, S.I. Aging like a rock star: A psychological perspective on psychological well-being in old age. Yale University Reunion Weekend, New Haven, CT, 2019.

Lawrie, S.I. Cultural change and generational theory: same or different stories? East West Center Brown Bag, Honolulu, HI, 2017.

Lawrie, S. I. Longitudinal approaches for tracking student success across the college years. Quantitative Methods in the Social Sciences (QMSS) Symposium. University of California Santa Barbara, Santa Barbara, CA., 2017.

Lawrie, S.I., The role of cultural psychology in business practice. University of Hawaii at Manoa Shidler College of Business, Honolulu, HA, 2013.

Teaching

*F=fall, SP=spring, S=summer

Adjunct Professor, Westmont College, Montecito, CA

General Psychology |F2018, SP2019, F2019, S2021|

The Science and Practice of Positive Psychology |S2019, SP2020, F2020|

Instructor of Record, University of California, Santa Barbara

      Positive Psychology |S2017|

      Research Methods |S2018|

Instructor of Record, University of California, Santa Barbara School of Professional and Continuing Education

      Social Psychology |S2020|

Invited Lecturer/Instructor of Record, East West Center Hawaii, Asia Pacific Leadership Program

      Leadership across Cultures |F2017|

      Whole Person Leadership: The Role of Positive Psychology in the Business of Leading |F2017|

      Generations, Gender, and the Changing Landscape of Leadership |F2017|

Invited Lecturer/Instructor of Record, University of Iasi, Iasi, Romania

      Cultural Psychology | S2014|

Invited Lecturer/Instructor of Record, Intl. Teravada Buddhist Missionary University, Yangoon, Myanmar

      Cultural Psychology | S2013|

Laboratory Section Leader, University of California Santa Barbara

      Laboratory in Introductory Research Methods, Laboratory in Advanced Research Methods, Statistics, Laboratory in Experimental Social Psychology

Teaching Assistant, University of California Santa Barbara

      Cultural Psychology, Social Influence, Psychopathology, Health Psychology, Experimental Psychology, Critical Issues in Psychology, Adult Development and Aging, Memory, Psychology of Self, Introduction to Cognitive Psychology, Cognitive Psychology of the Supernatural

Mentoring

Undergraduate honors thesis students*:* 4

Undergraduate research assistants: 25, 13 currently in graduate school

Graduate students: 8

Additional Training

AntiRacist Table – 30 Day Challenge |2020|
AntiRacist Table

Latent Class Analysis |2019| **Survey Design** |2019|
Methods University, Santa Barbara, CA

Longitudinal Structural Equation Modeling |2018|
Stats Camp, Albuquerque, NM

Hierarchical Linear Modeling |2016| **Structural Equation Modeling** |2015|
Inter-University Consortium for Political and Social Science Research Statistical Methods, Amherst, MA

Certifications

Certificate in College Teaching |2018|
University of California, Santa Barbara Summer Teaching Institute for Associates

Mindfulness and Meditation Teacher Certificate |2020|
School of Positive Transformation

Positive Psychology Practitioner Certificate |2020|
School of Positive Transformation

Chief Happiness Practitioner Certificate |2020|
World Happiness Academy

Service

Founder, UCSB Resilience Summit and Certificate Program |2020-
> In conjunction with the Department of Psychological and Brain Sciences at the University of California, Santa Barbara along with the help of the local chapter of the Psi Chi Psychology Undergraduate Honor Society developed a series of 10 workshops with accompanying assignments, quizzes, and reflections on Positive Psychology, resilience, and *suffering better* during current challenging times. Undergraduate and graduate students across UCSB are able to enroll in the free certificate program taking place during the Fall and Winter quarters of 2020 and earn a certificate in the *Science of Resilience.*

Graduate Student Representative, UCSB Building and Research (Covid) Reopening Committee |2020-

Advanced Graduate Student Mentor, UCSB Graduate Scholars Program |2017-

> The UCSB Graduate Scholars program pairs senior graduate students with incoming graduate students form populations traditionally underrepresented in academia. Mentored 8 grad. students

Program Assistant, Methods University Statistical Camp |2018|

Ad-Hoc Reviewer
> *Emotion*
> *Social Psychological and Personality Science*

Professional Association Memberships

American Psychological Association
Society for Personality and Social Psychology
Society for the Teaching of Psychology
International Association for Cross-Cultural Psychology
International Positive Psychology Association
International Positive Education Network

ABSTRACT

Emotional Fit, Emotional Accuracy, and Belonging
Among First-Generation and Continuing-Generation University Students

By Smaranda Ioana Lawrie

The current dissertation is made up of four parts. Parts I and II are based on a single one year, three-wave longitudinal study, but data was separated into two data sets. Students who completed only one or two of the three-wave study (i.e., "non-completes) were analyzed in Part I, whereas students who completed all three waves of the study (i.e., "completes") were analyzed in Part II. Part I provides initial evidence of differences in emotional profiles between first- and continuing-generation students. Specifically, continuing-generation freshmen showed greater emotional fit with the "majority" college culture (that of continuing-generation upperclassmen) compared to first-generation freshmen. However, Part II showed no evidence for emotional acculturation; there was no evidence of change in emotional fit scores for either first- or continuing-generation students over the course of the one-year study. Part III is an additional cross-sectional study that found that emotional accuracy may be more important than emotional fit in terms of student outcomes such as stress, ability uncertainty, and identity overlap with college. Finally, Part IV empirically distinguished between social and academic belonging to determine the implications of different combinations of belonging on student outcomes.

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Smaranda Ioana Lawrie

Emotional Fit, Emotional Accuracy, and Belonging
Among First-Generation and Continuing-Generation University Students

Education then, beyond all other devices of human origin, is the great equalizer of the conditions of men, the balance-wheel of the social machinery.

Horace Mann, Father of American Public Education

Nearly a century ago, famed author and historian, James Adams, coined the term *American Dream* to describe the heart and soul of American culture. He wrote that, "*life can be better and richer and fuller for everyone, with opportunity for each . . . regardless of social class or circumstance of birth* (1921)." For generations, America prided itself on being the "land of opportunity" - a place where anyone could achieve the *American Dream* and rise from rags to riches if they put in the hard work and persevered (e.g. Duncan & Murnane, 2011). However, modern America is falling short of these ideals. The United States is currently one of the most unequal and least socially mobile countries in the world (Norton & Ariely, 2011; Noah, 2012; Saez, 2013; Wilkinson, 2011), and this inequality has detrimental consequences for everyone, both at the bottom and top of the social hierarchy (Corak, 2013; Kawachi & Kennedy, 2002; Leon, Vågerö, & Olausson, 1992; Wilkinson, 2002; Wilkinson & Pickett, 2009).

A multitude of factors contribute to the large income gaps in this country, but education, and particularly postsecondary education, plays a key role. Many Americans view education as the great equalizer, the engine of social mobility, and the key to the American Dream (e.g. Scios, 2000; Bowen, Kurzweil, & Tobin, 2005). They are not entirely wrong. A bachelor's degree is the most powerful predictor of one's status in American society, and the divide between the 30% of Americans who have a college degree, and the 70% who don't, represents the biggest divide in this country (Markus & Conner, 2013). At the same time, the education system systematically fails entire groups of students. African American, Latinx-

American, and other non-Asian minorities, women in STEM, and first-generation college students, who are the first in the family to attend college, all underperform in university settings. This has huge implications that stretch out over the lifetime (Hershbein, 2016). Rather than being the machinery of equality, as Horace Mann had envisioned, our education system is partially responsible for maintaining and growing the inequality in this country (Bourdieu & Wacquant, 1992).

The current research focused on a large group of students that has received considerably less attention in the psychological literature - first-generation university students, who currently make up one-third of the student population at four-year institutions, and are the quickest growing student demographic (e.g. Reardon, 2011; Duncan & Murnane, 2011). Like other minorities, and perhaps more so, first-generation students tend to struggle in college. In fact, the gap in academic outcomes between first-generation and continuing-generation students is currently double the black-white gap. First-generation students typically take fewer credits; they receive lower grades; they participate in fewer extracurricular activities; they form fewer relationships with classmates, staff, and faculty; they suffer from more psychological and physical health issues, and they are more likely to drop out of college (see Choy, 2001; Pascarella et. al., 2004 for a review; see Sirin, 2005 for a meta-analysis on relationship between SES and academics; Pryor et. al., 2007; Kim & Sax, 2009; see Rubin, 2012 for a meta-analysis on relationship between SES and social integration).

There are many explanations that, at least partially, account for the poor outcomes of first-generation students. Many of these students need to balance work-school obligations; they live off campus and deal with commutes; they frequently come from underperforming

high schools; they don't have role models who themselves went to college, and they often deal with family guilt from family members who feel like they were *left behind* (e.g. Pascarella, et. al., 2004; Engle et. al., 2006; Covarrubias & Fryberg, 2014; Vasquez-Selgado et. al., 2015). However, even when these diverse demographic and enrollment characteristics are taken into account, first-generation status remains a major risk factor for college success - suggesting that psychological processes are also at play (e.g. Choy, 2001, 2002 Horn & Nuñez, 2000). The Cultural Mismatch Theory (CMT), developed by Nicole Stephens and colleagues, proposes that first-generation college students experience additional difficulty as they transition to college because they have been socialized in a culture that is different and sometimes at odds with university culture. Typically, having grown up in a more working-class environment, first-generation students bring a more interdependent self to a university environment that heavily emphasizes and values independence. This mismatch causes them to feel out of place in their new environment, somewhat akin to an immigrant in a new country. Chronic concerns about belonging, in turn, have been shown to impinge on academic performance as well as physical and psychological well-being (Stephens et. al., 2012; Stephens, Fryberg, et. al., 2012).

The current dissertation was designed to build on this innovative theory in order to understand the precise mechanisms that explain how first-generation students experience this mismatch or incompatibility with their college environment. Unlike other social categories (e.g., race and gender), social class membership is less defined by distinct physical signals and thus somewhat more difficult to distinguish and label (Kraus & Stephens, 2012). Presumably, this is especially true on a college campus where many students, wealthy and poor, first- and continuing-generation, alike, wear a *uniform* of college sweats and flip-flops

(Markus & Conner, 2013). I was thus curious about what signals first-generation students that they don't belong. With this broad goal in mind, I proposed that part of the answer lies in the difference between how first-generation vs. continuing-generation students might respond emotionally to similar situations or stimuli. Emotions reflect an individual's opinion, his or her view of the world, and his or her intention to act (e.g., De Leersnyder, Mesquita, Kim, Eom, & Choi, 2014). If a person experiences emotions that are different from the emotions experienced by other individuals around him or her, he or she will most likely begin to feel out of place and start to question his or her belonging.

A large database of research in the field of Cultural Psychology has found that culture has profound implications on emotional experiences (for reviews see Mesquita & Leu, 2007; Tsai & Clobert, 2019). For example, research has found that people from different national cultures vary in the intensity and transparency with which they express their emotions (e.g. Ekman, 1972; Matsumoto, Yoo, & Fontaine, 2008), in the amount of emotions that they experience (e.g., Mesquita & Karasawa, 2002; Kitayama, Markus, & Kurasawa, 2000; Wang, 2004), in the type of emotions that are typically experienced on a daily basis (e.g. Mesquita, 2001; Savania, et. al., 2013), and in the type of emotions that feel particularly good or bad (e.g. Kitayama, Mesquita, Karasawa, 2006; Uchida & Kitayama, 2009). At the same time, a recent surge of research on social class and college generational status (i.e., first- vs. continuing- generation students) suggests that social class cultures have profound implications on psychological functioning in much the same way that national cultures do. Growing up in different social class contexts fosters and requires different types of behavior. For example, limited incomes in lower working-class communities necessitate that people rely on each other more than they would in middle- and upper-class communities. Over time,

repeated behavioral patterns shape different aspects of the self, and patterns of relating to others (e.g., Kraus & Stephens, 2012). Building on and uniting these two lines of research, I expected that socialization in different social class environments would also have profound implications on individuals' emotional lives, although, as far as I know, the link between social class and emotional experiences has not been previously investigated.

This dissertation was designed to serve several broad goals. First, I wanted to establish that college generational status (i.e., first- vs. continuing- generation status) would influence emotional response profiles in similar situations. In other words, I expected that first-generation and continuing-generation students would have different patterns of emotional experiences. Specifically, I predicted that continuing-generation freshmen students would have emotion profiles more similar to that of continuing-generation upperclassmen (whom I took to represent the "majority" or "host" college culture) and first-generation freshmen would have emotional profiles that are less similar to that of continuing-generation upperclassmen. In other words, continuing-generation freshmen would show more emotional fit (higher emotional congruence scores) with the "majority" culture and first-generation freshmen would show less emotional fit (lower emotional congruences scores) with the "majority" culture. Second, I wanted to establish that a lack of emotional fit with the "majority" (or host) culture has negative implications for first-generation students' sense of belonging and academic and well-being outcomes. Thirdly, I wanted to determine whether first-generation students acculturate emotionally to the college environment in the same way that immigrants acculturate to their host culture (e.g. De Leersnyder et. al., 2011.) I expected that, on average, emotional fit with the majority culture would increase over time and that this would have positive implications for belonging, and academic and well-being outcomes.

Emotional Fit, Emotional Contagion, and Emotional Acculturation

The old adage, "*opposites attract"* has it all wrong. Opposites don't attract, or if they do, the relationship often doesn't last. People strongly prefer similar others, and relationships among more similar individuals tend to be more fulfilling and last longer than relationships among more dissimilar individuals (e.g. Acitelli, et. al., 2000; Anderson, et. al., 2003). Furthermore, if given a choice, most people will prefer meeting strangers with similar attitudes, IQs, social backgrounds, and physical features (Fehr, 1996). More relevant to the current research, similarity in emotions is associated with more rewarding interactions (e.g., Locke & Horowitz, 1990), greater empathy (e.g., Preston & de Waal, 2002), greater interpersonal coordination (e.g. Hatfield, Cacioppo, & Rapson, 1994; Preston & de Waal, 2002), greater cooperation (e.g. Barsade, 2002), increased relationship satisfaction (Anderson, et. al., 2003; Gonzaga et. al., 2007), and decreased stress responses (Townsend, Kim, & Mesquita, 2014).

Emotional similarity is so critical for interpersonal and relational outcomes that emotional transfer between individuals sometimes occurs almost instantaneously. Wild and colleagues (2001) found that looking at a picture of a sad or happy face for just half a second was enough to induce these feelings in participants, and this type of emotional transmission has also been documented in direct interactions (E.g. Gump & Kulik, 1997), videos (E.g. Doherty, 1998), simple audio recordings (e.g. Hietanen, Surakka, & Linnanoski, 1998), and social media (Coviello et. al., 2014). Even babies as young as two to four days "catch" emotions from other babies and start to cry when they hear a nearby baby crying (e.g., Simner, 1971). And by ten weeks, infants are already able to imitate specific emotions such as happiness, sadness, and anger from their mothers' faces (Haviland & Lelwica, 1987).

Emotional contagion can even take place across large groups of people. Sociologists have documented numerous examples of "mass hysteria" in a variety of societies. For example, Hatfield, Cacioppo, and Rapson (1994) provide examples of entire communities getting depressed in Malaysia, experiencing feverish laughter and crying in East Africa, and extreme fear in Singapore.

Emotional transfer in long-term relationships leads to convergence of emotional profiles. Totterdell and colleagues (1998; 2000), for example, have found that the typical emotional reactions of crews of nurses, groups of accountants, and cricket team players, who work (and practice) together are closely related to each other, even after controlling for shared on-the-job problems. Emotional convergence has also been documented among dating couples (Anderson, Keltner, John, 2003), married couples (Gonzaga, Campos, & Bradbury, 2007), and college roommates (Anderson et. al., 2003). Using social networking techniques, Fowler and Christakis (2008) have found further striking evidence of the collective nature of emotion; happiness and unhappiness, for example, occur in distinct clusters within large networks. A happy friend who lives within a mile increases the probability that a person is happy by about 25%, a spouse increases the probability of happiness by about 8%, a sibling by 14%, and a neighbor by a whopping 34%. In fact, the relationship between peoples' happiness extends up to three degrees of separation (i.e., a friend of a friend's friend). On the flip side of the emotion spectrum, the same results have also been found with loneliness (Cacioppo, Fowler, & Christakis,2009) and depression (Rosenquist, Fowler, & Christakis, 2011).

Individuals who move from one country (their home country) to another country (the host culture) also change emotionally and, given some time, acculturate to the host culture's

typical patterns of emotional responses (e.g. De Leersnyder, Mesquita, & Kim, 2011; De Leersnyder et. al., 2020). That is, over time, they begin to respond emotionally in similar patterns to the ways that other members of the host culture respond emotionally. Moreover, emotional fit between an immigrant's emotional patterns and the typical host country's emotional patterns has been shown to have positive implications for other acculturation processes. Immigrants who show more emotional fit (i.e., higher emotional congruence scores with their new host culture) show heightened psychological well-being (De Leersnyder, Mesquita, & Kim, 2015) and heightened relational well-being (De Leersnyder, Mesquita, Kidm, Eom, & Choi, 2014).

Tying together this work on emotional fit, emotional contagion, and emotional acculturation, with previous work on the Culture Mismatch Theory for first-generation students, I hypothesized that first-generation and continuing-generation freshmen, socialized in different SES cultures, would come in with different patterns of emotional profiles but, over time, first-generation students would acculturate emotionally and become more similar to continuing-generation upperclassmen (i.e., their emotional fit with the "host" or "majority" culture would increase over time).

Social Psychology in Action: "Wise" Interventions in Education

Hundreds of interventions focused on changing the objective qualities of environments (i.e., opportunities and resources for numerically underrepresented students) or of individuals (i.e., improving academic skills) have been developed to assist underperforming students at all levels of education. Regrettably, many of these - even comprehensive and well-funded programs, have had little effect on student outcomes past the initial treatment period (e.g., Glezerman, et. al., 2010). Other interventions, such as live-in

programs, have proven beneficial for at risk student populations, but they require tremendous resources to implement and run, and are thus not feasible on most campuses. In contrast, in recent years, a number of "Wise" interventions developed by social psychologists have been implemented broadly and successfully at relatively low costs (for reviews see Gehlbach, 2010; Yeager & Walton, 2011; Walton, 2014). For example, one of the big challenges that minority students face on campus is managing stereotype threat - the fear that their social identity as a minority student could be devalued. Managing concerns about marginality, in turn, can have detrimental effects on academic outcomes. However, "Wise" psychological interventions are successfully able to interrupt this negative loop of thinking and set students on a better path towards academic (and psychological) success.

"Wise" interventions are based on a precise understanding of psychological processes; specifically, psychologists have identified several different aspects of people's psychology that harms student educational outcomes, and then designed interventions aimed at changing these processes. These minor tweaks in people's psychology can initiate self-reinforcing processes (commonly referred to as recursive processes) that have long-lasting effects. As such, seemingly *small* interventions implemented at the right time and in the right way can have *big* effects.

There are several psychological interventions that have been successfully implemented with first-generation students. For example, like other minority populations in college, first-generation students often worry about being stereotyped and fitting in (e.g. Croizet & Claire, 1998; Johnson, Richeson, & Finkel, 2011, Ostrove & Long, 2007), but affirming important values can alleviate these concerns. In one study, first-generation students who were asked to affirm their most important values worried less about fitting in at

the end of the semester and obtained better grades in multiple classes (Harackiewicz, Canning, Tibbetts, Priniski, & Hyde, 2016). Furthermore, in a longitudinal follow up to this study, researchers found that these effects persisted three years after the initial intervention (Tibbetts, Garackiewicz, Canning, Boston, Prinski, & Hyde, 2016).

Taking a different approach, Smeding and colleagues (2013) found that the achievement gap between first- and continuing- generation students can be reduced by promoting mastery-oriented assessment (see also Souchal, Toczek, Darnon, Smeding, Butera & Martinot, 2014). In three different studies, the researchers found that if low-income students are encouraged to see assessment as part of the learning process in college, rather than a way to compare students to each other, low-income first-generation students performed as well as their wealthier peers.

Building on the Cultural Mismatch Theory, Nicole Stephens and her colleagues have also developed a program to help first-generation students. The main objective of their *Difference-Education Intervention* is to teach students that different backgrounds are useful in college. In an initial study, freshmen first-generation students attended a discussion panel conducted by a demographically diverse group of seniors. In the intervention condition, the upperclassmen discussed how they overcame difficulties and found success in college all the while emphasizing the unique role their first-generation status played. In the control condition, the same upperclassman provided the same stories but did not discuss their backgrounds. This small intervention eliminated the social class gap such that first-generation students who took part in the intervention sought out more resources (e.g. meeting with TAs and professors), earned higher grades, and reported multiple psychological improvements (Stephens Hamedani, & Destin, 2014) compared to students in the control

condition. Furthermore, these effects appear to be long lasting. In a follow-up study, two years later, students who had taken part in the intervention presented physiological thriving in a stressful speech situation (in other words, they were able to more quickly return to physiological baseline following this stressful event). The authors suggest that this might mean that first-generation students who took part in the intervention have learned to see their first-generation status as a source of strength, rather than a weakness (Stephens, Townsend, Hamedani, Destin, & Manzo, 2015).

My ultimate goal, moving beyond the current dissertation, is to build on the current research looking at emotional profiles among first- and continuing- generation students and eventually create another intervention to help support first-generation students achieve their college goals. However, "Wise" psychological interventions work because they are based on strong theoretical foundations. After all, as Lewin wrote, "*there is nothing so practical as a good theory*." Thus, before another intervention can be developed, a better mechanistic understanding of how emotional processes unfold over time for first- and continuing-generation students in college is needed.

Present Research

There are many reasons for the gap in achievement between first- and continuing-generation students, but psychological factors play no small part. Several different studies have established that one of the biggest challenges faced by first-generation students in university environments is a culture clash. However, what is unclear from this work is how this cultural mismatch is actually experienced or felt by first-generation students. In other words, what are the psychological mechanisms that lead first-generation students to experience a mismatch?

The primary goal of the current research was to provide initial empirical evidence for the role of emotional fit as a psychological mechanism that might explain why first-generation students feel out of place in college. With this goal in mind, my first objective was to establish that first-generation students and continuing-generation students, on average, experience different patterns of emotions in similar situations and contexts. My second objective was to establish that emotional fit (greater similarity between an individuals' emotional pattern and the emotional pattern of continuing-generation college students who make up the "majority" or "host" college culture has positive implications for college outcomes, particularly by increasing sense of belonging, which in turn would have positive implications for other well-being and academic outcomes, and particularly GPA. My third objective was to establish that first-generation college students emotionally acculturate to the larger college culture over time (i.e., the culture of continuing-generation students), in the same way that immigrants acculturate to a new country and culture, and that this has positive implications for college outcomes.
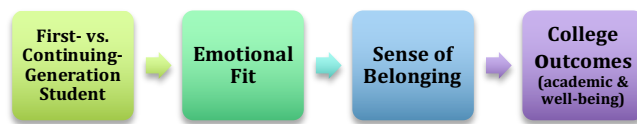
The initial dissertation proposal outlined a three-wave longitudinal study designed to track freshmen during their first year of college (Fall Freshman - Fall Sophomore year). This longitudinal research is outlined in Sections I and II. Based on these findings, two additional studies (Part III and IV) were carried out and submitted as part of the current dissertation.

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In Part I, following a missing participants analysis, I used data from students who only completed one or two of the three-wave longitudinal study (i.e., students labeled as "non-completes) and carried out analyses to determine emotional fit differences between first- and continuing-generation students as well as how emotional fit (and other psychological variables) at Wave 1 of the study predict GPA 1.5 years later (Wave 4).

In Part II, I investigated if students acculturate emotionally over time. To this end, I used data from students who completed all three waves of the longitudinal study (i.e., students labeled as "completes") and carried out several growth curve models in order to determine how emotional fit changes over time. In a supplementary addition to Part II, I replicated the regression analyses from Part I to determine how and if emotional fit and other psychological variables measured at all three time points (Waves 1, 2, 3) predict cumulative GPA at time point 4, during students' Winter quarter of their Sophomore year.

Longitudinal Waves

Wave 1	Wave 2
Emotional Fit (positive and negative prompts)	Emotional Fit (negative prompts ONLY)
Satisfaction w/ Life	Satisfaction w/ Life
Self-Esteem	Self-Esteem
Belonging	Belonging
Stress	Stress
Ability Uncertainty	Ability Uncertainty
Interpersonal Support	Interpersonal Support

Wave 3	Wave 4
Emotional Fit (negative prompts ONLY)	Cumulative GPA
Satisfaction w/ Life	
Self-Esteem	
Belonging	
Stress	
Ability Uncertainty	
Interpersonal Support	

Based on findings in sections I and II, I collected additional data for a third cross-sectional study (Part III) to investigate whether emotional fit or emotional accuracy (i.e., having an understanding of the patterns of emotions among "majority" culture continuing-generation students) is more important for student outcomes.

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Finally, in Part IV, I collected more data in order to investigate whether conceptually distinct types of belonging (i.e., social vs. academic belonging) are empirically distinguishable, and if different types of belonging or combinations of belonging, are more or less common among different groups of students on campus (i.e., first- vs. continuing-generation students) as well as how these different patterns or classes of belonging are associated with different school outcomes (i.e., academic (GPA) and psychological (self-esteem and stress) outcomes).

Part I: Emotional Fit	Part II: Emotional Fit Over Time	Part III: Emotional Fit vs. Accuracy	Part IV: Academic vs. Social Belonging
Participants: "Non-completes"	Participants: "Completes"	Participants: New data set	Participants: Wave 1 participants + additional data collection
Cross-sectional analysis of Wave 1 variables and and Wave 4 GPA	Longitudinal analysis with Waves 1, 2, 3 Replication of Part 1 analysis with "completes"		
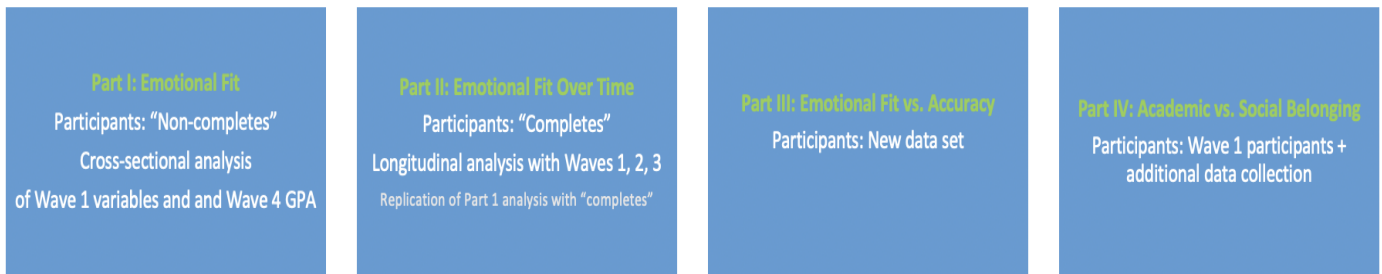
Part I

Emotional Fit Among First-Generation and Continuing-Generation Students

Part 1: Emotional Fit Among First-Generation and Continuing-Generation College Students

       There were two goals for current section (Part I). First, I wanted to establish any emotional fit differences between first- and continuing- generation freshmen at Time 1/Wave 1 of the longitudinal study. Specifically, I predicted that first-generation freshmen in their first few weeks of college would show *lower* emotional fit with continuing-generation upperclassmen (considered to represent the "majority" or "host" college culture) compared to continuing-generation freshmen in their first few weeks of college. Second, I examined how GPA at Time 4/Wave 4 is predicted by emotional fit (or emotional congruence scores) and other psychological variables measured at Time 1.

Method

Participants

       Participants were undergraduate students at a large and diverse public university in South-Central California recruited in one of five ways: (1) the Psychology Department participant pool (SONA), (2) the paid participant pool, (3) flyers distributed around campus, (4) an email sent out by the university's Registrar Office, and (5) recruitment "pizza parties" set up in common areas of university dorms during dinner hours. During Wave 1, participants were either tested individually on a computer in a lab in the Psychology Department or in small groups using paper-and-pencil versions of the study in common (but quiet) areas of student dormitories. During Waves 2 and 3, participants were sent a link to the study and asked to fill out the survey in a quiet and private place of their choosing. Participants received either half a course credit or $5 for participation in Wave 1. Subsequently, participants received an additional $5 for completing Wave 2, $5 for completing Wave 3, and

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a bonus of $3 for completing all three waves. Participants recruited in the dormitories also received 1-2 slices of pizza during Wave 1.

Students provided their student IDs in order to match their survey responses to official transcripts obtained from the university's registrar office. Transcripts were obtained only with students' consent, and once survey responses were matched to GPAs, all identifying information was removed from the data file, and data analysis proceeded without any identifying information present. The entire data collection period spanned one and a half years and was approved by the hosting university's internal review board (IRB).

Two hundred and sixty-four freshmen completed the first wave of the study, and I obtained cumulative GPA data for 218 (82.58%) of these participants during the Winter quarter of the second year of the study (Wave 4). However, drop-out rate was significantly greater than expected. Despite being made aware of the longitudinal nature of the study during initial recruitment efforts, only 117 participants completed Wave 2, and 112 participants completed Wave 3. Moreover, only 81 participants completed all three waves, with 32 participants (27.4%) who completed Wave 2 not completing Wave 3, and 30 participants (26.8%) from Wave 3 having missed Wave 2. Out of the 81 respondents who fully completed the study, only 68 (83.95%) also consented to providing access to their GPA data. See Table 1.2 for detailed demographic data for both students who completed all three waves ("completes") and students who only completed one or two waves ("non-completes").

First-Generation and Continuing-Generation Students. In order to distinguish between first- and continuing- generation students, students reported on their parent(s)' highest level(s) of education. Students who had at least one parent with a college degree from a four-year institution (had achieved a bachelor's degree or more) were considered to be

"continuing-generation" students. All other students were considered to be "first-generation" students. These criteria for assigning "first-generation" and "continuing-generation" status has been common in past research comparing first- and continuing- generation students (e.g., Stephens et. al., 2014). According to these criteria, our sample consisted of $n = 120$ first-generation students, and $n = 144$ continuing-generation students in Wave 1. For Wave 2, out of the 117-total sample, $n = 47$ were first-generation students, and $n = 70$ were continuing-generation students. Lastly, out of the 112-total sample in Wave 3, $n = 49$ were first-generation students and $n = 63$ were continuing-generation students.

An additional 66 continuing-generation upperclassmen (i.e. juniors and seniors) were surveyed in order to establish majority culture emotional patterns to be used in emotional fit (emotional congruence) calculations. See "Methods" section below and Table 1.1 for means and standard deviations for each Emotional Fit score.

Table 1.1 Means and Standard Deviations for Emotional Fit scores, split by first-generation and continuing-generation students, for both "completes," and "non-completes"

	Completes				Non-Completes				Upperclassmen (continuing-generation only)	
	First-generation		Continuing-generation		First-generation		Continuing-generation			
	M	SD	M	SD	M	SD	M	SD	M	SD
PDE W1	2.92	0.53	2.67	0.32	2.89	0.61	2.80	0.67	3.11	0.60
PEE W1	3.00	0.48	2.83	0.41	2.93	0.54	2.91	0.60	3.02	0.49
NDE W1	2.93	0.61	2.86	0.81	2.83	0.76	2.87	0.75	3.08	0.81
NEE W1	2.50	0.82	2.62	0.69	2.57	0.71	2.59	0.74	2.98	0.74
PE W1	2.96	0.47	2.75	0.32	2.91	0.55	2.85	0.60	3.07	0.48
NE W1	2.72	0.65	2.73	0.71	2.69	0.67	2.74	0.68	3.03	0.70

FIT W1	2.85	0.49	2.74	0.44	2.80	0.54	2.79	0.59	3.04	0.58
PDE W2	3.15	0.69	2.84	0.65	2.88	0.67	3.12	0.69	-	-
PEE W2	3.06	0.70	3.00	0.60	2.91	0.61	3.06	0.64	-	-
NDE W2	2.80	0.78	2.95	0.71	2.75	0.96	3.10	0.78	-	-
NEE W2	2.69	0.98	2.58	0.84	2.46	1.02	2.86	0.95	-	-
PE W2	3.10	0.61	2.92	0.59	2.90	0.59	3.09	0.62	-	-
NE W2	2.75	0.82	2.77	0.68	2.61	0.96	2.98	0.82	-	-
FIT W2	2.93	0.57	2.84	0.57	2.75	0.72	3.03	0.64	-	-
NDE W3	3.05	0.94	2.74	0.76	3.10	0.84	3.11	0.48	-	-
NEE W3	3.06	0.95	2.80	0.70	2.99	0.70	3.19	0.58	-	-
NE W3	3.05	0.89	2.76	0.67	3.04	0.71	3.15	0.49	-	-

W1-wave 1, W2-wave 2, W3-wave 3, NEE-Negative Engaged Emotion Fit, NDE-Negative Disengaged Emotion Fit, PEE-Positive Engaged Emotion Fit, PDE-Positive Disengaged Emotion Fit, NE-Negative Emotion Fit, PE-Positive Emotion Fit, FIT-Overall emotional fit

Note: For W2, "non-completes" were 32 students (14 first-gen., 18 continuing-gen.). For W3, "non-completes" were 30 students, (14 first-gen.,16 continuing-gen.)

Table 1.2 Demographic variables for all waves, "completes" and "non-completes"

Variable	Wave 1 (N=264)	Wave 2 (N=117)	Wave 3 (N=112)
Age			
Range	17-20	17-19	17-19
Mean	18.1	18.04	18.05
Standard Deviation	.48	.46	.48
Gender identity			
Female	7.8%	74.4%	74.1%
Male	29.2%	25.6%	25.9%
Race and ethnicity			

Asian, Asian American	27.3%	28.2%	28.6%
Black or African American	1.5%	2.6%	1.8%
Hispanic or Latinx-American	26.9%	21.4%	21.4%
Native Pacific Islander	.4%	.9%	.9%
White or Caucasian-American	37.9%	41.0%	41.1%
Other	6.1%	6.0%	6.3%
Annual family income			
Below $50,000	29.2%	28.2%	27.7%
$50,000 - $100,000	21.2%	22.2%	21.4%
$101,001 - $250,000	25.0%	22.2%	26.8%
Over $250,000	11.7%	15.4%	12.5%
Don't Know	12.5%	12.0%	11.6%
Socioeconomic status			
Lower class	12.9%	13.7%	12.5%
Lower middle class	25.4%	22.2%	23.2%
Solidly middle class	3.3%	29.9%	31.3%
Upper middle class	27.3%	29.1%	27.7%
Upper class	4.2%	5.1%	5.4%
Place of Birth			
In the US	77.3%	81.2%	76.8%
Outside the US	22.7%	18.8%	23.2%
Educational Background			
First generation to go to college	45.5%	41.9%	42.9%
Continuing generation	54.5%	58.1%	

Measures

The current research was carried out in three waves of a longitudinal design. Students were tested during their first few weeks of college (i.e. Fall quarter of their freshman year, Wave 1), Spring quarter of their freshman year (Wave 2) and Fall quarter of their Sophomore year (Wave 3). Additionally, official transcripts with cumulative GPAs were obtained from the registrar's office during the Winter quarter of students' sophomore year (Wave 4).

Emotional Fit. Emotional fit (or emotional congruence scores) between freshmen students and the host culture (i.e. culture of continuing-generation students who make up the majority culture on campus) was measured using the Emotional Patterns Questionnaire (EPQ) (Leersnyder, Mesquita, & Kim, 2011). Although the EPQ was initially developed as a measure of immigrants' emotional similarity to their host group (e.g. Korean immigrants in the United States or Turkish immigrants in Belgium), I adapted the tool in order to compare the emotional patterns of first- vs. continuing-generation students. The EPQ prompts participants to describe four different recent situations in which they experienced the following four classes of emotions: (1) Positive Engaged, (2) Positive Disengaged, (3) Negative Engaged, and (4) Negative Disengaged. Participants filled out all four prompts in the first two waves of the study, but only the negative engaged and negative disengaged prompts in Wave 3 in order to shorten the survey and encourage students to complete all three waves. The EPQ is also typically administered for multiple contexts such as school, work, or home. However, for the sake of brevity and because I was particularly interested in school outcomes, I restricted the use of the EPQ to the school context in the current study. For example, in the Positive Engaged prompt, students were asked to write about "*an occasion at school in which they felt good about their relationship with others*;" and in the Negative Disengaged prompt, students were asked to write about "*an occasion at school in*

which they felt bad about things that happened to them personally." After writing about each prompt, participants rated themselves on 30 different emotions elicited by the prompt (e.g., good, happy, bad, sleepy, surprised, etc.) using a 7-point Likert-type scale (1 = *not at all*, 7 = *extremely*). The emotion items included were chosen to represent each of the four quadrants of the circumplex model of affect, and they ranked differently on valence, arousal, and social engagement dimensions (Barrett & Russell, 1998).

In order to calculate emotional fit (or emotional congruence scores), I computed the average scores of continuing-generation upperclassmen (i.e., juniors and seniors) for each of the 120 emotions measured (i.e. 30 emotions in each of 4 prompts: 30 x 4 = 120 emotions total) and correlated these scores to freshmen students' individual responses on these same items. Thus, each freshman participant's individual emotional pattern (their ratings on each of the 120 emotions) was correlated to the average host culture's emotional pattern. This correlation represents participants' emotional fit score - that is, the similarity between a participants' unique emotional pattern and the mean pattern of the larger college culture (continuing-generation culture). After computing the individual correlation scores, I averaged individual emotion correlations to compute several different overall emotional fit scores; these included: an emotional fit score for the Positive Engaged scenario, an emotional fit score for the Positive Disengaged scenario, an emotional fit score for the Negative Engaged scenario, and an emotional fit score for the Negative Disengaged scenario. All scores were then converted to Fisher's Z-scores using the formula $z' = .5[\ln(1+r) - \ln(1-r)]$, where r is the individual correlation score. This was done in order to ensure a normal distribution of scores. I also collapsed fit scores across positive and negative prompts and calculated an average emotional fit score for the positive scenarios and an average emotional fit score for the

negative scenarios, as well as one overall emotional fit score collapsed across positive and negative, engaged and disengaged.

Satisfaction with Life. Satisfaction with Life (SWL) was measured using the five-item Satisfaction with Life Scale (Diener et. al., 1985). Participants were asked to think about how much they agreed or disagreed with a list of statements that could potentially describe their lives. Responses were reported using a seven-point Likert Scale (1=*strongly disagree* to 7=*strongly agree*; e.g., "*In most ways my life is close to my ideal," "The conditions of my life are excellent*). Higher numbers indicate greater satisfaction with life.

Self Esteem. Self-esteem (RSE) was measured using five items from the Rosenberg (1965) Self-Esteem Scale. Participants were asked to think about how much they agreed or disagreed with a list of statements that could potentially describe them. Responses were reported using a seven-point Likert Scale (1=*strongly disagree* to 7=*strongly agree*; e.g., "*On the whole I am satisfied with myself," "All in all, I am inclined to feel that I am a failure*"). Two items (2 and 5) were reverse coded so that higher scores indicate greater self-esteem.

Belonging. Belonging was measured with the Sense of Social and Academic Fit Scale (Walton & Cohen, 2007). Participants answered seventeen questions assessing their feelings of belonging at the University of California Santa Barbara (UCSB). Responses were reported using a seven-point Likert Scale (1=*strongly disagree* to 7=*strongly agree*; e.g., "*People at UCSB accept me*," "*Other people understand more than I do about what is going on at UCSB* (reverse scored)"). Four items (items 2, 3, 4 and 9) were reverse coded so that higher scores indicate greater belonging.

Stress. Stress was measured using the ten-item Perceived Stress Scale (Cohen et. al., 1994). Participants were asked how often they felt or thought a certain way in the past

month/30-days on a seven-point Likert Scale (1=*never* to 7=*very often*; e.g., "*In the last month, how often have you felt that you were unable to control the important things in your life,*" "*In the last month, how often have you felt nervous and stressed?*"). Four items (item 4, 5, 7 and 8) were reverse coded so that higher scores are indicative of higher levels of stress experienced in the past month.

Ability Uncertainty. Ability Uncertainty (AU) was measured using the seven-item Ability Uncertainty Scale (Lewis & Hodges, 2015). Participants were asked questions about how confident they feel in their academic abilities at UCSB. Responses were reported using a seven-point Likert Scale (1=*strongly disagree* to 7=*strongly agree*; e.g., "*I feel confident about my abilities at UCSB* (reverse scored), "*I have no doubts that I possess or can acquire the abilities UCSB requires* (reverse scored)." Two items (items 3 and 5) were reverse coded so that higher scores indicate higher ability uncertainty.

Interpersonal Support. Interpersonal support (ISEL) was measured using the twelve-item Interpersonal Support Evaluation List (Cohen & Hoberman, 1983). Participants were asked questions about the level of support they felt they had in various situations. Responses were reported using a seven-point Likert Scale (1=*definitely false* to 7=*definitely true*; e.g., "*If I wanted to go on a trip for a day (for example, to the country or mountains), I would have a hard time finding someone to go with me* (reverse coded), "*If I were sick, I could easily find someone to help me with my daily chores.*" Six items (item 3, 4, 5, 6, 9 and 10) were reverse coded so that higher scores indicate lower perceived interpersonal support.

GPA. Finally, official transcripts were obtained (with student consent) from the university's registrar office to assess an objective academic outcome (i.e. cumulative GPA). Transcripts were obtained in the Winter quarter of the second year of the study (Wave 4).

Reliability analyses were computed separately for students who completed all three waves of the study (i.e., "completes") as well as at Wave 1 for students who only completed one or two waves of the study (i.e., "non-completes"). See Tables 1.3 and 1.4. Internal consistency looked good for all of the scales employed.

Table 1.3. Reliability analyses results for study variables for "completes"

	Alpha			Omega		
	W1	**W2**	**W3**	**W1**	**W2**	**W3**
SWL	0.89	0.88	0.88	0.89	0.88	0.88
RSE	0.83	0.82	0.83	0.84	0.82	0.83
Belonging	0.91	0.93	0.93	0.91	0.93	0.93
Stress	0.9	0.88	0.87	0.9	0.89	0.88
AU	0.86	0.88	0.89	0.88	0.9	0.91
ISEL	0.88	0.91	0.92	0.88	0.92	0.92

SWL - Satisfaction with Life, RSE - Self -Esteem, AU - Ability Uncertainty, ISEL - Interpersonal Support, W1 – Wave 1, W2 – Wave 2, W3 – Wave 3

Table 1.4. Reliability analyses results for study variables for "non-completes" at Wave 1

Variables	**Alpha**	**Omega**
SWL	0.89	0.89
RSE	0.86	0.8
Belonging	0.91	0.92
Stress	0.87	0.88
AU	0.85	0.86
ISEL	0.87	0.87

SWL - Satisfaction with Life, RSE - Self -Esteem, AU - Ability Uncertainty, ISEL - Interpersonal Support

Missing Data Analysis

While the desired statistical analyses for this study and the next (e.g., Latent Growth Curve Modeling; LGCM) does allow for missing data/participants, one important assumption

of the analysis is that the data is missing completely at random (Enders, 2011). Furthermore, Bennett (2001) suggested that if more than 10% of the data is missing, results of statistical analyses are likely to be biased. With more than 69% of the total sample having missed at least one wave, I decided to split the "completes" and "non-completes" into two separate databases so as not to bias the final results. Students who completed all three waves of the study (i.e., the "completes") were analyzed longitudinally in Part II using LGCM techniques. "Non-completes" were analyzed in the current section (Part I) using cross-sectional techniques to investigate how emotional fit at Wave 1 (as well as other Wave 1 variables) predict GPA 1.5 years later, at Time 4/Wave 4.

Additionally, the participants who completed all three waves, the "completes" were compared to "non-completes" (i.e., participants who completed only one or two waves) to see if there were any significant differences between these two groups of participants. These results are displayed in Table 1.5. Two significant differences were found. Belonging at Wave 3 was significantly lower for "non-completes" when compared to "completes" ($t(110) = 2.17$, $p < .05$), and Satisfaction with Life at Wave 2 was significantly lower for "non-completes" when compared to "completes" ($t(115) = 2.09$, $p < .05$). These findings further suggest that "completes" and "non-completes" should be analyzed separately, which is how I proceeded in subsequent analyses. The analyses in Part I employed the "non-completes" data and the analyses in Part II employed the "completes" data.

Table 1.5. Differences between "completes" and "non-completes"

Variable	Non-completes (N=183)	Completes (N=81)	Differences	p-value

Age			t(261) = -.908	.365
Range	17-20	17-19		
Mean	18.12	18.06		
Standard Deviation	.49	.48		
Gender identity			$\chi^2(1) = .034$	.854
Female	7.5%	71.6%		
Male	29.5%	28.4%		
Race and ethnicity			$\chi^2(5) = 6.182*$	.289
Asian, Asian American	25.1%	32.1%		
Black or African American	1.1%	2.5%		
Hispanic or Latinx-American	3.1%	19.8%		
Native Pacific Islander	0%	1.2%		
White or Caucasian-American	37.7%	38.3%		
Other	6.0%	6.2%		
Annual family income			$\chi^2(4) = 1.106$	.893
Below $50,000	3.1%	27.2%		
$50,000 - $100,000	21.3%	21.0%		
$101,001 - $250,000	25.1%	24.7%		
Over $250,000	1.4%	14.8%		
Don't Know	12.6%	12.3%		
Socioeconomic status			$\chi^2(4) = 1.474**$	.831
Lower class	13.7%	11.1%		
Lower middle class	26.8%	22.2%		
Solidly middle class	3.1%	3.9%		
Upper middle class	25.7%	3.9%		
Upper class	3.8%	4.9%		
Place of Birth			$\chi^2(1) = .249$	.618

In the US	76.0 %	8.2%		
Outside the US	24.0%	19.8%		
Educational Background			$\chi^2(1) = 1.668$	.197
First generation to go to college	48.1%	39.5%		
Continuing generation	51.9%	6.5%		
ISEL (Mean (SD))				
Wave 1	4.64 (1.39)	4.61 (1.54)	$t(261) = .732$	.465
Wave 2	2.34 (1.12)	2.60 (1.28)	$t(115) = 1.004$	.318
Wave 3	2.79 (1.17)	2.74 (1.26)	$t(110) = -.187$	.852
Belonging (Mean (SD))				
Wave 1	5.03 (1.03)	5.13 (1.00)	$t(261) =. 732$	.465
Wave 2	5.07 (1.14)	5.15 (1.13)	$t(115) = .309$	.758
Wave 3	**4.57 (1.14)**	**5.06 (1.03)**	**$t(110) = 2.17$**	**.034**
Ability Uncertainty (Mean (SD))				
Wave 1	3.68 (1.36)	3.85 (1.31)	$t(262) = .948$	.334
Wave 2	3.92 (1.50)	3.81 (1.39)	$t(115) = -.380$	.704
Wave 3	3.89 (1.24)	2.81 (1.37)	$t(110) = -292$	.771
Satisfaction with Life (Mean (SD))				
Wave 1	4.64 (1.39)	4.61 (1.54)	$t(262) = -.178$	.859
Wave 2	**4.04 (1.37)**	**4.65 (1.41)**	**$t(115) = 2.09$**	**.038**
Wave 3	4.53 (1.44)	4.64 (1.52)	$t(110) = .351$	.727
Stress (Mean (SD))				
Wave 1	3.74 (1.11)	3.51 (1.19)	$t(262) = -1.555$	.121
Wave 2	3.97 (1.03)	4.03 (1.17)	$t(115) = .248$	.804
Wave 3	4.26 (.97)	4.28 (1.04)	$t(110) =.062$	.951
Self-Esteem (Mean (SD))				
Wave 1	5.21 (1.23)	5.08 (1.28)	$t(262) = -.800$	.424

Wave 2	4.78 (1.15)	4.95 (1.23)	t(115) = .674	.502
Wave 3	4.93 (1.35)	4,89 (1.32)	t(110) = -.129	.898
Negative Engaged Emotional Congruence (Mean (SD))				
Wave 1	.31 (.47)	.34 (.43)	t(261) = .449	.654
Wave 2	.44 (.49)	.48 (.38)	t(115) = .496	.621
Wave 3	.53 (.36)	.49 (.42)	t(110) = -.373	.710
Negative Disengaged Emotional Congruence (Mean (SD))				
Wave 1	.51 (.50)	.53 (.45)	t(262) = .323	.747
Wave 2	.64 (.45)	.81 (.46)	t(115) = .1.757	.082
Wave 3	.72 (.45)	.75 (.46)	t(110) = .333	.740

*5 cells(41.7%) have expected count less than 5. The minimum expected count is .31.
**1 cell (10%) have expected count less than 5. The minimum expected count is 3.38.

Results

Emotional Fit Scores Among First- vs. Continuing- Generation Students

To test the first hypothesis, that college generational status (i.e., first- vs. continuing-generation student status) would influence emotional response profiles in similar situations, I conducted a series of T-tests. Positively Engaged Emotional Fit was only marginally different ($t(181)=1.83$, $p = .07$) in first-generation students ($M = 1.57$, $SD = 0.58$) compared to continuing-generation students ($M = 1.41$, $SD = 0.59$) but in a direction opposite to my predictions. There was no significant difference in terms of Positively Disengaged Emotional Fit ($t(181)= 0.11$, $p = .92$) for first-generation students ($M = 1.43$, $SD = 0.61$) compared to continuing-generation students ($M = 1.42$, $SD = 0.61$). There was also no significant difference in terms of combined positive prompts ($t(181)=1.07$, $p = .287$) when comparing first-generation ($M = 1.50$, $SD = 0.53$) and continuing-generation ($M = 1.42$, $SD = 0.53$)

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students. Similarly, Negatively Engaged Emotional Fit scores were not significantly different ($t(180)$=-.57, p = .56) in first-generation students (M = 0.29, SD = 0.48) compared to continuing-generation students (M = 0.33, SD = 0.45). However, Negatively Disengaged Emotional Fit was significantly lower ($t(180)$=-2.71, p = .007) in first-generation students (M = 0.41, SD = 0.54) compared to continuing-generation students (M = 0.60, SD = 0.44). There was also a significant difference in terms of the averaged negative prompts ($t(181)$= -2.05, p = .04), with first-generation students (M = 0.25, SD = 0.44) having lower scores than continuing-generation students (M = 0.47, SD = 0.38). Finally, the overall Emotional Fit (collapsed across positive and negative, engaged and disengaged) did not reveal a significant difference ($t(181)$= -.39, p = .70) between first-generation students (M = 0.93, SD = 0.32) and continuing-generation students (M = 0.94, SD = 0.30).

Although I predicted possible differences across both positive and negative, engaged and disengaged prompts, between first- and continuing- generation students, the hypothesis was only partially supported; first-generation freshmen, compared to continuing-generation freshmen, showed lower emotional fit with continuing-generation upperclassmen, but only in the Negative Disengaged prompt and in the collapsed negative prompts.

Wave 1 Predictors of Wave 4 GPA

Next, I wanted to see if and how GPA at Wave 4 would be predicted, by Emotional Fit scores at time 1, as well as other factors measured at Wave 1. To do this, I first looked at zero-order correlations and then conducted multiple regression analyses. As shown in Table 1.7, Pearson correlation analyses do not show any significant relationships between study

variables at Time 1 and GPA at Time 4 (Winter of Sophomore year) for "non-completes,"
including no correlation between Emotional Fit Scores at time 1 and GPA at time 4. While
having significant zero-order correlations between the dependent variable and the
independent variables is not a requirement for conducting a regression analysis, the fact that
the correlations have an extremely low effect size did not bode well for further analyses, but I
proceeded, nevertheless.

Since Wave 4 GPA was significantly lower for first-generation students (N=88, *M*
=2.92, *SD* =.38) compared to continuing-generation students (N=95, *M* = 3.43, *SD* = 0.39)
(*t*(148) = -7.22, *p* < .001), I also analyzed the correlations between study variables split by
college generational status. The corresponding correlation coefficients are displayed in Table
1.8. Interestingly, even though I still found no significant relationships between Wave 1
variables and Wave 4 GPA, some of the patterns changed directions (i.e., some variables
have a different direction for first-generation compared to continuing- generation students).
Although these differences are not significant and cannot be used to draw any conclusions,
the different patterns of correlations do suggest that generational education status should be
considered when doing the regression analyses, as generational status may influence and
change the outcome of the analysis.

Table 1.6. Correlations between Wave 1 variables and Wave 4 GPA, full sample

	GPA	SWL	BE	PSS	AU	ISEL	RSE	NEE	NDE	PEE	PDE	NE	PE	EFIT
GPA	1													
SWL	.10	1												
BE	.07	.55**	1											
PSS	-.08	-.46**	-.47**	1										
AU	-.17*	-.33**	-.42**	.46**	1									
ISEL	-.05	-.41**	-.63**	.35**	.21**	1								
RSE	.14*	.62**	.55**	-.56**	-.51**	-.38**	1							
NEE	.06	-.10	-.15*	.18**	.18**	.04	-.11	1						
NDE	.04	-.09	-.08	.22**	.17**	.08	-.17**	.45**	1					
PEE	-.13	.18**	.19**	-.16*	.03	-.14*	.14*	-.05	-.13*	1				
PDE	.03	.11	.19**	-.16**	-.03	-.12	.11	-.07	-.18**	.55**	1			
NE	.05	-.11	-.13*	.24**	.20**	.06	-.16*	.84**	.86**	-.12	-.16**	1		
PE	-.06	.16**	.21**	-.18**	.00	-.15*	.14*	-.07	-.18**	.88**	.88**	-.16**	1	
EFIT	-.01	.07	.09	.00	.14*	-.08	.02	.50**	.42**	.68**	.65**	.53**	.75**	1

SWL - Satisfaction with Life, BE - Belonging; PSS – Stress, AU - Ability Uncertainty, ISEL - Interpersonal Support, RSE - Self -Esteem, NEE – Negative Engaged Emotion Fit, NDE – Negative Disengaged Emotion Fit, PEE- Positive Engaged Emotion Fit, PDE-Positive Disengaged Emotion Fit, NE-Negative Emotion Fit, PE-Positive Emotion Fit, EFIT - Overall emotional fit
*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Table 1.7. Correlations between Wave 1 variables and Wave 4 GPA, "non-completes" only

	GPA	SWL	BE	PSS	AU	ISEL	RSE	NEE	NDE	PEE	PDE	PE	NE	EFIT
GPA	1													
SWL	.07	1												
BE	.11	.51**	1											
PSS	-.06	-.37**	-.42**	1										
AU	-.14	-.36**	-.45**	.43**	1									
ISEL	-.08	-.37**	-.62**	.36**	.23**	1								
RSE	.11	.58**	.53**	-.51**	-.50**	-.36**	1							
NEE	.01	-.05	-.14	.13	.19*	.03	-.07	1						
NDE	.06	-.03	-.06	.18*	.19**	.05	-.15*	.43**	1					
PEE	-.10	.24**	.19*	-.25**	.03	-.11	.16*	-.09	-.15*	1				
PDE	.08	.19**	.23**	-.28**	-.08	-.15*	.18*	-.07	-.23**	.58**	1			
PE	-.01	.24**	.24**	-.30**	-.03	-.15*	.19**	-.09	-.21**	.88**	.89**	1		
NE	.04	-.05	-.11	.19**	.22**	.04	-.13	.83**	.86**	-.15*	-.20**	-.20**	1	
EFIT	.02	.18*	.13	-.14	.12	-.10	.08	.48**	.39**	.68**	.66**	.75**	.50**	1

SWL - Satisfaction with Life, BE - Belonging; PSS – Stress, AU - Ability Uncertainty, ISEL - Interpersonal Support, RSE - Self - Esteem, NEE – Negative Engaged Emotion Fit, NDE – Negative Disengaged Emotion Fit, PEE- Positive Engaged Emotion Fit, PDE-Positive Disengaged Emotion Fit, NE-Negative Emotion Fit, PE-Positive Emotion Fit, EFIT-Overall emotional fit
*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Table 1.8. Correlations among study variables for "non-completes," split by generational status

	GPA	SWL	BE	PSS	AU	ISEL	RSE	NEE	NDE	PEE	PDE	PE	NE	EFIT
GPA	1	.16	.00	-.03	-.21	.02	.16	-.03	-.15	.08	.16	.13	-.13	.05
SWL	-.17	1	.49**	-.40**	-.33**	-.38**	.60**	-.15	-.14	.34**	.22*	.31**	-.17	.18
BE	.05	.51**	1	-.48**	-.46**	-.63**	.54**	-.21*	-.09	.29**	.25*	.30**	-.16	.16
PSS	-.06	-.30**	-.30**	1	.45**	.33**	-.56**	.25*	.27**	-.34**	-.38**	-.41**	.32**	-.17
AU	.05	-.36**	-.38**	.39**	1	.26**	-.47**	.26*	.33**	-.09	-.13	-.12	.35**	.11
ISEL	-.14	-.33**	-.61**	.38**	.16	1	-.34**	.11	.08	-.13	-.14	-.15	.10	-.07
RSE	-.02	.55**	.48**	-.42**	-.53**	-.37**	1	-.19	-.24*	.35**	.33**	.38**	-.24*	.19
NEE	.05	.03	-.09	-.01	.13	-.04	.05	1	.37**	-.09	-.04	-.08	.83**	.46**
NDE	.04	.01	-.14	.15	.14	.07	-.12	.49**	1	-.15	-.25*	-.22*	.83**	.31**
PEE	-.15	.18	.14	-.16	.13	-.13	-.06	-.07	-.10	1	.58**	.89**	-.17	.71**
PDE	-.01	.17	.23*	-.17	-.03	-.17	-.02	-.11	-.21*	.58**	1	.89**	-.20*	.70**
PE	-.09	.20	.21	-.19	.05	-.17	-.04	-.10	-.18	.88**	.89**	1	-.21*	.79**
NE	.05	.02	-.14	.09	.15	.02	-.04	.84**	.88**	-.10	-.19	-.17	1	.43**
EFIT	-.05	.18	.08	-.10	.15	-.13	-.07	.50**	.46**	.67**	.62**	.73**	.56**	1

SWL - Satisfaction with Life, BE - Belonging; PSS – Stress, AU - Ability Uncertainty, ISEL - Interpersonal Support, RSE - Self - Esteem, NEE – Negative Engaged Emotion Fit, NDE – Negative Disengaged Emotion Fit, PEE- Positive Engaged Emotion Fit, PDE-Positive Disengaged Emotion Fit, NE-Negative Emotion Fit, PE-Positive Emotion Fit, EFIT-Overall emotional fit
*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Note: Figures shown below the diagonal represent correlations for first generation college-level education participants, while figures above the diagonal show correlations for continuing generation college-level education participants

Prior to running the multiple regression analyses, checking for the prerequisite assumptions was a necessary first step to take. Linearity of the relationship between the dependent variables and each independent variable was tested using scatter plots. All independent variables had a linear relationship with GPA. Homoscedasticity was also tested using scatter plots, by looking at standardized residuals. As homoscedasticity was observed, the other assumptions were tested. Independence of observations was tested using the Durbin-Watson statistic. The Durbin-Watson d = 1.848, which is between the two critical values of 1.5 and 2.5 (Uyak,Ozdemir, & Toroz, 2007), independence of observations can be assumed. Multicollinearity was tested with the Variance Inflation Factor (VIF) values produced by SPSS, which needed to be under 10. Normal Q-Q Plots were also computed to test that the residuals are approximately normally distributed.

All the assumptions were satisfied, so I proceeded with a stepwise multiple regression analysis to test whether Wave 4 GPA was predicted by Negative Engaged Emotions (NEE) fit scores, Negative Disengaged Emotions (NDE) fit scores, Positive Engaged Emotions (PEE) fit scores, Positive Disengaged Emotion (PDE)fit scores, overall Positive Emotions fit scores (PE), overall Negative Emotions fit scores (NE), and an overall emotional fit score (collapsed across negative-positive and engaged-disengaged), as well as Wave1 satisfaction with life, belonging, stress, ability uncertainty, perceived interpersonal support, self-esteem. Finally, I also investigated student generational status (which was first converted from a continuous variable into a dummy variable) as a predictor of time 4 GPA.

A significant regression equation was found ($F(1,147) = 53.808$, $p < .001$), with an R^2 of .268. However, none of emotional fit scores or any of the other psychological variables measured during Wave 1 predicted GPA at Wave 4. Thus, my hypothesis that emotional fit

would be predictive of other student outcomes was not supported. The only significant

predictor for GPA at time 4 was generational status (i.e., first- vs. continuing- generation

student status) (B = -.521, t(147)= -7.335, p < .001). For first-generation students, GPA was

lower (predicted GPA is equal to 3.437 - 0.521 for first-generation students) than for

continuing-generation students. Table 1.9 summarizes the results of the regression model.

Table 1.9. Stepwise Multiple Linear Regression with generational status predicting GPA

Variable	B	SE	95% CI	β	t	p
(constant)	3.44	0.05	[3.34,3.53]	0.00	71.68	<.001
First generation education	-0.52	0.07	[-0.66, -0.38]	-0.52	-7.34	<.001
SWL				-0.01	-0.09	0.93
BE				0	0.02	0.99
PSS				-0.02	-0.33	0.74
AU				-0.07	-0.98	0.33
ISEL				-0.03	-0.40	0.69
RSE				0.06	0.78	0.44
NEE				-0.01	-0.11	0.91
NDE				-0.04	-0.61	0.54
PEE				-0.04	-0.52	0.61
PDE				0.09	1.26	0.21
NE				-0.04	-0.58	0.57
PE				0.03	0.42	0.67
EFIT				0	0.05	0.96

SWL - Satisfaction with Life, BE - Belonging; PSS – Stress, AU - Ability Uncertainty, ISEL - Interpersonal Support, RSE - Self -Esteem, NEE – Negative Engaged Emotion Fit, NDE – Negative Disengaged Emotion Fit, PEE- Positive Engaged Emotion Fit, PDE-Positive Disengaged Emotion Fit, NE-Negative Emotion Fit, PE-Positive Emotion Fit, EFIT-Overall emotional fit
Note: Results: F(1,147) = 53.80, p <.001

Given these findings, I wondered if income or ethnicity (which have both been

associated with generational status in past literature) may play a role in predicting GPA. I

first looked at the difference between income levels on GPA scores. A one-way ANOVA

showed a significant difference between groups (F(4,144)=8.23, p <.001). Specifically, a

post-hoc Games-Howell test showed a significant difference ($p = .001$) between participants whose family income was under \$50,000 ($M = 3.02$, $SD = .51$) and those whose family income was \$100,000-\$250,000 ($M = 3.46$, $SD = .44$). Respondents whose family income was under \$50,000 had significantly ($p = .001$) lower GPAs than respondents whose family income was over \$250,000 ($M = 3.52$, $SD = .34$). Interestingly, no differences were observed between respondents with a family income of under \$50,000 and respondents with a family income of \$50,000-\$100.000 ($M = 3.01$, $SD = .52$, $p = 1.000$), or between respondents with a family income of \$100,000-\$250,000 and respondents with a family income of over \$250,000 ($p = 1.000$). Based on these results, I merged the two lower income bands (lower-middle income variable) and the two higher income bands (upper-middle income variable).

Next, I looked at ethnicity. Again using a one-way ANOVA, I saw significant differences between the five groups ($F(4,145) = 5.10$, $p = .001$), although the sample size for African-Americans was too low for any analyses to yield any significant results (N =2). The Games-Howell post-hoc test showed significant differences ($p = 0.22$) between Asian ($M = 3.26$, $SD = .48$) and Latinx ($M = 2.93$, $SD = .47$) students, and between Latinx and European-American ($M = 3.31$, $SD = .47$) ($p = 0.002$) students, but not between European-American and Asian ($p = 0.98$) students.

I again checked that the assumptions for stepwise multiple regression analysis were satisfied. Durbin-Watson d = 2.056, and all other requirements were met, so I conducted the analysis to test whether GPA would still be predicted by generational status, or if income and/or ethnicity would show that this is a confounding variable. A significant change was noticed when introducing upper-middle income into the regression equation though the effect size was low (R^2_{chage}=0.51 $F_{change}(1,147)$=10.897, p_{change} = .001). Therefore, besides

generational status (B = -.511, $t(147)$= 50.62, $p < .001$), the only significant predictor for GPA at time 4 was upper-middle income (i.e. income of over $100,000) ($B$ = .263, $t(147)$= 3.301, p = .001), and the participants' predicted GPA is equal to 3.30 - 0.40 (if first-generation) and + 0.26 (if family income is over $100,000 in family).

Table 1.10. Stepwise Multiple Linear Regression with generational status and income predicting GPA

Variable	B	SE	95% CI	β	t	p
(constant)	3.30	0.06	[3.17,3.43]	0.00	50.62	<.001
First generation education	-0.40	0.08	[-0.55, -0.25]	-0.40	-5.51	<.001
Upper-middle income	0.26	.08	[3.17,3.43]	0.25	3.30	.001
SWL				-0.04	-0.56	0.57
BE				-0.03	-0.36	0.72
PSS				-0.01	-0.17	0.87
AU				-0.05	-0.76	0.45
ISEL				-0.03	-0.37	0.71
RSE				0	0.02	0.99
NEE				-0.03	-0.38	0.70
NDE				-0.05	-0.70	0.48
PEE				-0.02	-0.33	0.74
PDE				0.11	1.54	0.13
NE				-0.06	-0.81	0.42
PE				0.05	0.68	0.50
EFIT				0.01	0.13	0.89
Lower-middle income				0.07	0.68	0.50
ETHNICITY - Asian				0.1	1.48	0.14
ETHNICITY - Hispanic				-0.11	-1.40	0.16
ETHNICITY - White				-0.03	-0.45	0.65

SWL - Satisfaction with Life, BE - Belonging; PSS – Stress, AU - Ability Uncertainty, ISEL - Interpersonal Support, RSE - Self -Esteem, NEE – Negative Engaged Emotion Fit, NDE – Negative Disengaged Emotion Fit, PEE- Positive Engaged Emotion Fit, PDE-Positive Disengaged Emotion Fit, NE-Negative Emotion Fit, PE-Positive Emotion Fit, EFIT-Overall emotional fit
Note: Results: $F(2,147) = 33.24$, $p <.001$, $R^2 = .311$

Part I Discussion

Part I was a first step in establishing that first-generation and continuing-generation students during their first year of college experience different emotional profiles in similar situations, and this may be especially true when it comes to negatively valanced emotional situations. Although there were no differences in emotional fit between first- and continuing-generation freshmen at Wave 1 in terms of the Positive Engaged, Positive Disengaged, or collapsed positive scenarios, we did find significant differences in the Negative Disengaged prompt and across both negative prompts collapsed together. More precisely, as predicted, first-generation freshmen had lower emotional fit (with continuing-generation upperclassmen who represent the "host" culture or "majority" college culture) when considering the Negative Engaged scenario or an average of the negative scenarios. Thus, my hypothesis about generational status differences in emotional fit scores was partially supported. Surprisingly, however, Wave 1 emotional fit scores did not predict GPA at Wave 4, 1.5 years later. In fact, no measured Wave 1 psychological variables were associated with GPA at Wave 4. Only generational status (i.e., first- vs. continuing-generation student status) and income was predictive of cumulative GPA during the Winter quarter of students' sophomore year of college. These findings did not support my hypothesis about the importance of emotional fit scores in predicting other college outcomes.

Part II

Emotional Fit Over Time

Part II: Emotional Fit Over Time

In Part I, I observed some initial differences in emotional fit (emotional congruence scores) between first- and continuing- generation students. There were no differences across the positive prompts (i.e., Positive Engaged, Positive Disengaged, or positive collapsed across engaged and disengaged). However, there were some differences between first-generation and continuing-generation students when it came to the negative prompts. As predicted, first-generation freshmen showed lower emotional fit with continuing-generation upperclassmen in the Negative Disengaged prompt as well as across the negative prompts when they were collapsed (averaged) together, compared to the continuing-generation freshmen. In the current analysis, I used the "completes" dataset and investigated changes in emotional fit (emotional congruence scores) over time to see if first-generation students acculturate emotionally to the majority college culture (that of continuing-generation upperclassmen). I predicted that first-generation students would show increases in emotional fit scores over time, in the same way that immigrants to a new country show increases in emotional fit (a measure of emotional acculturation) over time.

In a supplementary, second part of the current analyses, I also used the "completes" data set and repeated the correlation and regression analyses conducted in Part I to determine how variables, and especially emotional fit variables, at all three waves of the study, predict Time 4/Wave 4 cumulative GPA.

Method

Participants

Participants were the same as described in Part I. However, due to the nature of the analysis required to track longitudinal change in emotional fit scores, Part II focused only on

participants previously labeled as "completes" (i.e., those students who completed all three waves of the study). These included N=81 respondents, with an average age of $M = 18.06$ (0.48). Fifty-eight of the participants (71.6%) were female, and the rest identified as male. Thirty-two (39.5%) out of the eighty-one participants were first-generation college education students. Full demographics are displayed in Table 1.5.

Measures

The measures were the same as described in the section above (Part I). However, some changes were made to the measurement of emotional fit. Emotional fit was measured with the Emotional Profile Questionnaire (Leersnyder, Mesquita, & Kim, 2011) at all three time points of the study (Waves 1, 2, and 3), however, in order to shorten the survey and encourage student participation, only the negative prompts were administered during the third wave of the longitudinal study. Although this change was not ideal, I believed that maintaining participants was more important than getting data on all four prompts. Thus, in Wave 3, students were presented with the Negative Engaged prompt and the Negative Disengaged prompt, and I was able to calculate only three emotional fit scores: NEE fit score, NDE fit score, and an overall negative fit score based on collapsing across the engaged and disengaged prompt. These three fit scores were analyzed longitudinally (across Waves 1, 2, and 3) in the current section (Part II).

Analytic Overview

Three latent growth curve models (LGM) were constructed using IBM Amos Version 20 (Arbuckle, 2011) to see if a significant growth over time could be observed in terms of emotional fit scores. The unconditional LGMs were conducted separately for first-generation students and continuing- generation students. A constellation of model fit indices were

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analyzed to determine model fit. In addition to the chi-square test of model fit, the room mean square of approximation (RMSEA), the comparative fit index (CFI), and the standardized root-mean square residual (SRMR), I also looked at the Bentler-Bonett (Bentler & Bonett, 1980) Normed Fit Index (NFI), a relative fit index that looks at the difference between the baseline (or null) model and the hypothesized model. A value of less than .9 indicates a poor model fit, with values exceeding .95 showing a good model fit. RMSEA (Steiger, 1990) is a measure of difference between the population and model-implied covariance matrices per degree of freedom, with values under 0.08 indicating good model fit (Cangur & Ercan, 2015). SRMR is a measure of the average of standardized fitted residuals (Hu & Bentler, 1998) that indicates an acceptable fit when it produces a value smaller than 0.10 (Cangur & Ercan, 2015). The CFI compares a more restricted model with a null model in which all variables are assumed to be uncorrelated, with values over .90 indicating an acceptable fit (Kline, 2005).

Results

Negative Engaged Emotion Prompt

The first step I took was to investigate whether with both latent intercept and linear slope models of growth would prove a good fit. The hypothesized model is presented in Figure 1. Unfortunately, the overall fit was poor for both first-generation ($\chi2(1) = 4.69$, $p = 0.03$;CFI = 0.55, NFI= 0.58, RMSEA = 0.35, SRMR = 0.031), and continuing-generation students ($\chi2(1) = 1.5$, $p = 0.22$;CFI = 0.89, NFI= 0.80, RMSEA = 0.10, SRMR = 0.005). Additionally, there was no increase in overall fit ($\chi2(1) = 5.30$, $p = 0.021$;CFI = 0.68, NFI= 0.68, RMSEA = 0.23, SRMR = 0.012) when the groups (first- and continuing- generation

students) were subsequently merged into a single unconditional multiple group model with all parameters free to vary across generational status.
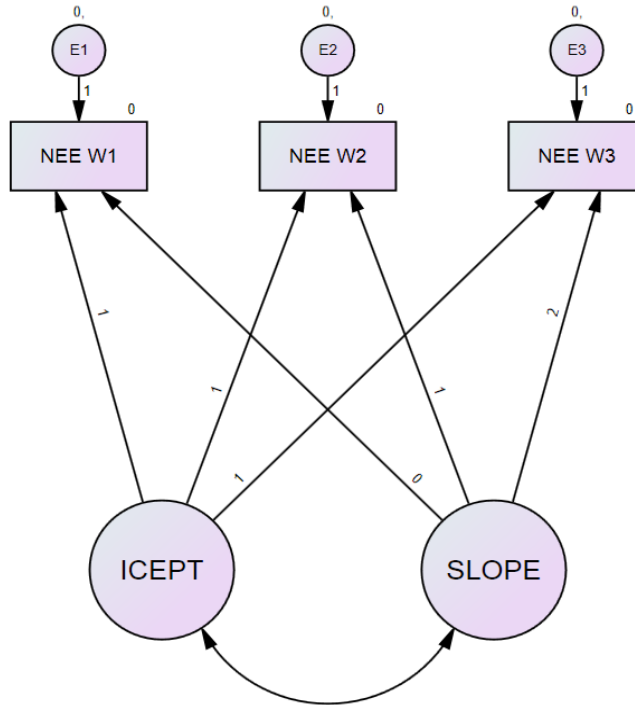
Negative Disengaged Prompt

Similar results were obtained when looking at the negative disengaged prompt (See Figure 2). For both first-generation students ($\chi2(1) = 3.94$, $p = 0.047$; CFI = 0.00, NFI= 0.27, RMSEA = 0.31, SRMR = 0.023), and continuing-generation students ($\chi2(1) = 4.00$, $p = 0.74$;CFI = 0.47, NFI=0.54, RMSEA = 0.00, SRMR = 0.015), the model fit was overall very poor. And again, merging the two groups into one unconditional model did not produce a good model fit $\chi2(1) = 7.93$, $p = 0.005$; CFI = 0.32, NFI= 0.40, RMSEA = 0.29, SRMR = 0.017).

Negative Prompts Collapsed (Averaged together across engaged and disengaged)

Lastly, I looked at the collapsed Negative Emotional Fit as seen in Figure 3. Not surprising given the previous results, the model fit was overall poor for both first-generation ($\chi2(1) = 4.69$, $p = 0.03$; CFI = 0.55, NFI= 0.58, RMSEA = 0.35, SRMR = 0.031) and for continuing-generation students ($\chi2(1) = 1.51$, $p = 0.22$; CFI = 0.82, NFI= 0.80, RMSEA = 0.10, SRMR = 0.005). Merging the two groups did not change the result ($\chi2(1) = 5.29$, $p = 0.021$; CFI = 0.68, NFI= 0.68, RMSEA = 0.23, SRMR = 0.012).

Taken together, these results suggest that contrary to the hypothesis, emotional fit with the majority culture (that of continuing generation upperclassmen) does not increase with time. In other words, students do not seem to acculturate emotionally, at least not during their first year of study which was the period under current investigation. Furthermore, based on our results, I could not ascertain any differences in whether first-generation students and continuing-generation students acculturate emotionally in a different way. Subsequent t-tests

further supported this fact; there were no significant differences in either Negative

Disengaged Emotional Fit at Time 1 ($t(79)$= - .53, p =.95), Time 2 ($t(79)$= 0.40, p =.69), and

Time 3 ($t(79)$= .34, p =.74), or Negative Engaged Emotional Fit at Time 1 ($t(79)$= - .69, p

=.49), Time 2 ($t(79)$= 1.05, p =.30), and Time 3 ($t(79)$= .34, p = .74) in the current sample,

using only "completes."

Figure 2.1. LGC Model used to test change in Negative Engaged Emotional Fit over time
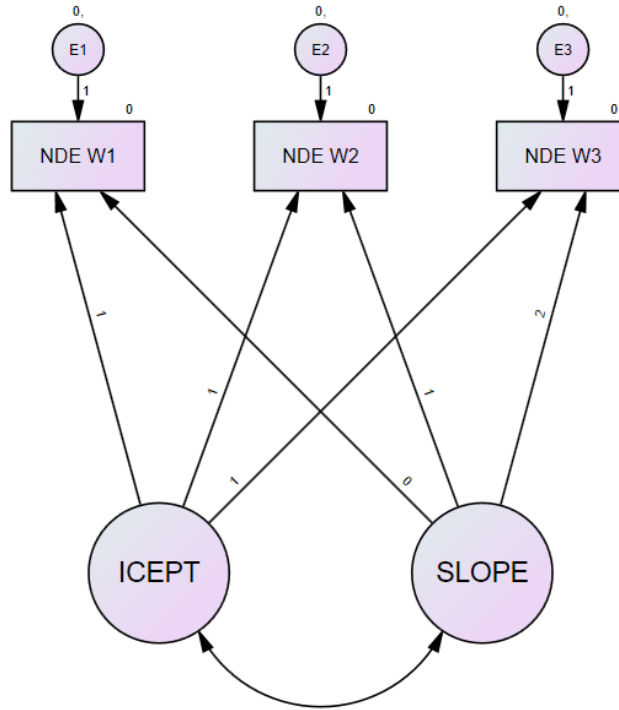
Figure 2.2. LGC Model used to test change in Negative Disengaged Emotional Fit over time
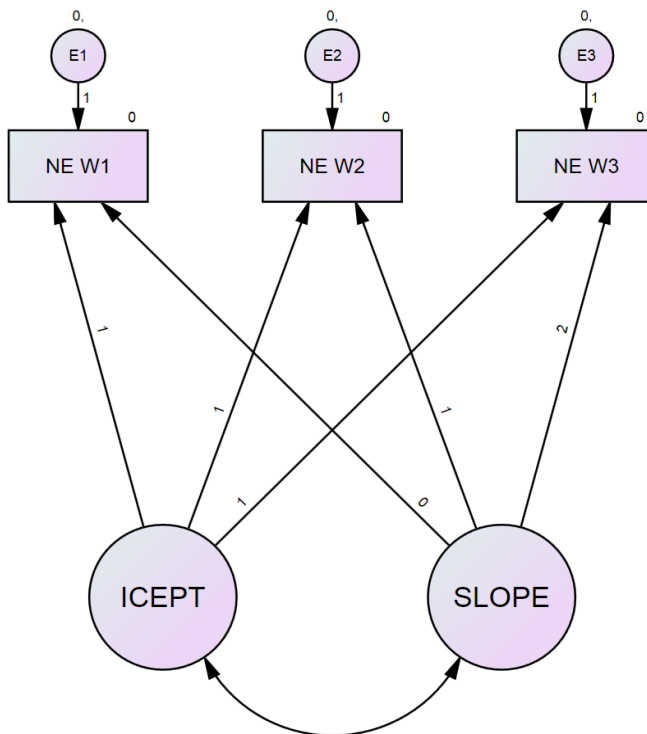
Figure 2.3. LGC Model used to test change in overall Negative Emotional Fit over time

Supplementary Analyses: Three-Wave Predictors of Wave 4 GPA

Although I had initially predicted that emotional fit would change over time (increase) and that this would have implications for belonging, which in turn would improve other school outcomes, the current latent growth curve modeling results indicate that emotional fit does not change over time. Nevertheless, I still decided to test if any variables at any time point would predict GPA in Wave 4. These results build on Part I findings but included only the "completes" participants and an analysis of Waves 1, 2, and 3.

To do this, I first examined the zero-order correlations between the study variables at all three waves. These are presented in Table 2.1, 2.2 and 2.3. I found that the only variable at Time 1 that was correlated with GPA at Time 4 was Ability Uncertainty ($r = -.24$, $p = .05$). At Time 2, satisfaction with life produced a significantly positive medium strength correlation with GPA at time 4 ($r = .36$, $p < .01$), as did self-esteem ($r = .38$, $p = .01$). GPA was also negatively and significantly associated with stress ($r = -.49$, $p = .00$), ability uncertainty ($r = -.49$, $p = .00$), and perceived interpersonal support ($r = -.25$, $p = .04$) at Wave 2. For the last wave, significant positive correlations were observed between GPA and satisfaction with life ($r = .31$, $p = .01$), belonging ($r = .24$, $p = .05$), and self-esteem ($r = .29$, $p = .02$). Significant negative correlations were found between GPA and stress ($r = -.29$, $p = .02$), as well as between GPA and ability uncertainty ($r = -.52$, $p = .00$).

Table 2.1. Correlations between study variables for "completes," Wave 1

	GPA	SWL W1	BE W1	Stress W1	AU W1	ISEL W1	RSE W1	NEE W1	NDE W1
GPA	1								
SWL W1	.17	1							
BE W1	-.04	.63**	1						
Stress W1	-.10	-.65**	-.59**	1					
AU W1	-.24*	-.28*	-.37**	.55**	1				
ISEL W1	.01	-.50**	-.67**	.35**	.18	1			
RSE W1	.21	.70**	.61**	-.69**	-.54**	-.42**	1		
NEE W1	.16	-.22	-.18	.30**	.18	.06	-.19	1	
NDE W1	.00	-.22*	-.15	.32**	.10	.14	-.20	.50**	1

W1-Wave 1, BE – Belonging, ISEL - Interpersonal Support, AU - Ability uncertainty, RSE – Self Esteem, NEE – Negative Engaged Emotion Fit, NDE – Negative Disengaged Emotion Fit
,*. Correlation is significant at the .05 level (2-tailed).
**. Correlation is significant at the .01 level (2-tailed).

Table 2.2. Correlations between study variables for "completes," Wave 2

	GPA	SWL W2	BE W2	Stress W2	AU W2	ISEL W2	RSE W2	NEE W2	NDE W2
GPA	1								
SWL W2	.36**	1							
BE W2	0.20	.49**	1						
Stress W2	-.32**	-.70**	-.43**	1					
AU W2	-.49**	-.39**	-.38**	.51**	1				
ISEL W2	-.25*	-.44**	-.60**	.51**	.23*	1			
RSE W2	.38**	.73**	.49**	-.73**	-.57**	-.52**	1		
NEE W2	0.10	0.073	0.153	-0.069	0.088	-0.146	0.016	1	
NDE W2	-0.11	-0.163	0.109	.24*	0.156	-0.029	-.23*	.49**	1

W2 – Wave 2, BE – Belonging, ISEL - Interpersonal Support, AU - Ability uncertainty, RSE – Self Esteem, NEE – Negative Engaged Emotion Fit, NDE – Negative Disengaged Emotion Fit
,*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Table 2.3. Correlations between study variables for "completes," Wave 3

	GPA	SWL W3	BE W3	Stress W3	AU W3	ISEL W3	RSE W3	NEE W3	NDE W3
GPA	1								
SWL W3	.31*	1							
BE W3	.24*	.60**	1						
Stress W3	-.29*	-.60**	-.47**	1					
AU W3	-.52**	-.50**	-.54**	.61**	1				
ISEL W3	-.17	-.55**	-.70**	.25*	.39**	1			
RSE W3	.29*	.75**	.65**	-.63**	-.63**	-.51**	1		
NEE W3	.16	-.11	.06	.08	.03	-.15	-.08	1	
NDE W3	-.07	-.19	-.11	.24*	.13	-.09	-.18	.54**	1

W3 – Wave 3, BE – Belonging, ISEL - Interpersonal Support, AU - Ability uncertainty, RSE – Self Esteem, NEE – Negatively Engaged Emotion Fit, NDE – Negative Disengaged Emotion Fit
,*. Correlation is significant at the .05 level (2-tailed).
**. Correlation is significant at the .01 level (2-tailed).

Overall, I found that variables measured during Wave 1 (during the first few weeks of college) had little association with GPA 1.5 years later. However, as students got deeper and farther into their college career, different measured psychological variables show more association with GPA at a later time. Although these findings were not predicted in the current study and not the direct focus of the current investigation, they are worth further investigation in future studies. Many currently used "wise" or "mindset" interventions employed on college campuses are administered early in a students' college career (usually before their first semester or during the first weeks of the first semester), but these findings suggest that potentially timing interventions later or administering follow-up interventions later on in the year might further help students.

As with the "non-completes" data set in Part I, using the "completes" data set in the current section (Part II), I again found that GPA was significantly lower for first-generation students (N=26, M =2.96, SD =.49) compared to continuing-generation students (N=42, M = 3.40, SD = 0.47) ($t(66)$ = -3.78, p < .001). Therefore, I once again looked at the zero-order correlations separated by generational status. These results are presented in Table 2.4, 2.5, and 2.6.

However, it should be pointed out that the sample sizes became quite small when the data was split by generational status; there were only 26 first-generation participants, and 20 continuing-generation participants who participated in all three waves and also consented to sharing their GPA information.

Table 2.4. Correlations between study variables for "completes," Wave 1, split by generational status

	GPA	SWL W1	BE W1	Stress W1	AU W1	ISEL W1	RSE W1	NEE W1	NDE W1
GPA	1	.03	-.21	.15	.14	.10	.01	.28	-.14
SWL W1	.03	1	.63**	-.62**	-.05	-.37**	.69**	-.22	-.16
BE W1	-.13	.58**	1	-.66**	-.29*	-.56**	.57**	-.11	-.07
Stress W1	-.21	-.63**	-.40*	1	.42**	.31*	-.71**	.32*	.33*
AU W1	-.47*	-.40*	-.31	.64**	1	-.02	-.38**	.12	-.04
ISEL W1	.09	-.62**	-.77**	.36*	.31	1	-.23	-.10	.08
RSE W1	.10	.64**	.57**	-.56**	-.56**	-.61**	1	-.15	-.10
NEE W1	-.15	-.29	-.34	.40*	.39*	.31	-.36*	1	.50**
NDE W1	.06	-.38*	-.30	.37*	.39*	.25	-.44*	.49**	1

Correlations below the diagonal are first-generation students; correlations above the diagonal are continuing-generation students.
W1 – Wave 1, BE – Belonging, SS- Stress, AU - Ability uncertainty, ISEL- Interpersonal Support, RSE – Self-Esteem, NEE – Negative Engaged Emotion Fit, NDE – Negative Disengaged Emotion Fit
,*. Correlation is significant at the .05 level (2-tailed).
**. Correlation is significant at the .01 level (2-tailed).

Table 2.5. Correlations between study variables for "completes," Wave 2, split by generational status

	GPA	SWL W2	BE W2	Stress W2	AU W2	ISEL W2	RSE W2	NEE W2	NDE W2
GPA	1	.07	.07	-.19	-.48**	-.19	.21	.07	-.14
SWL W2	.50**	1	.69**	-.71**	-.28	-.44**	.76**	.19	-.03
BE W2	.07	-.07	1	-.57**	-.22	-.71**	.62**	.29*	.18
Stress W2	-.38	-.53**	.06	1	.41**	.50**	-.75**	-.14	.14
AU W2	-.13	-.07	-.35*	.46**	1	.16	-.52**	-.07	.05
ISEL W2	-.13	-.33	-.40*	.46**	.16	1	-.52**	-.27	-.19
RSE W2	.41*	.54**	.09	-.56**	-.45**	-.46**	1	.16	-.08
NEE W2	.24	.02	.03	-.04	.23	.00	-.18	1	.53**
NDE W2	-.08	-.42*	.05	.47**	.36*	.20	-.55**	.42*	1

Correlations below the diagonal are first-generation students; correlations above the diagonal are continuing-generation students.
W2 – Wave 2, BE – Belonging, SS- Stress, AU - Ability uncertainty, ISEL- Interpersonal Support, RSE – Self-Esteem, NEE – Negative Engaged Emotion Fit, NDE – Negative Disengaged Emotion Fit
,*. Correlation is significant at the .05 level (2-tailed).
**. Correlation is significant at the .01 level (2-tailed).

Table 2.6. Correlations between study variables for "completes," Wave 3, split by generational status

	GPA	SWL W3	BE W3	Stress W3	AU W3	ISEL W3	RSE W3	NEE W3	NDE W3
GPA	1	.11	.08	-.14	-.41**	-.10	.10	.18	.02
SWL W3	.24	1	.73**	-.63**	-.41**	-.57**	.85**	-.03	-.10
BE W3	.22	.35*	1	-.56**	-.46**	-.65**	.65**	.08	-.05
Stress W3	-.29	-.46**	-.22	1	.52**	.28*	-.62**	-.01	.21
AU W3	-.52**	-.46**	-.53**	.66**	1	.36*	-.51**	-.11	-.06
ISEL W3	.02	-.45**	-.73**	.04	.30	1	-.55**	-.26	-.30*
RSE W3	.23	.51**	.56**	-.53**	-.69**	-.33	1	.05	-.05
NEE W3	.16	-.24	.05	.25	.27	.02	-.33	1	.47**
NDE W3	-.12	-.30	-.17	.28	.41*	.19	-.40*	.66**	1

Figures shown below the diagonal represent correlations for first generation college-level education participants, while figures above the diagonal show correlations for continuing generation college-level education participants.

W3 – Wave 3, BE – Belonging, SS- Stress, AU - Ability uncertainty, ISEL- Interpersonal Support, RSE – Self Esteem, NEE – Negatively Engaged Emotions, NDE – Negatively Disengaged Emotions

,*. Correlation is significant at the .05 level (2-tailed).

**. Correlation is significant at the .01 level (2-tailed).

Similarly, to Part I findings with "non-completes," there were differences in correlation patterns when splitting the data by generational status. For example, satisfaction with life in Wave 2 was only significant for first-generation students ($r = .50$, $p = .01$), but not for continuing-generation students ($r = .07$, $p = .65$). Ability uncertainty in Wave 1 was again only significant for first generation students ($r = -.47$, $p = .02$), but not for continuing-generation students ($r = .14$, $p = .38$), as was self-esteem at Wave 2 ($r = .41$, $p = .04$ for first-generation students but $r = .21$, $p = .18$ for continuing-generation students). However, ability uncertainty at Wave 2 was significant for continuing-generation respondents ($r = -.48$, $p = .001$), but not first- generation respondents ($r = -.12$, $p = .54$). Again, these different patterns of correlations suggest that subsequent regression analyses should be conducted separately for first- and continuing- generation students.

Unlike the data for "non-completes" in section I above, there were no significant differences between income levels for GPA ($F(4,63) = 2.027$, $p = .101$), but there was a significant difference between ethnicities after excluding African-American and Native-American participants due to low sample sizes ($F(2,58) = 10.3$, $p < .001$). Asian students had a significantly ($p = .032$) higher GPA ($M = 3.23$, $SD = .49$) compared to Latinix ($M = 2.79$, $SD = .44$) students, but not European-American students ($M = 3.48$, $SD = .42$, $p = .151$). There was also a significant difference between European-American and Latinx students ($p = .000$).

To test whether GPA could be predicted by any of the study variables at any of the time points, and specifically Emotional Fit scores, I conducted a stepwise Multiple Linear Regression (MLR), as I did in Part I. I was specifically interested to see whether the results obtained in Part I using "non-completes" would replicate with the current sample (i.e.,

"completes"). I checked that the assumptions for MLR were satisfied for this sample. The

Durbin-Watson d = 2.143, and all the other requirements were met.

In total, only three variables stood out as significant, but none of these included the

Emotional Fit scores. The three variables are presented in Table 2.7. Ability uncertainty from

Wave 3 was the main predictor of GPA for this sample, with R^2=.275 ($F(1,66)$=25.03, p

< .001). After generational status (first-generation) was introduced into the equation, R^2

jumped to .337 (R^2_{change} = .062, $F_{change}(1,65)$=6.05, p=.017). Finally, after introducing

belonging from Wave 1, the final R^2 was .404 (R^2_{change} = .068, $F_{change}(1,64)$=7.25, p=.009).

Curiously, belonging at Wave 1 was a negative predictor for GPA. The participants' predicted

GPA is equal to 4.00 - 0.20*mean score for ability uncertainty at Wave 1 - 0.32 (if first

generation) - 0.14*mean score for belonging at Wave 1.

Table 2.7. Results for the Stepwise Multiple Linear Regression predicting GPA

Model	B	SE	95% CI	β	t	Sig.
1 (Constant)	4.00	0.16	[3.68,4.33]		24.57	<.001
Ability uncertainty W3	-0.20	0.04	[-0.29,-0.12]	-0.52	-5.00	<.001
2 (Constant)	3.97	0.16	[3.66,4.28]		25.21	<.001
Ability uncertainty W3	-0.17	0.04	[-0.25,-0.08]	-0.43	-3.95	<.001
First generation education	-0.28	0.11	[-0.51,-0.05]	-0.27	-2.46	0.017
3 (Constant)	4.84	0.35	[4.13,5.54]		13.63	<.001
Ability uncertainty W3	-0.20	0.04	[-0.28,-0.11]	-0.50	-4.70	<.001
First generation education	-0.32	0.11	[-0.54,-0.1]	-0.31	-2.94	0.005
Belonging W1	-0.14	0.05	[-0.25,-0.04]	-0.28	-2.69	0.009
SWL W1				0.13	1.05	0.30
SWL W2				0.15	1.33	0.19
SWL W3				0.07	0.57	0.57
Belonging W2				0.11	0.96	0.34
Belonging W3				0.05	0.41	0.69
Stress W1				0.05	0.38	0.70
Stress W2				-0.03	-0.21	0.84
Stress W3				0.03	0.27	0.79
Ability uncertainty W1				0.07	0.60	0.55
Ability uncertainty W2				-0.06	-0.41	0.68
ISEL W1				-0.07	-0.54	0.59
ISEL W2				-0.12	-1.06	0.30

ISEL W3	0.00	-0.04	0.97
Self Esteem W1	0.02	0.17	0.86
Self Esteem W2	0.11	0.82	0.41
Self Esteem W3	-0.09	-0.71	0.48
NEE W1	0.15	1.53	0.13
NEE W2	0.08	0.81	0.42
NEE W3	0.18	1.92	0.06
NDE W1	-0.01	-0.11	0.91
NDE W2	-0.07	-0.69	0.49
NDE W3	0.01	0.07	0.94
Lower-middle income	0.10	0.90	0.37
Upper-middle income	0.09	0.86	0.39
ETHNICITY - Asian	-0.06	-0.55	0.59
ETHNICITY - Hispanic	-0.05	-0.43	0.67
ETHNICITY - White	0.18	1.67	0.10

W1 – Wave 1, W2 – Wave 2, W3 – Wave 3, ISEL- Interpersonal Support, RSE – Self Esteem, NEE – Negatively Engaged Emotions, NDE – Negatively Disengaged Emotions

Note: Results: $F(3,64) = 14.47$, $p < .001$

Part II Discussion

Part II showed that unlike the emotional acculturation that occurs amongst immigrants to a new host country, college students do not seem to acculturate emotionally to the "majority" or "host" culture (that of continuing-generation upperclassmen) over the course of their first year at university (Fall of Freshman year to Fall of Sophomore year). Neither first-generation nor continuing-generation students showed any changes (growth or decline) in emotional fit in the Negative Engaged, Negative Disengaged, or Negative collapsed emotional situations. Thus, my hypothesis about emotional fit changing over time was not supported.

Furthermore, replicating and building on findings from Part I, I found that emotional fit scores at all three waves (Waves 1, 2, and 3) are not predictive of GPA at time point 4 (Winter of students' sophomore year), again not supporting initial hypothesizing. Interestingly, although not a focus of the current research, I did find that other measured

psychological variables (i.e., self-esteem, stress, ability uncertainty) become increasingly more important as students progressed through college. I found that when measured at Wave 1 of the study, measured psychological factors did not have much power in predicting GPA at time 4, but psychological factors measured at Waves 2 and 3 had more predictive power. Unfortunately, for my specific hypotheses, this pattern did not apply to emotional fit scores which did not predict GPA regardless of what wave they were measured in. In summary, Parts I and II suggest that although emotional fit is somewhat different between first- and continuing- generation students (at least when it comes to the Negative Disengaged and Negative collapsed emotional situations) at the beginning of college, emotional fit does not seem to change with time and emotional fit does not seem to be an important predictor of GPA 1.5 years later. Taken together, these results negate the original hypothesizing and suggest that emotional fit may not be such an important psychological mechanism in explaining the culture clash first-generation students experience on a college campus.

Part III

Emotional Fit vs. Emotional Accuracy

Part III: Emotional Fit vs. Emotional Accuracy

Originally, I hypothesized that emotional fit (or lack thereof) with the "host" or "majority" college culture could be a potential psychological mechanism explaining the culture clash that first-generation students experience on college campuses. Specifically, I predicted that emotional fit with the "majority" culture (that of upperclassmen continuing-generation students) would be higher for continuing-generation compared to first-generation freshmen and this would explain college outcomes such as belonging and GPA. Additionally, I had predicted that with time, first-generation students would acculturate emotionally, and their emotional fit scores would increase over the course of the study. However, the hypotheses were only partially supported after completing the initially proposed three-wave longitudinal research. Although, there were some differences in emotional-fit between first- and continuing- generation students at Wave 1 of the study (Fall of Freshman year) in the Negative Disengaged and Negative averaged/collapsed situations with first-generation students reporting less fit than continuing-generation students, emotional fit did not predict GPA 1.5 years later (at time 4/Wave 4). Furthermore, I found no evidence of emotional acculturation as both first-generation and continuing-generation students showed no evidence of change (growth or decline) in emotional fit over the course of the three-wave study. Taken together, these findings suggest that emotional fit may not be as significant a psychological mechanism in explaining the culture clash experienced by first-generation students on college campuses as had originally been predicted.

Given these findings, in Part IV, I turned my attention to *emotional accuracy*. Specifically, I hypothesized that if emotional fit is not as important as previously hypothesized, maybe, instead, *emotional accuracy*, that is students' reading and

understanding of the emotional patterns of "typical" or "majority" culture students, is a more important psychological mechanism explaining the culture clash first-generation students experience on a college campus. It may be that first-generation students have lower emotional accuracy and more difficulty reading and interpreting the emotional experiences of "majority" culture students and this is how the culture clash is experienced. This is in line with a large database of research on Emotional Intelligence showing the multifaceted and multi-domain benefits of being able to read and understand other people's emotions (Mayer & Salovey, 1997; Mayer, Salovey, & Caruso, 2002). In the school domain, for example, students who score higher in emotional accuracy have numerous positive downstream school outcomes (e.g., Abdullah et. al., 2004). To explore the idea that emotional accuracy, regardless of actual (personal) emotional fit, may be an important psychological mechanism explaining the culture clash experienced by first-generation students on a college campus, I conducted an additional cross-sectional study which pitted the two concepts (i.e. emotional fit and emotional accuracy) against each other to see which of the two contributes more to student outcomes. This was a largely exploratory study and multiple models were tested. The model with best fit was one in which belonging and self-esteem mediated the relationship between emotional fit and emotional accuracy and outcomes such as stress, ability uncertainty and identity overlap with college (i.e. IOS with UCSB), stress, and ability uncertainty. This model is presented as part of the current section (Section III).

Methods

Participants

The current section involved entirely new data collection. Like in Sections 1 and 2, participants were undergraduate students at a large, diverse, and prestigious public university

in South-Central California. Participants were recruited through the Psychology Department's participant pool (SONA) and received half a course credit for their participation. All participants were tested individually on computers in a lab in the Psychology Department. Data collection did not contain any identifying information and the study was approved by the hosting university's internal review board (IRB).

Two hundred and fifty-two underclassmen students completed the study. Of these, 60.7% were Freshmen (N=153), and 39.3% were Sophomores (N=99). The mean age for the sample was M=18.47, SD=.66. Seventy-three participants (29%) identified as male, and the remaining (71%) identified as female. In terms of social-economic status, 29 (11.5%) respondents identified as lower class, 62 respondents (24.6%) identified as lower-middle class, 75 respondents (29.8%) identified as solidly-middle class, 76 respondents (30.2%) identified as upper-middle class and 8 respondents (3.2%) identified as upper-class. Two respondents (0.8%) chose not to answer this question. Finally, 64 respondents (25.4%) said their family income was under $50,000, 54 respondents (21.4%) declared that their family income was between $50,000 and $100,000, 66 respondents (26.2%) said that their family income was between $100,000 and $250,000, and 33 respondents (13.1%) said that their family income was over $250,000. Thirty-three respondents (13.1%) said they did not know their family income, and 2 (0.8%) respondents declined to answer this question.

First-Generation and Continuing-Generation Students. Like in the previous sections (Parts I and II), parental education was used to distinguish between first-generation and continuing-generation students. Students who had at least one parent with a college degree from a four-year institution (had achieved a bachelor's degree or more) were considered to be "continuing-generation" students. All other students were considered to be "first-generation"

students. These criteria for assigning "first-generation" and "continuing-generation" status has been common in past research comparing first- and continuing- generation students (e.g., Stephens et. al., 2014). According to these criteria, our sample consisted of $n = 111$ first-generation underclassmen, and $n = 141$ continuing-generation underclassmen.

An additional 92 continuing-generation upperclassmen respondents completed the study to be used in emotional fit and emotional accuracy calculations for computing "host" or "majority" culture averages. Unfortunately, a glitch in data-downloading from Qualtrics resulted in missing additional demographic information on these participants.

Measures

As in Part I and II above, the Rosenberg (1965) Self-Esteem Scale (Self-Esteem), the Sense of Social and Academic Fit Scale (Walton & Cohen, 2007), the Perceived Stress Scale (Cohen et. al., 1994), and the Ability Uncertainty Scale (Lewis & Hodges, 2015) were employed in the current study. The reliability results for these scales are displayed in Table 3.2. Additionally, the current study also included the single-item, Inclusion of Other(s) in the Self Scale (IOS), to measure the overlap between students' personal identity with the University of California Santa Barbara (UCSB). Students were asked to choose between one of seven pairs of circles that ranged from just touching to almost completely overlapping where one circle in each pair was labeled "self" and the second circle was labeled "UCSB." Higher numbers are indicative of greater identity overlap between the self and UCSB.

Emotional Fit and Emotional Accuracy. Emotional Fit (emotional congruence scores) was measured in an identical fashion to Part I and Part II above. Participants were asked to write about specific emotional events in their lives and then rate themselves on 30 different emotions elicited by the prompt (e.g., good, happy, bad, sleepy, surprised, etc.) using a 7-

point Likert-type scale (1 = *not at all*, 7 = *extremely*). In order to measure *emotional accuracy*, after rating their own emotions in the scenarios, students were subsequently asked to rate how they thought the "*typical UCSB student*" would respond in the same situation. These responses were also correlated to the averages of the continuing-generation upperclassmen in the same way that emotional fit scores were computed. Correlation scores were then converted to Fisher's Z-scores using the formula $z' = .5[\ln(1+r) - \ln(1-r)]$, where r is the individual correlation score. This was done to ensure a normal distribution of scores.

In order to keep the survey relatively short, students were only presented with negative prompts in the current study: The Negative Engaged prompt and the Negative Disengaged prompt for a total of four prompts and 120 rated emotions. We chose the negative prompts (as opposed to the positive prompts) because there were greater differences in the negative prompts between first- and continuing- generation students in the previous research (see Section I and II above). Emotional fits scores were also averaged in order to obtain an overall Negative Emotional Fit score (collapsed across Negative Engaged Emotional Fit scores and Negative Disengaged Emotional Fit scores) and an overall Negative Emotional Accuracy score (collapsed across Typical Student Negative Engaged Emotional Fit scores and Typical Student Negative Disengaged Emotional Fit scores).

Table 3.1. Means and Standard Deviations for Emotional Fit and Emotional Accuracy scores, split by generational status

	First-generation		Continuing-generation		Upperclassmen	
	M	*SD*	*M*	*SD*	*M*	*SD*
NEE	2.96	0.80	2.82	0.65	2.98	0.74
NDE	2.99	0.90	2.76	0.69	3.08	0.81
TSNEE	2.88	0.82	2.78	0.76	2.99	0.73
TSNDE	2.95	0.92	2.67	0.71	2.91	0.83
NE	2.98	0.77	2.79	0.60	3.03	0.70
TSNE	2.92	0.81	2.73	0.67	2.95	0.71
EFIT	2.95	0.77	2.76	0.61	3.03	0.69

NEE – Negative Engaged Emotional Fit, NDE – Negative Disengaged Emotional Fit, TSNEE – Typical Student Negative Engaged Emotional Fit, TSNDE – Typical Student Negative Disengaged Emotional Fit, NE - Negative Emotional Fit, TSNE - Typical Student Negative Emotional Fit, EFIT – Overall Negative Emotional Fit

Table 3.2. Reliability analyses results for study variables

Variables	Alpha	Omega
Self-Esteem	0.89	0.90
Belonging	0.90	0.91
Stress	0.86	0.86
Ability Uncertainty	0.82	0.84

Analytic Approach

As a first step, I ran T-tests to establish differences between first- and continuing-generation students on both *emotional fit* and *emotional accuracy* scores. Next, I analyzed zero-order correlations to get a better understanding of the relationships between study variables before moving on to a multi-group Structural Equation Modeling (SEM)

framework. SPSS Version 24 (IBM, 2016) was used in the initial analyses, and Amos Version 20 (Arbuckle, 2011) and maximum likelihood estimation was used for the SEM modeling. Several model fit indices were analyzed to ascertain how well the model(s) reflected the data. These included the chi-square test of model fit, the room mean square of approximation (RMSEA), the comparative fit index (CFI), the standardized room-mean square residual (SRMR), and the Bentler-Bonett (Bentler & Bonett, 1980) Normed Fit Index (NFI). For NFI, a value of over .9 indicates good model fit, while RMSEA (Steiger, 1990) should show values of under 0.08 to indicate good model fit (Cangur & Ercan, 2015). SRMR indicates an acceptable fit when it produces a value smaller than 0.10 (Cangur & Ercan, 2015), while CFI shows acceptable fit when its value is over .90 (Kline, 2005).

Furthermore, to test whether a particular model was invariant across education generational status (i.e., first- vs. continuing generation student groups), I constrained the paths of the model to be equal across the two groups and compared this to the unrestricted model to determine which paths should be freely estimated. I also examined the change in fit indices to see whether the added constraints affected model fit. In order to test for differences between the two groups, I used the "Group Differences" tool provided by the "Stats Tools Package" in AMOS (Gaskin, 2016). A significant z-score indicates significant differences between groups.

Results

Emotional Fit and Emotional Accuracy Among First- vs. Continuing- Generation Students

As a first step, I conducted several t-tests to determine any differences between first- and continuing- generation students on emotional fit and emotional accuracy. No significant differences ($t(250)= -1.47,\ p = .14$) were observed when looking at Negative Engaged

Emotional Fit (NEE) between first-generation ($M = .46$, $SD = .49$) and continuing-generation ($M = .53$, $SD = .40$) students. Similarly, I found no significant differences ($t(250)= .36$, $p = .72$) in terms of Negative Disengaged Emotional Fit (NDE) between first-generation ($M = .72$, $SD = .43$) and continuing-generation ($M = .70$, $SD = .45$) students, although I had previously observed a significant difference in the NDE prompt in the previous research (see Parts I and II above). Typical Student Negative Disengaged Emotional Fit (TSNDE), a measure of emotional accuracy, also did not show significant differences ($t(250)= .16$, $p = .88$) between first-generation ($M = .74$, $SD = .47$) and continuing-generation ($M = .73$, $SD = .39$) students. However, there was a significant differences in terms of Typical Student Negative Engaged Emotional Fit (TSNEE) ($t(250)= -2.60$, $p = .01$), with continuing-generations students showing higher emotional accuracy ($M = .60$, $SD = .42$) compared to first-generation students ($M = .45$, $SD = .45$).

In terms of average Negative Emotional Fit (NE), there were no significant differences ($t(250)= -.69$, $p = .49$) between first-generation ($M = .58$, $SD = .36$) and continuing-generation ($M = .62$, $SD = .35$) students. Likewise, for average Typical Student Negative Emotional Fit (TSNE), there were no significant differences ($t(250)= -1.53$, $p = .13$) between first-generation ($M = .60$, $SD = .36$) and continuing-generation ($M = .67$, $SD = .34$) students.

To summarize, the current study did not reveal any college generational differences between first- and continuing- generation students on actual emotional fit as I had found in the previous research (see Parts I and II above). However, I did find a significant college generational status difference on emotional accuracy in the predicted direction. Continuing-generation students had higher emotional accuracy, but only in the negative engaged prompt

(typical student Negative Engaged Emotional Fit). In the following analyses, I examined whether the implications of emotional fit and emotional accuracy are the same or different for first- and continuing- generation students. These analyses were exploratory and multiple models were tested. Only the model with best fit is shown below. This is a model in which self-esteem and belonging mediated the relationship between emotional fit and emotional accuracy scores and other college outcomes including stress, ability uncertainty, and identity overlap with UCSB.

Initial Analyses

To better understand existing relationships between variables in the data, I again first examined zero-order correlations between all of study variables. These results are presented in Table 3.3. All emotional congruence scores were significantly correlated with each other. The relationship between Negative Engaged Emotional Fit (NEE) and Typical student Negative Engaged Emotional Fit (TSNEE) was significant and had a high effect size ($r = .73$, $p < .01$) which was to be expected. Similarly, Negative Disengaged Emotion Fit (NDE) and Typical student Negative Disengaged Emotional Fit (TSNDE) was strongly positively correlated ($r = .58$, $p < .01$). With the exception of the relationship between TSNDE and NEE which was significant, but weak ($r = .13$, $p < .05$), all other relationships were significant and moderate. Interestingly, however, belonging was only significantly associated with NDE ($r = -.13$, $p < .05$)

Table 3.3. Correlations between study variables

	NEE	TSNEE	NDE	TSNDE	SE	Belonging	Stress	IOS	AU
NEE	1.00								
TSNEE	.58**	1.00							
NDE	.28**	.23**	1.00						
TSNDE	.13*	.30**	.73**	1.00					
SE	-.25**	-.09	-.21**	.02	1.00				
Belonging	-.11	.09	-.13*	-.02	.42**	1.00			
Stress	.30**	.10	.35**	.14*	-.52**	-.30**	1.00		
IOS	-.10	.00	-.04	.00	.28**	.65**	-.24**	1.00	
AU	.15*	-.05	.22**	.04	-.56**	-.35**	.48**	-.26**	1.00

NEE - Negative Engaged Emotional Fit, NDE – Negative Disengaged Emotional Fit, TSNEE - Typical Student Neg. Engaged Emotional Fit; TSNDE - Typical Student Neg. Disengaged Emotional Fit, SE - Self-Esteem, IOS - Inclusion of Other in Self, AU – Ability Uncertainty
**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 3.4. Correlations between study variables, split by generational status

	NEE	TSNEE	NDE	TSNDE	SE	Belonging	Stress	IOS	AU
NEE	1.00	.70**	.35**	.26**	-.24**	-.17*	.35**	-.16*	.24**
TSNEE	.45**	1.00	.30**	.40**	-.17*	.00	.20*	-.04	.09
NDE	.22*	.15	1.00	.75**	-.27**	-.19*	.40**	-.13	.38**
TSNDE	.01	.21*	.73**	1.00	-.08	-.09	.26**	-.05	.20*
SE	-.28**	-.03	-.10	.12	1.00	.45**	-.56**	.30**	-.60**
Belonging	-.11	.09	-.04	.06	.36**	1.00	-.39**	.63**	-.25**
Stress	.25**	-.02	.28**	.01	-.45**	-.19*	1.00	-.34**	.57**
IOS	-.06	-.01	.08	.05	.23*	.65**	-.09	1.00	-.18*
AU	.13	-.11	.00	-.13	-.50**	-.35**	.39**	-.29**	1.00

NEE - Negative Engaged Emotional Fit, NDE – Negative Disengaged Emotional Fit, TSNEE - Typical Student Neg. Engaged Emotional Fit; TSNDE - Typical Student Neg. Disengaged Emotional Fit, SE - Self-Esteem, IOS - Inclusion of Other in Self, AU – Ability Uncertainty
**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Note: Figures shown below the diagonal represent correlations for first-generation students, while figures above the diagonal show correlations for continuing-generation students.

Belonging as a Mediator

Next, I moved to a SEM framework to test whether belonging mediated the relationship between Emotional Fit and Emotional Accuracy (Typical Student Emotional Fit) and our outcome variables (self-esteem, stress, IOS, and ability uncertainty), and whether the model would be different for first-generation students vs. continuing-generation students. Figure 4 presents the model we tested with belonging as the only mediator. While there were significant differences in terms of the relationships between variables between continuing-generation students and first-generation students, the overall model fit was poor even prior to imposing restrictions to test for group differences and after removing non-significant paths ($\chi 2(36) = 178.57$, $p = 0.00$; CFI = 0.82, NFI= 0.79, RMSEA = 0.13, SRMR = 0.091). As such, I moved on to the next model which included both self-esteem and belonging as mediators.

Belonging and Self-Esteem as Mediators

Given the poor fit of the initially hypothesized model, I wanted to see whether adding an additional mediator, specifically self-esteem, would help improve model fit. A large database of previous research has found that self-esteem helps explain many positive outcomes in the educational domain (e.g., Ferkany, 2008; Hattie, 1992; Kernis, 2005) so adding self-esteem as a second mediator was a logical next step. As with the previous model, all paths that were significantly correlated to the outcome variables in at least one of the two groups were initially inserted. After removing the direct paths that were insignificant, the modified model (presented in Figure 5) showed an overall acceptable model fit (χ^2=91.33, df=36, p=.000; CFI=.93; NFI = .90 SRMR=.080; RMSEA=.07 CI 10% [.05, .09]) suggesting

that the two mediator model (including both self-esteem and belonging) is superior to the model including only belonging as a mediator.

Follow-up invariance tests showed that two structural covariances needed to vary freely in order not to negatively impact the model fit. Negative Engaged Emotional Fit and Typical Student Negative Disengaged Emotional Fit needed to be left to freely vary. Essentially what this means is that while all other paths and estimates can be constrained to be equal in both groups, the two Emotional Fit scores have to vary in order for the model to work.

What stands out from the model is that belonging was significantly and positively predicted by emotional accuracy in the Negative Engaged prompt, that is the Typical Student Negative Engaged Emotional Fit (albeit only significantly for continuing-generation students), but negatively predicted by actual emotional fit, that is the Negatively Engaged Emotional fit. Similarly, self-esteem was positively predicted by emotional accuracy in the Negative Disengaged prompt, that is the Typical Student Negative Disengaged Emotional Fit, but negatively predicted by actual emotional fit in the same prompt, the Negatively Disengaged Emotional fit. And this pattern was the same across college generational status (See Figure 5).

Next, I tested the direct-only (non-mediation) effects of Emotional Fit and Emotional Accuracy (i.e. Typical Student Emotional Fit scores) on the outcome variables followed by the indirect-only mediation effects of Emotional Fit and Emotional Accuracy through the two mediators (i.e., belonging and self-esteem). These results are outlined below, separated by the three outcome variables (IOS, stress, and ability uncertainty)

Inclusion of Others in Self

For Inclusion of Others in Self (IOS), there was no significant direct effect of Negative Engaged Emotional Accuracy (i.e., Typical Student Negative Engaged Emotional Fit) and no significant indirect effect of Negative Engaged Emotional Accuracy. However, there were significant negative indirect effects for Negative Engaged Emotional Fit through belonging for continuing-generation students (B = -.74 (.36), 95% CI [-1.44, -.11], $p < .05$, β =- .22 (.10), 95% CI [-.42, -.03], $p < .05$), and first-generation students (B = -.33 (.15), 95% CI [-.75, -.08], $p < .01$, β =- .13 (.05), 95% CI [-.24, -.03], $p < .01$). In other words, IOS is mediated fully by belonging when predicted by Negative Engaged Emotional Fit, such that higher emotional fit in the Negative Engaged prompt reflects lower belonging which leads to lower Inclusion of Others in Self.

On the other hand, IOS is not predicted at all by Emotional Accuracy in the Negative Engaged prompt (i.e., Typical Student Negative Engaged Emotional Fit), Negative Disengaged Emotional Fit, or Emotional Accuracy in the Negative Disengaged prompt (i.e., Typical Student Negative Disengaged Emotional Fit). The lack of relationship between IOS and emotional fit or emotional accuracy in the Negative Disengaged prompt is not entirely surprising given that the Negative Disengaged prompt asked students to think and write about a negative situation that did not involve another individual, and both belonging and IOS are ultimately relational measures.

Stress

In terms of stress, for direct-only non-mediation, stress was not significantly predicted by Negative Engaged Emotional Fit alone (i.e., without the mediating role of self-esteem) for either group of students. However, Negative Disengaged Emotional Fit

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significantly positively predicted stress, for both continuing-generation (B = .51 (.17), 95% CI [.08, 0.82], p < .05, β = .22 (.07), 95% CI [.05, 0.37], p < .01) and first-generation (B = .50 (.22), 95% CI [.05, 0.97], p < .05, β =.22 (.10), 95% CI [.01, 0.38], p < .05) students.

In terms of indirect-only mediation, stress was significantly predicted by Negative Engaged Emotional Fit through self-esteem for both continuing-generation (B = .20 (.10), 95% CI [.02, 0.41], p < .05, β = .08 (.04), 95% CI [.01, 0.15], p < .05) and first-generation (B = .18 (.07), 95% CI [.06, 0.35], p < .01, β = .09 (.04), 95% CI [.03, 0.18], p < .01) students. Stress was also significantly predicted by Negative Disengaged Emotional Fit through self-esteem for both first-generation (B = .29 (.15), 95% CI [.02, 0.64], p < .05, β = .13 (.06), 95% CI [.01, 0.28], p < .05), and continuing-generation (B = .46 (.17), 95% CI [.20, 0.88], p < .01, β = .20 (.07), 95% CI [.15, 0.35], p < .01) students .

Patterns were reversed for emotional accuracy scores. Typical Student Negative Disengaged Emotional Fit (that is NDE Emotional Accuracy) significantly but negatively predicted stress through self-esteem for both first-generation (B = -.29 (.14), 95% CI [-.60, -.05], p < .05, β = -.14 (.06), 95% CI [-.29, -.02], p < .05) and continuing-generation (B = -.36 (.17), 95% CI [-.74, -.06], p < .01, β = -.13 (.07), 95% CI [-.27, -.02], p < .01) students.

To summarize, stress is fully mediated by self-esteem when predicted by Negatively Engaged Emotional Fit scores for both groups, but partially mediated by self-esteem when predicted by Negatively Disengaged Emotional Fit (for both groups). As emotional fit scores increase, self-esteem levels *decrease*, which in turn *increase*s stress levels. Conversely, as emotional accuracy scores *increase* (particularly in the NDE prompt), self-esteem also *increases,* which in turn *lowers* Stress.

Ability Uncertainty

When looking at direct-only non-mediation effects, ability uncertainty (AU) was only positively and significantly predicted by Negative Disengaged Emotional Fit and only for continuing-generation (B = .58 (.17), 95% CI [.29, .84], p < .05, β = .23 (.08), 95% CI [.10, .36], p < .05) students.

For indirect mediation effects, ability uncertainty was significantly and positively indirectly predicted by Negative Disengaged Emotional Fit through self-esteem in both first-generation (B = .34 (.17), 95% CI [.03, .75], p < .05, β = .14 (.08), 95% CI [.02, .34], p < .05), and continuing-generation (B = .60 (.19), 95% CI [.28, 1.06], p < .01, β = .24 (.07), 95% CI [.12, .41], p < .01) students. Ability uncertainty was also significantly and positively indirectly predicted by Negatively Engaged Emotional Fit through belonging, but only for first-generation (B = .30 (.10), 95% CI [.09, .48], p < .01, β = .14 (.05), 95% CI [.05, .23], p < .01) students.

Conversely, ability uncertainty was significantly but negatively predicted by emotional accuracy in the Negative Disengaged prompt (i.e., Typical Student Negative Disengaged Emotional Fit) through self-esteem in both first-generation (B = -.35 (.17), 95% CI [-.59, -.05], p < .05, β = -.16 (.08), 95% CI [-.33, -.02], p < .05), and continuing-generation (B = -.47 (.21), 95% CI [-.89, -.09], p < .01, β = -.16 (.07), 95% CI [-.30, -.03], p < .01) students. Likewise, Emotional Accuracy in the Negative Engaged Prompt (i.e., Typical Student Engaged Emotional Fit) significantly indirectly predicted ability uncertainty through belonging, but only for first-generation (B =- .09 (.07), 95% CI [-.35, -.01], p < .05, β = -.04 (.03), 95% CI [-.15, .00], p < .05) students.

To summarize the mediation results, results indicated that self-esteem partially mediates the relationship between Negative Disengaged Emotional Fit and ability uncertainty for continuing-generation students, but fully mediates the relationship for first-generation students such that increased emotional fit leads to lowered self-esteem which in turn leads to higher ability uncertainty.

Self-esteem also fully mediates the relationship between Negative Disengaged Emotional Accuracy (that is Typical Student Negative Disengaged Emotional Fit) and ability uncertainty for both groups. However, as opposed to actual Negative Disengaged Emotional Fit, higher NDE Emotional Accuracy scores reflect higher self-esteem and in turn lower ability uncertainty.

Additionally, belonging fully mediates the relationship between Negatively Engaged Emotional Fit and ability uncertainty, but only for first-generation students. Specifically, for first-generation students, higher Negatively Engaged Emotional Fit scores show lowered belonging which, in turn, increase ability uncertainty. Finally, belonging fully mediates the relationship between Negative Engaged Emotional Accuracy (that is Typical Student Engaged Emotional Fit) and ability uncertainty for first-generation students but does not mediate the relationship for continuing-generation students. In other words, higher NE Emotional Accuracy scores for first-generation students result in higher belonging which in turn lowers ability uncertainty.
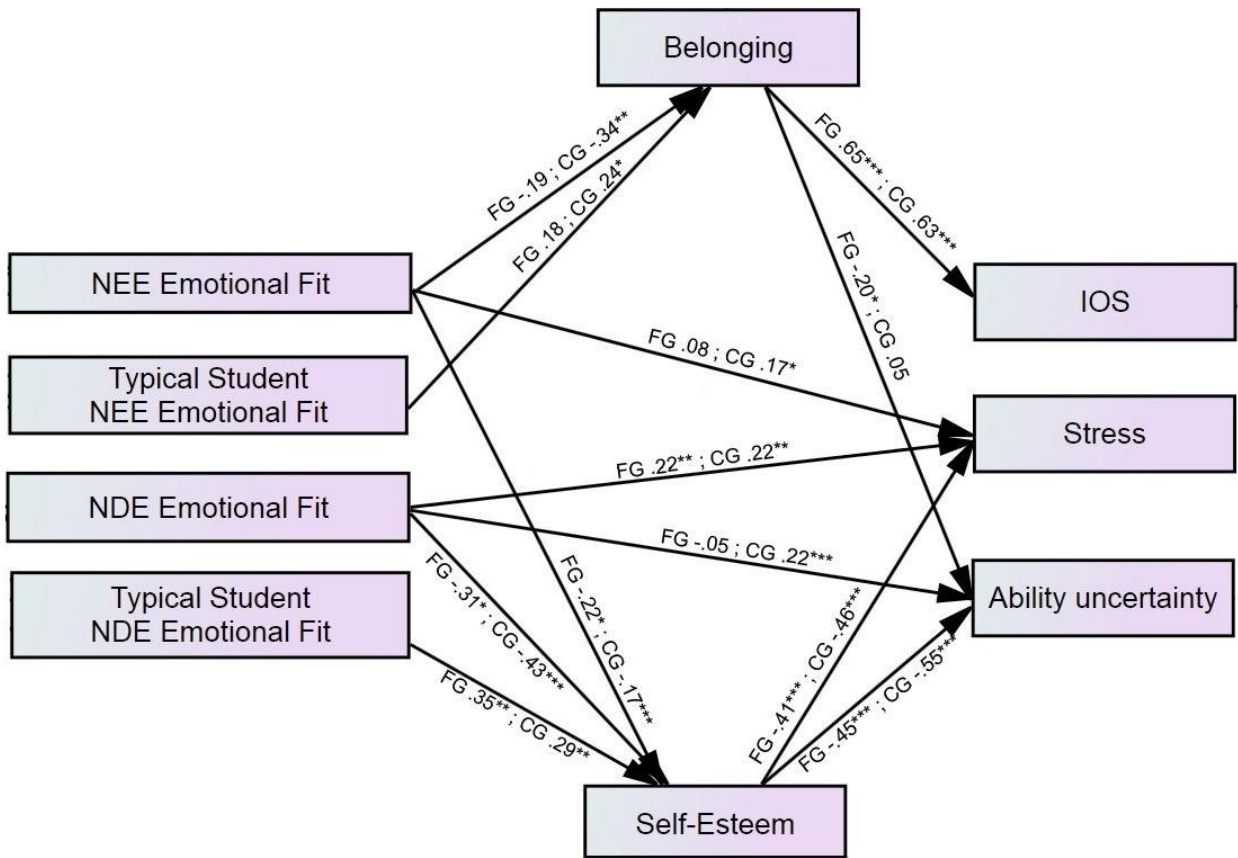
Figure 5. Structural Equation Model used to test the mediation of belonging and self-esteem

Note. In this figure, the values shown are standardized path coefficients. The paths that were not

statistically significant in at least one sample are not shown; FG – First-generation students; CG –

Continuing-generation students; * - *p* <.05, ** - *p* <.01 , *** - *p* <.001.

Table 3.5. Differences in the Paths of the Model between the two groups

Path in the model	Sample				z-score
	First-Generation		Continuing-Generation		
	Estimate	P	Estimate	P	
NDE → Self-Esteem	-0.767	0.023	-1.104	0.000	-0.736
TSNDE → Self-Esteem	0.780	0.009	0.860	0.013	0.176
NEE → Self-Esteem	-0.475	0.018	-0.485	0.042	-0.031
TSNEE → Belonging	0.377	0.086	0.525	0.033	0.449
NEE → Belonging	-0.369	0.064	-0.783	0.003	-1.261
NDE → Stress	0.500	0.010	0.507	0.002	0.026
Self-Esteem → Ability uncertainty	-0.444	0.000	-0.544	0.000	-0.955
Self-Esteem → Stress	-0.377	0.000	-0.418	0.000	-0.400
NEE → Stress	0.163	0.346	0.430	0.019	1.058
NDE → Ability uncertainty	-0.134	0.513	0.576	0.000	2.692***
Belonging → Ability uncertainty	-0.227	0.014	0.061	0.438	2.373**
Belonging →IOS	0.906	0.000	0.940	0.000	0.234

NEE – Negative Engaged Emotional Fit, NDE – Negative Disengaged Emotional Fit, TSNEE –

Typical Student Negative Engaged Emotional Fit; TSNDE – Typical Student Negative Disengaged

Emotional Fit; IOS - Inclusion of Other in Self

Note: *** p-value < 0.01; ** p-value < 0.05

Part III Discussion

Initially I had hypothesized that emotional fit (or lack thereof) might be a psychological mechanism that would help explain how first-generation students experience a culture clash on university campuses. Although some differences between emotional fit among first- and continuing- generation freshmen were observed in Parts I and II of the current research, there was no evidence of emotional acculturation over the entire first year of college, or for the benefits of emotional fit. Given that emotional fit seems to matter less in terms of student outcomes than had originally predicted, an additional study (Part III) was carried out in order to examine the benefits of *emotional accuracy,* or students' ability to read and understand the emotional patterns of "majority" or "host" culture students (that is continuing-generation upperclassmen).

Interestingly, in the current study, there were no significant differences in emotional fit between first- and continuing- generation students in either the Negative Engaged or Negative Disengaged prompt, as we had previously found in sections I and II. However, significant differences were observed in terms of emotional accuracy. In the Negative Engaged prompt, first-generation students had lower emotional accuracy compared to continuing-generation students.

The most interesting results were in regard to the effects of emotional fit vs. emotional accuracy in terms of self-esteem, belonging, inclusion of others in self, stress and ability uncertainty. As expected, emotional accuracy predicted positive student outcomes. Broadly speaking, increased emotional accuracy (in the two prompts: engaged and disengaged) was either directly associated with increased IOS and decreased stress and Ability Uncertainty, or indirectly associated with these positive outcomes through the mediating roles of belonging and/or self-esteem.

However, a surprise finding was that higher emotional fit scores were associated with poorer student outcomes for both first- and continuing-generation students. Either directly, or indirectly (through self-esteem and belonging), higher emotional fit (in the two prompts: engaged and disengaged) predicted lower IOS and increased stress and increased ability uncertainty. Further research needs to be conducted to fully make sense of these findings, especially considering that emotional fit and emotional accuracy are moderately to highly correlated with each other. One possibility is that in certain situations, emotional fit may backfire because students might feel like everyone else and like they are responding to situations like everyone else but for one reason or another, they are still not succeeding or fitting in college. Another possibility is that in a culture that emphasizes uniqueness so much (e.g., Kim & Markus, 1999), feeling like everyone else may not feel as good as originally predicted. Another possibility is the current results were obtained because only negative prompts were presented to students whereas past studies using the Emotional Profile Questionnaire included both positively and negatively valanced prompts. Perhaps "majority" culture emotions are predominantly negative (i.e., the disillusioned senior) and that is why high emotional fit scores were obtained.

Although it remains unclear why emotional fit may have negative consequences for student outcomes in the current study, one big takeaway from the present research is that emotional accuracy is lower for first-generation students and this may have implications for academic and psychological outcomes in college (e.g., ability uncertainty or stress). First-generation students seem to have a more difficult time reading and understanding the emotions of "majority" or "host" culture college students (that is continuing-generation upperclassmen) which makes sense given that the two groups of students were most likely

socialized in very different SES cultures. The upside to these findings is that students can be taught to better understand majority culture emotions (thereby increasing their emotional accuracy) (e.g., Ashkanasy & Dasborough, 2003; Pool & Qualter, 2012) so this provides space for the development of a potentially useful intervention that could supplement other interventions designed to help first-generation students as well as other minority student groups succeed in college.

Part IV

Social and Academic Belonging

A Note on Part IV

In the original dissertation proposal, belonging played a central role. Specifically, I had predicted that emotional fit would be associated with increased belonging which in turn would have further downstream implications for other positive student outcomes. Somewhat surprisingly, belonging, did not end up being as important as originally predicted. These findings (or lack thereof) sparked many new questions about the nature of belonging and specifically about how we, as a field, conceptualize, measure and manipulate belonging. Section IV was inspired by these questions.

This study will soon be submitted for publication and original formatting has mostly been retained here.

The study will be submitted for publication under the following name:

A Tale of Two Belongings: Social and Academic Belonging Differentially Shape Academic and Psychological Outcomes Among University Students

And with the following authorship:

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Abstract

The benefits of *belonging* in academic settings are well established. Students achieve better academic, physical, and psychological outcomes when they feel a subjective sense of belonging in school. However, school belonging is a complex and multidimensional concept. Classic theories of school persistence (e.g., Tinto, 1993) have distinguished between *academic* and *social* belonging. However, both empirical research and applied work has often conflated these two facets of belonging. The current study used latent class analysis with a diverse sample of undergraduates (N= 837) to determine whether distinct profiles of belonging exist on a college campus and whether these different classes of belonging predict academic and psychological outcomes. Four distinct classes naturally emerged in our sample: a *High Social, High Academic* belonging class (35%), a *Low Social, High Academic* belonging class (15%), a *High Social, Low Academic* belonging class (38%), and a *Low Social, Low Academic* belonging class (12%). As expected, students in the *High Social, High Academic* class had the statistically best psychological and academic outcomes (GPA, self-esteem, and stress), and students in the *Low Social, Low Academic* class had statistically the worst outcomes. Interestingly, students in the *Low Social, High Academic* class outperformed students in the *High Social, Low Academic* class both academically and psychologically. Results suggest that in a school context, a sense of academic belonging is more important than a sense of social belonging, in terms of both academic and psychological outcomes.

*Keywords: school belonging, social belonging, academic belonging, latent class analysis

A Tale of Two Belongings: Social and Academic Belonging Differentially Shape Academic and Psychological Outcomes Among University Students

I long, as does every human being, to be at home wherever I find myself. -Maya Angelou

Despite the progress that has been made in recent decades, the American system of higher education is still far from equitable. Students of color and students from lower socioeconomic backgrounds tend to perform worse academically and are, overall, less likely to graduate from college. For example, recent data from the National Center for Education Statistics shows that 45% of white students enrolled at four-year institutions graduate within four years, but only 21 % of black students graduate within the same timeframe (2020). School reforms focused on changing the objective qualities of environments (i.e., opportunities and resources for numerically underrepresented students) or of individuals (i.e., improving academic skills) have contributed to a narrowing educational gap. But, these efforts have been far from sufficient. In the past two decades, positive outcomes have been achieved by supplementing these traditional reforms with psychological interventions (i.e., wise interventions or lay-theory interventions) designed to simultaneously address the subjective experience of disadvantaged students (i.e., group-based fears about belonging, intellectual potential, and/or cultural fit) (for reviews see Walton, 2014; Walton & Wilson, 2018). Among these efforts, one psychological construct that has received much empirical and theoretical attention is *sense of school belonging.* Furthermore, interventions designed to foster a sense of school belonging have been found to be tremendously effective in applied settings: increasing subjective and objective measures of school achievement such as happiness, motivation, retention rates, and grade point averages (e.g., Cohen & Garcia, 2008; Walton et al., 2015; Walton & Cohen, 2011).

School belonging is a complex and multidimensional concept that extends beyond specific interpersonal relationships within the school context. Different facets, or types of belonging, contribute to an overall sense of fit in school. Specifically, classic theories of school persistence (e.g., Tinto, 1993; Bean, 1980) have distinguished between *academic belonging*, a student's subjective assessment of his or her ability to meet academic demands, and *social belonging,* a student's subjective interpretation of the quality of his or her social embeddedness in school. Despite this theoretical distinction, past research has often conflated these facets of belonging. As a result, it is unclear how these two facets of belonging predict positive school outcomes independently and/or interactively.

In the present research, we test whether these conceptually distinct types of belonging are empirically distinguishable. Then we determine how each type of belonging or combination of types of belonging, is associated with different measures of school outcomes (i.e., academic (GPA) and psychological (self-esteem and stress) outcomes) among college students. Towards this goal, we use an innovative statistical technique (latent class analysis; Nylund-Gibson & Choi, 2018) that allows us to go beyond a simple binary comparison between social and academic belonging, to examine the naturally existing profiles or classes of belonging that students exhibit on a college campus and furthermore determine how these different classes or profiles of belonging are associated with school outcomes. Finally, we investigate whether groups that are typically underrepresented on college campuses (i.e., ethnic minorities and first-generation students) are more or less likely to belong to certain classes of belonging.

Belonging in Schools

In his classic piece, *Nature of Love*, Harry Harlow wrote that "*certainly man cannot live by milk alone* (1958)." This succinct phrase nicely summarizes decades of findings, in both psychology and related fields, on the nature of belonging. Fulfilling the need to belong is both central to the human experience and essential for survival itself - not far behind the need for food and water (or milk, for that matter) (Ainsworth, 1989; Bowlby,1988; Baumeister & Leary, 1995; Maslow, 1954). When belonging needs are thwarted, individuals suffer a panoply of dire physical and mental health outcomes including, among other things, *depression* (Cacioppo et al., 2006), *substance abuse* (Åkerlind & Hörnquist,1992), and even a *shortened life span* (Perissinotto, Stijacic, & Covinsky, 2012). Conversely, a sense of belonging both inoculates against negative outcomes, and promotes thriving. Belonging is associated with positive outcomes such as *lowered anxiety and depression* (Cohen & Wills, 1985), *trust* (Hillebrant, Sebastian, & Blakemore, 2011), *self*-worth and *self-esteem* (Gailliot & Baumeister, 2007; Leary et al., 1998), *happiness* (Myers & Diener, 1995) and *meaning in life* (Baumeister, 1991; Lambert et. al., 2013).

A sense of belonging plays an essential role in the school context as well, and students, at all levels of education, achieve better academic, psychological, and physical outcomes when they experience a sense of belonging in school (Anderman & Freeman, 2004; Goodenow & Grady, 1993; Osterman, 2000; Pittman & Richmond, 2007; also see Walton & Brady, 2017 and Walton & Wilson, 2018 for reviews). A sense of belonging is so critical in the school context that, for many students, it will determine how far they will pursue their education. For example, in one study, Yeager and colleagues (2016) looked at the importance of subjective belonging, alongside a constellation of other school relevant factors

(personality, test anxiety, grit, self-control, growth (vs. fixed) mindset, and intelligence) and found that belonging was the most important factor in determining college enrollment rates among a group of high performing students from an urban charter school network. Because a sense of belonging is so important in the school context, a number of belonging interventions, designed to bolster students' sense of belonging, have gained tremendous popularity on school campuses nationwide in the past several decades (Allen & Kern 2020; Yeager & Walton, 2011). Stacking empirical evidence suggests that these short, cost effective, and easily implemented interventions have disproportionately large benefits on student outcomes (Kenthirarajah, & Walton, 2015; Walton, 2014; Walton & Wilson, 2018). As a whole, many such interventions, if timed correctly, contribute to improved life outcomes into adulthood, long after school has come to an end (e.g., Brady, Walton, Jarvis, & Cohen, 2016).

Although we now know that a perception of fit between students and their school environment is key to positive school outcomes, and that fostering a sense of belonging is both possible and tremendously beneficial, one question that remains unanswered is precisely what type of belonging, or combination of types of belonging, mediates these processes. In other words, there has yet to be a systematic analysis on how *academic belonging* (a student's subjective assessment of his or her ability to meet academic demands) or *social belonging (*a student's subjective interpretation of the quality of his or her social embeddedness in school) independently or interactively predict school outcomes. Answering this question is important from an applied perspective as previous research has found that individual, but well-targeted interventions are more effective than kitchen-sink approaches in which multiple interventions are administered simultaneously (e.g., Yeager et. al., 2016).

A Tale of Two Belongings: Social and Academic Belonging in Schools

By and large, past empirical research (and interventions) investigating school belonging have employed experimental manipulations that conflate these two conceptually different types of school belonging (i.e., academic and social belonging). For instance, a popular belonging experimental manipulation, aimed at teaching neophyte students that belonging is problematic for most students at the beginning of a new school but improves with time, simultaneously exposes incoming students with stories from multiple upperclassmen, some of who describe struggles with social belonging (e.g., *" When I first got to [school], I worried I was different from other students at [school]. Everyone else seemed so certain that they were right for [school], I wasn't sure I fit in. . .*), and others who describe initial struggles with academic belonging (e.g., I *didn't go to a very good high school, and I worried that my high school courses had not prepared me well for college. . . .*)(e.g., Walton & Cohen, 2011; Yeaager et. al., 2016). Similarly, popular scales measuring school belonging often ask questions relating to both social and academic facets of belonging (e.g., "*Other students here like me the way I am*" and "*People here know I can do good work;"* Psychological Sense of School Membership, Goodenow, 1993; or "*I get along well with people at [school]*" and "*I think in the same way as do people who do well at [school],*" Sense of Social and Academic Fit, Walton & Cohen, 2007).

This approach is not altogether surprising given that schools are institutions in which academic and social dimensions are inherently intertwined. This is especially true during the college years when factors related to both social and academic domains increase in salience, as many students leave their home, family, and childhood friends for the first time, and enter an environment that places increased emphasis on scholastic achievement (Pittman &

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Richmond, 2007). As a result, one would expect that to an extent, *both* a sense of academic

and social belonging are important for school outcomes. And indeed, independent lines of

research (and theorizing) point to the benefit of *both* types of belonging. A long history of

research on *self-efficacy*, for example, has found that a student's judgement of his or her

abilities in a school context, irrelevant of accuracy, is related to choice of activities, effort,

and persistence, and therefore predictive of outcomes in the domain (Bandura, 1986; Locke

& Latham, 1990; Weiner, 1985). Students with low academic belonging, who don't feel like

they have *the chops* to succeed in school, are likely to make choices that ultimately

undermine their success. According to the *Expectancy-Value Theory* (Atkinson, 1964;

Muenks et. al., 2018; Wigfield et. al., 2016), if students have low expectations for their

ability to fit in academically, they won't even be motivated to try (Berndt & Miller, 1990:

Trautwein et al., 2006). And research on the *imposter syndrome* has found that even

extremely high achieving students who worry about their academic belonging, suffer these

negative consequences, despite objective abilities well above-average (Clance & Imes, 1978;

Parkman, 2016). Similarly, a rich tradition of research on *stereotype-threat* has found that

stereotypes of lower ability among certain groups of students (e.g., first-generation students,

ethnic minorities) act as psychological threats that cause students to question their abilities

and academic belonging, which ultimately undermines their performance and well-being in

school contexts (Steele, 1997; Steele & Aronson, 1995).

There is likewise literature that points to the importance of a subjective sense of

social belonging in predicting positive school outcomes. As early as the 60s, Maslow (1962)

theorized that the need for social belonging takes precedence over the needs for knowledge

and understanding in the psychological hierarchy. The importance of social belonging has

also been highlighted, in more recent decades, in research based on the *Sociometer Theory* (Baumeister, 2000; Leary, 2005), which proposes that self-esteem is a sociometer, or internal measure (akin to a gas gauge), of how one is connecting with others (Leary & Downs, 1995). Individuals with a low sense of belonging experience low self-esteem which, in turn, has negative downstream effects on thoughts, emotions, and behaviors that can negatively impact school outcomes. A series of studies found that self-esteem is intimately tied to self-presentation patterns which may be important in a school context; individuals with high self-esteem are oriented toward self-enhancement so they take chances, and capitalize on their strengths in order to stand out in a positive way. Individuals with low self-esteem, however, tend to pull back in order to avoid standing out in negative ways (Baumeister, Ttice, & Hutton, 1989). These behavioral patterns have implications for academic and psychological outcomes in school. Related studies have shown that social exclusion, which results in a lowered sense of social belonging, even directly reduces reasoning abilities. In one study, for instance, excluded participants obtained lower scores on intelligence tests, and in another study, excluded participants showed impairments in a reading comprehension task (Baumeister, Twenge, & Nuss, 2002). Finally, there is also substantial research and theorizing pointing to the concurrent importance of both types of belonging. Research based in the tradition of *Self-Determination Theory*, for examples, finds that social belonging (i.e., relatedness) and academic belonging (i.e., competence), along with autonomy, work together to contribute to school outcomes (Ryan & Deci, 2016).

The Present Research

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The present study employed a correlational design in order to gauge the naturally occurring subjective experiences of belonging among students on a college campus. A survey was administered to students at a large, diverse, and prestigious public university. The survey measured students' subjective sense of social belonging (Walton & Cohen, 2007) and academic belonging (Lewis & Hodges, 2015), as well as subjective psychological outcomes (i.e., stress and self-esteem). We also analyzed an objective measure of academic achievement: students' cumulative grade point average (GPA), which was obtained directly from the university's registrar office with the consent of students.

Latent class analysis (LCA; Nylund-Gibson & Choi, 2018) was used to analyze the data. Latent class analysis is an innovative modeling technique that groups individuals into latent "classes," "profiles," or "clusters" based on response patterns to a set of indicator variables (in this case, responses to questions about perceived/subjective social and academic belonging). The LCA approach was used to establish the number and type of combinations of social and academic belonging (ie., belonging classes) that exist naturally in our student population. After belonging classes were determined, analyses were performed to further explore how class membership is predictive of subjective psychological outcomes (stress and self-esteem) and an objective academic outcome (GPA). A finite mixture modeling approach, such as latent class analysis, can provide information about how the different types of belonging (social and academic) are subjectively experienced by students that may be obscured by the typical additive or cumulative approach to the measurement of belonging. Specifically, a latent class approach can illustrate how social and academic belonging may work together or separately, to influence academic and psychological outcomes on school campuses.

In summary, we used LCA to examine whether students naturally form distinctive classes or clusters based on different combinations of conceptually different types of belongingness—academic and social. Then, we examined how each cluster or class of belonging predicts psychological and academic school outcomes. Finally, we investigated if and how demographic characteristics such as student generational status (first-generation vs. continuing-generation students) and ethnicity are predictive of group membership or belonging class. We chose to look specifically at generational status and ethnicity because these two demographic variables have been associated with differential school outcomes in much past empirical research (Cook et. al., 2012; Croizet et. al., 2001; Sherman et. al., 2013).

Method

Participants

Participants were undergraduate students at a large, diverse, and prestigious public university in South-Central California. They were recruited for the study in three separate ways: (1) through the subject pools of the Psychology and Education departments, (2) through an email advertising the study sent out by the university's registrar office, and (3) through recruitment posters placed around campus, especially in the dining halls, dormitory common room areas, and poster boards in common outside spaces. Students received either course credit or money ($10) as compensation. All participants were tested individually and in private on a computer or tablet, either in a laboratory in the Psychology department, or in common areas of student dormitories. Students provided their student IDs in order to match their survey responses to official transcripts obtained from the university's registrar office. Transcripts were obtained only with students' consent, and once survey responses were matched to GPAs, all identifying information was removed from the data file, and data

analysis proceeded without any identifying information present. The entire data collection period spanned one and a half years and was approved by the hosting university's internal review board (IRB). GPA data was obtained in the Winter quarter of the second year of the study, thus we had cumulative GPAs for a minimum of an entire year of college for all students. In other words, cumulative GPAs covered one year of study for participants who were freshmen at the time of study completion, cumulative GPAs covered two years for participants who were sophomores at the time of study completion, and so forth.

A total of 837 students took part in the study (age $M = 19.09$, $SD = 6.12$). Four hundred and sixty-five students were freshman (first-year students), $n = 155$ students were sophomores (second-year students), $n = 147$ students were juniors (third-year students), $n = 33$ students were seniors (fourth-year students), and $n = 34$ students were missing data on college standing. Five hundred and ninety-eight identified as female, $n = 238$ identified as male, and $n = 1$ refused to report their gender or chose the "other" option. Two hundred and fifty nine students identified as White or Caucasian/European-American, $n = 226$ identified as Asian or Asian-American, $n = 243$ identified as Hispanic or Latinx-American, $n = 22$ identified as Black or African-American, $n = 4$ identified as Native-American, $n = 10$ identified as Native Pacific-Islander, $n = 71$ students chose the "other" option, and 2 participants did not respond to the prompt.

Students additionally reported on their parent(s)' highest level(s) of education. Parental education level was used to assign participants "first-generation" or "continuing-generation" college status. Students who had at least one parent with a college degree from a four-year institution (had achieved a bachelor's degree or more) were considered to be "continuing-generation" students. All other students were considered to be "first-generation"

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students. These criteria for assigning "first-generation" and "continuing-generation" status has been common in past research comparing first- and continuing- generation students (e.g., Stephens et. al., 2014). According to these criteria, our sample consisted of $n = 400$ first-generation students, and $n = 437$ continuing-generation students.

Measures

The measures used for the current study were extracted from a larger survey looking at diverse outcomes among college students. The following measures will be talked about in order starting with indicators of class, covariates (alternatively called predictor variables in a non LCA context), and then distal outcomes (alternatively called dependent variables/outcome variables in a non LCA context). Means and standard deviations of the variables utilized in the study can be found in Table 1 in Supplemental Material.

Latent Class Indicators

Social Belonging. Social Belonging was measured using four items. These four latent class indicators were adapted from the Walton & Cohen (2007) Sense of Social and Academic Fit Scale. Participants indicated the extent to which they agree or disagree with statements about what UCSB is like for them on a seven-point Likert Scale (1=*strongly disagree* to 7=*strongly agree;* e.g., "*I get along well with people at UCSB,*" "*People at UCSB like me*"). Two items were reverse-coded so that higher scores are indicative of greater social belonging. In order to use the items in the Latent Class modeling context, the seven item Likert categories were trichotomized. Thus, responses of 1, 2, or 3 were coded as 1 = "*disagree*", responses of 4 were coded as 2 = "*neutral*", and responses of 5, 6, or 7 were coded as 3 = "*agree.*"

Academic Belonging. Academic Belonging was measured using four items. These four latent class indicators were adapted from the Lewis & Hodges (2015) Ability Uncertainty Scale. Whereas the original scale was designed to measure perceived ability to succeed in a specific academic major, we adapted the items to gauge perceived ability to succeed in college (at UCSB) more generally. Participants were asked the extent to which they agree with statements about what UCSB is like for them on a seven-point Likert Scale (1=*strongly disagree* to 7=*strongly agree*; e.g., "*I often wonder if I have what it takes to succeed at UCSB,*" "*I have no doubt that I possess or can acquire the abilities UCSB requires*"). Two items were reverse-coded so that higher scores are indicative of greater academic belonging. Likewise, as above, in order to use the items in the Latent Class modeling context, the seven item Likert categories were trichotomized. Thus, responses of 1, 2, or 3 were coded as 1 = "*disagree,*" responses of 4 were coded as 2 = "*neutral,*" and responses of 5, 6, or 7 were coded as 3 = "*agree.*"

Covariate Variables

Two demographic variables were included as covariate variables into the current model. In the LCA context, covariate variables refer to the variables that are tested to see whether they *predict* group membership. The following variables were included as covariates in the current research: *Generation Status (i.e., first-generation vs. continuing-generation students), Asian (i.e., Asian vs. non-Asian), Latinx (i.e., Latinx vs. non-Latinx),* and *White (i.e., White vs. non-White)*. These variables were included in the current study because both college generational status (i.e., first-generation vs. continuing-generation students) and ethnicity have been found to be related to school outcomes in past research (Cook et. al., 2012; Croizet et. al., 2001; Sherman et. al., 2013). In the current study, we tested whether

these demographic factors are predictive of which belonging class (cluster or profile) students belong to.

Distal Variables: **Stress, Self-Esteem, and GPA**

The dependent/outcome variables, typically referred to as distal variables in the LCA context, included in the current study were two psychological variables (i.e., stress and self-esteem) and one objective academic variable (cumulative grade point average/GPA).

Stress was measured using the ten-item Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1994). Participants were asked how often they felt or thought a certain way in the past month/30-days on a seven-point Likert Scale (1=*never* to 7=*very often*; e.g., "*In the last month, how often have you felt that you were unable to control the important things in your life,*" "*In the last month, how often have you felt nervous and stressed?").* Four items were reverse coded so that higher scores are indicative of higher levels of stress experienced in the past month. Internal consistency was adequate for this sample $\alpha = 70$.

Self-esteem was measured using the ten-item Rosenberg (1965) Self-Esteem Scale. Participants were asked to think about how much they agreed or disagreed with a list of statements that could potentially describe them. Responses were reported using a seven-point Likert Scale (1=*strongly disagree* to 7=*strongly agree*; e.g., "*On the whole I am satisfied with myself,*" "*All in all, I am inclined to feel that I am a failure*"). Five items were reverse coded so that higher scores indicate greater self-esteem. Internal consistency was excellent for this sample $\alpha = 90$.

Finally, official transcripts were obtained (with student consent) from the university's registrar office to assess objective academic outcomes. Transcripts were obtained in the

Winter quarter of the second year of the study. Cumulative student *GPAs* were used as an outcome for the current study.

Analytic Overview

All preliminary analyses were performed using SPSS v. 27. Mixture modeling was performed using Mplus, Version 8.1 (Muthén & Muthén, 1998–2017). Analyses began with the LCA (class enumeration to determine the naturally occurring number of different profiles of classes of belonging; Nylund-Gibson & Choi, 2018) followed by the addition of covariates (the demographic predictor variables) and distal outcomes (the dependent or outcome variables) using the manual 3-step method (Asparouhov & Muthén, 2014).

Class Enumeration. Latent class analysis (LCA) using full information maximum likelihood (Rubin, 1987) was used to determine the number of underlying latent classes (clusters or profiles) of belonging naturally present among our sample of college students. Random starts were used to verify that the solution converged on the global maximum rather than a local maximum. Models were analyzed following guidelines outlined by Masyn (2013) and Nylund-Gibson and Choi (2018) which entail a stepwise approach in which number of classes are increased by one until multiple fit indices suggest a best-fitting model.

Several current recommended fit statistics for choosing the best fitting model were utilized (Nylund-Gibson & Choi, 2018; Nylund et al., 2007; Masyn, 2013). These included four information criteria and two likelihood-based tests. The information criteria tests were the approximate weight of evidence (AWE; Banfield & Raftery, 1993), the constant Akaike information criterion (CAIC; Bozdogan, 1987), the Bayesian information criterion (BIC; Schwartz, 1978) and the sample size adjusted Bayesian information criterion (SABIC;

Sclove,1987). For the information criterion, the lowest values or when the return has diminished indicates the best fitting model.

The likelihood ratio tests compare two subsequent models (i.e., the K class model to the $K - 1$ class model). When the K class model compared to the $K - 1$ class model results in a significant p-value, this indicates that model fit is not significantly improved (Nylund-Gibson & Choi, 2018). Tests considered in the current study consisted of the bootstrapped likelihood ratio test (BLRT; McLachlan & Peel, 2000) and the Vuong-Lo-Mendell-Rubin adjusted likelihood ratio test (VLMR-LRT; Lo et al., 2001).

Class homogeneity, class separation, and substantive meaning of individual classes were also taken into consideration when determining the final model (Nylund-Gibson & Choi, 2018). Entropy was also examined to check classification accuracy but was not used as a fit statistic (Nylund-Gibson & Choi, 2018).

Manual 3-Step. Upon selection of a final class-solution, auxiliary variables including the covariate (x) variables (ethnicity and generational-status) and distal (y) variables (stress, self-esteem, and GPA) were included using the manual 3-step approach as represented in the conceptual model (see Figure 1). This approach was utilized as it permits for simultaneous modeling of both covariates (i.e., predictor variables, x) and distals (i.e., outcome variables, y) (Asparouhov & Muthén, 2014, Nylund-Gibson et al., 2019) and prevents potential shifting of the latent classes (Asparouhov, Muthén & Muthén, 2015). Specifically, mean distal outcomes (i.e., GPA, self-esteem, and stress) were evaluated by class via the omnibus Wald test followed by pairwise comparisons. Thus, the distals (y) were regressed onto the latent variable C, which was regressed onto the covariates (x) (e.g., ethnicity, generation status etc.) by multinomial logistic regression $x \rightarrow C \rightarrow y$.

Direct Regression. Additionally, the distal/outcome variables were regressed directly on the covariate/predictor variables in order to determine the relationship between generational status and ethnicity on school outcomes above and beyond class membership. There is only one estimate for each of these direct relationships as they are not estimated by class. In other words, as well as the relationship described above, the direct relationship between the outcome variables (y) and the predictor variables (x) was estimated ($x{\rightarrow}y$).

Figure 4.1. Conceptual model of the Social and Academic Belonging mixture
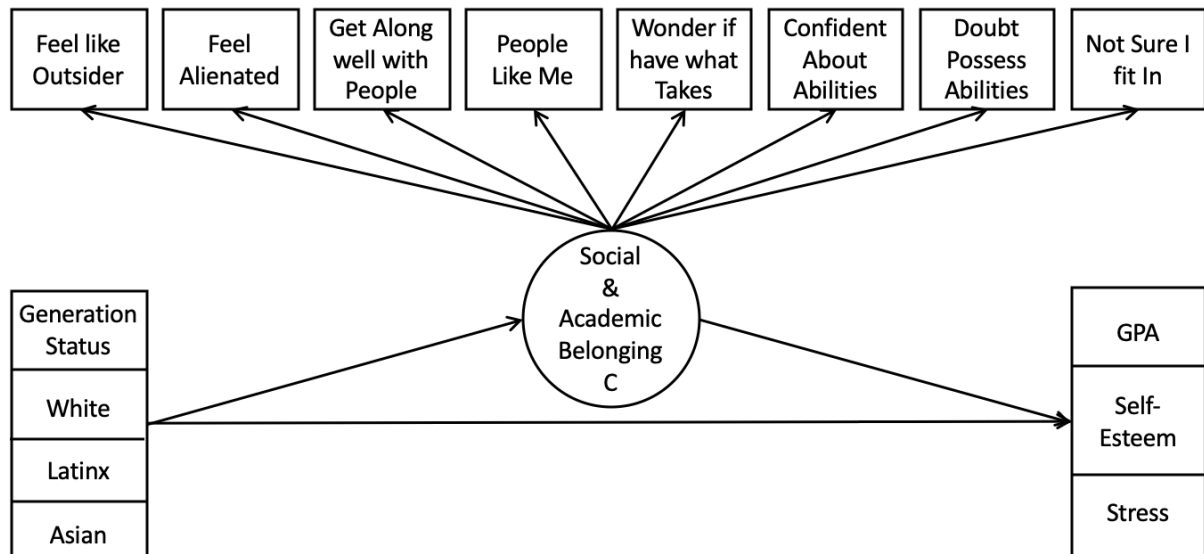
Results

Results of the class enumeration and the emergent classes (clusters or profiles of belonging) will be discussed first, followed by a discussion of the direct effects of the distals (outcome variables) regressed onto the covariates (predictor variables). Next the covariate multinomial logistic regression results followed by the overall (omnibus) distal mean differences and subsequent pairwise comparisons are considered.

Table 4.1. Descriptive statistics

Variable Name	Item Label	(N=837)	
		μ	sd
Latent Class Indicators			
Social Belonging:			
SB2R	*I Feel Like an Outsider*	2.40	.85
SB4R	*I Feel Alienated*	2.58	.73
SB7	*I Get Along Well with People*	2.80	.51
SB11	*People Like Me*	2.70	.57
Academic Belonging:			
AB2R	*I Wonder if I Have What it Takes*	1.76	.92
AB3	*I am Confident About My Abilities*	2.31	.83
AB5	*No Doubt I Can Possess Abilities*	2.50	.76
AB6R	*I'm Not Sure if I Fit In*	2.22	.88
Covariates:			
Generation Status	(Cont. Gen = 1, First Gen = 0)	.52	.50
Asian vs. non-Asian	(Asian = 1, non-Asian = 0)	.27	.44
Latinx vs. non-Latinx	(Latinx = 1, non-Latinx = 0)	.29	.45
White vs. non-White	(White = 1, non-White = 0)	.31	.46
Distals:			
GPA		3.14	.52
Self Esteem		4.93	1.20
Stress		4.19	.83

Note. Means and standard deviations of social and academic belonging are based on the trichotomized response categories from 1 = disagree to 3 = agree. R = reverse coded.

Belonging LCA. Class enumeration was conducted on the 4 social and 4 academic belonging indicators beginning with a 1 – class solution and increasing up to a 6 – class solution. Fit index information can be found in Table 2 of Supplemental Material. The BIC and CAIC supported the 4-class solution as values decreased with the addition of classes up to the 4-class solution, at which point, they began to increase in value. The AWE had the lowest value at class 3 while the SABIC had the lowest value at class 6. The VLMR-LRT became non-significant at the 5th class also supporting the 4-class solution. The BLRT did not become non-significant thus did not support any class solution. Since the BIC, CAIC, and the VLMR-LRT all supported the 4-class solution, it was chosen as the best fitting model. The entropy of the 4-class solution was .812 also indicating excellent classification accuracy.

To summarize, four unique and distinctive classes of belonging emerged from our student sample. Put differently, the university students in the current study exhibited one of

four distinct profiles of belonging which all represent different combinations of social and academic belonging. The four belonging classes (clusters of belonging or profiles of belonging) that emerged in our sample of students were labelled as follows: class 1 = *High Social, High Academic* (i.e., students with high social and high academic belonging), class 2 = *Low Social, High Academic* (i.e., students with low social and high academic belonging), class 3 = *High Social, Low Academic* (i.e., students with high social and low academic belonging) and class 4 = *Low Social, Low Academic* (i.e., students with low social and low academic belonging) (See Figure 2). See Figure 1 in Supplemental Material. The most common belonging profile, or our largest belonging class, was the *High Social, Low Academic Class*, which characterized 38% of students in our sample ($n = 316$). Encouragingly, the second most common belonging class was the *High Social, High Academic* class, which characterized 35% of students in our sample ($n = 291$). The *Low Social, High Academic* class and *Low Social, Low Academic* class were both relatively smaller classes characterizing 15% ($n = 129$) and 12% ($n = 99$) of our student sample, respectively. These results show that students do not simply have high or low belonging, but that social and academic belonging interact and unique profiles of belonging are present in an existing student population. It is also interesting to note that about half of students struggle with their academic belonging whereas only 27% of students report experiencing low social belonging.

Figure 4.2. Probability plots of the four-class model
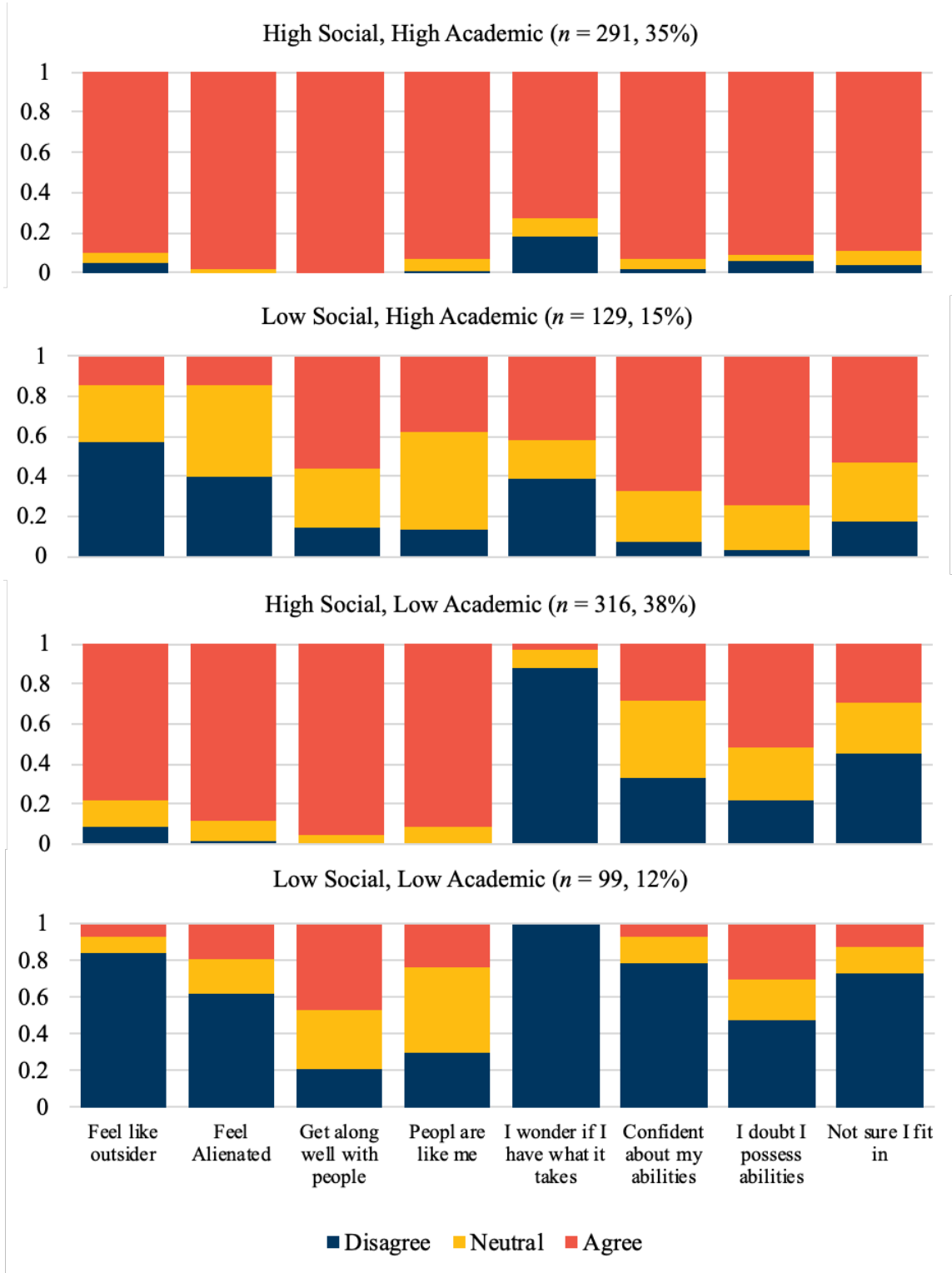
Regression Results. Results for the direct overall regression (above and beyond class membership) analyses were as follows: GPA was significantly predicted by generation status $b = .29$, $SE = .05$, $p < .001$ but not for White, Latinx, or Asian status students. This suggests that continuing-generation students score .29 points higher in GPA than first-generation students and that there are no ethnic difference in GPA for the White vs. non-White, Latinx vs. non-Latinx and Asian vs. non-Asian students comparisons. The GPA differences between first- and continuing-generation students are in line with previous study findings, however, the lack of ethnic differences in GPA in the current study diverge from much past research.

Self-esteem was significantly predicted by Asian status $b = -.33$, $SE = .11$, $p = .002$ but not by generation status, White status, or Latinx status. This indicates that those who identify as Asian self-report on average .33 points less on self-esteem than those who don't identify as Asian and that there is no difference in self esteem scores for generation, White, or Lateinx status. The finding that Asian and Asian-American students scored lower on self-esteem is not surprising given past research findings that suggest that Asians tend to place less emphasis on self-esteem compared to other cultural groups (Heine, 2003). Stress was not significantly predicted by Generation, White, Latinx, or Asian status. This indicates that, on average, there was no difference in scores of stress between first-generation vs. continuing-generation, White vs. non-White, Latinx vs. non-Latinx, and Asian vs. non-Asian students.

Covariates. Covariate results for all pairwise comparisons were considered along with frequencies of ethnic breakdown by generation status for each belonging class.

Covariate results for generation status indicated that continuing-generation students (compared to first-generation students) were more likely to be represented in the *High Social,*

High Academic class than the *Low Social, High Academic* class (*logit* = 1.04, *SE* = .28, *p*

< .001, *OR* = 2.84), the *High Social, Low Academic* class (*logit* = .82, *SE* = .22, *p* < .001, *OR*

= 2.26), and the *Low Social, Low Academic* class (*logit* = 1.63, *SE* = .28, *p* < .001, *OR* =

5.11). This indicates that continuing-generation students are over 2 times more likely to be in

the *High Social, High Academic* class than in the *High Social, Low Academic* class or the

Low Social, Low Academic class, and 5 times more likely to be in the *High Social, High*

Academic class than the *Low Social, Low Academic* class when compared to first generation

students. Continuing-generation students were also significantly more likely to be in the *High*

Social, Low Academic class than in the *Low Social, Low Academic* class (*logit* = .82, *SE*

= .32, *p* = .011, *OR* = 2.26) when compared to first-generation students. In other words,

continuing-generation students were over 2 times more likely to be in the *High Social, Low*

Academic class than the *Low Social, Low Academic* class when compared to first generation

students.

In terms of the analyses examining the role of ethnicity, the White students were

more likely to be in the *High Social, Low Academic* class than in the *Low Social, Low*

Academic class (*logit* = .99, *SE* = .44, *p* = .024, *OR* = 2.69) when compared to non-White

students. In other words, White students were over two and half times more likely to be in

the *High Social, Low Academic* class than in the *Low Social, Low Academic* class when

compared to non-White students. There were no significant differences across class when

comparing Latinx vs. non-Latinx and Asian vs. non-Asian students.

Table 4.3. Percentage of Ethnicity by Class

	High Social, High Academic %			Low Social, High Academic %			High Social, Low Academic %			Low Social, Low Academic %		
Ethnicity	All	First Gen	Cont. Gen	All	First Gen	Cont. Gen	All	First Gen	Cont. Gen	All	First Gen	Cont. Gen
Asian	23.4	23.4	23.4	37.6	31.4	45.5	26.1	23.6	28.8	27.3	23.9	35.7
Black	2.0	2.1	2.0	4.0	5.7	1.8	2.2	2.4	2.0	4.0	2.8	7.1
Latinx	21.7	42.6	11.9	28.8	45.7	7.3	33.3	53.3	11.8	37.4	47.9	10.7
Native American	—	—	—	—	—	—	1.3	1.8	.7	—	—	—
Pacific Islander	1.4	2.1	1.0	—	—	—	0.9	1.8	—	3.0	2.8	3.6
White	42.7	23.4	51.7	20.0	10.0	32.7	28.3	11.5	46.4	18.2	12.7	32.1
Other	8.8	6.4	10.0	9.6	7.1	12.7	7.5	4.8	10.5	9.1	9.9	7.1
Missing	—	—	—	—	—	—	.3	.6	—	1.0	—	—

Table 4.4. Log odds coefficients and odds ratio for the First-Generation four-class model

			Reference Class								
			1		2		3		4	
K	Class	Effect	Logit	OR	Logit	OR	Logit	OR	Logit	OR
1	High Social, High Academic	Generation	—	—	1.04***	2.84	.82*	2.26	1.63***	5.11
		White	—	—	.60	1.83	.23	1.26	.99*	2.69
		Latinx	—	—	.09	1.09	-.30	.74	.24	1.27
		Asian	—	—	-.60	.55	-.32	.72	.10	1.10
2	Low Social, High Academic	Generation	-1.04***	.35	—	—	-.23	.80	.59	1.80
		White	-.60	.55	—	—	-.37	.69	.39	1.47
		Latinx	-.09	.92	—	—	-.38	.68	.15	1.17
		Asian	.60	1.83	—	—	.28	1.32	.70	2.01
3	High Social, Low Academic	Generation	-.82*	.44	.23	1.25	—	—	.82*	2.26
		White	-.23	.80	.37	1.45	—	—	.76	2.14
		Latinx	.30	1.34	.38	1.47	—	—	.54	1.71
		Asian	.32	1.38	-.28	.76	—	—	.42	1.52
4	Low Social, Low Academic	Generation	-1.63***	.20	-.59	.55	-.82*	.44	—	—
		White	-.99*	.37	-.39	.68	-.76	.47	—	—
		Latinx	-.24	.79	-.15	.86	-.54	.59	—	—
		Asian	-.10	.91	-.70	.50	-.42	.66	—	—

Note: * = p < .05; *** = p < .05; OR = Odds Ratio.

D*istals.* Omnibus Wald tests were conducted for all three distal outcomes. This is similar to conducting an ANOVA before moving on to pairwise comparisons. Wald test results were significant with GPA $W = 9.82$, $df = 3$, $p = .020$, self-esteem $W = 304.71$, $df = 3$, $p < .001$, and stress $W = 170.54$, $df = 3$, $p < .001$, suggesting some differences between belonging classes on all three of the measured outcome variables. Follow-up pairwise

comparison results for GPA can be found in Figure 3 in Supplemental Material. Follow-up

pairwise comparison results for self-esteem and stress can be found in Figure 4 in

Supplemental Material.

GPA. GPA was significantly higher for students in the *High Social, High Academic*

class (M = 3.02) compared to students in the *Low Social, Low Academic* class (M = 2.78;

M_{DIFF} = .24, SE = .10, p = .01) suggesting that those in the *High Social, High Academic* class

scored .24 points on average higher on GPA than those in the *Low Social, Low Academic*

class. GPA was significantly higher for students in the *Low Social, High Academic* class (M

= 3.08) compared to students in the *High Social, Low Academic* class (M = 2.92; M_{DIFF} = .18,

SE = .08, p = .038) and the *Low Social, Low Academic* (M = 2.78; M_{DIFF} = .31, SE = .11, p

= .005). This indicates that those in the *Low Social, High Academic* class scored on

average .18 points higher on GPA than the *High Social, Low Academic* class and .31 points

higher on GPA than the *Low Social, Low Academic* class. There were no significant

differences between students in the *High Social, High Academic* class vs. the *Low Social,*

High Academic class, the *High Social, High Academic* class vs. the *High Social, Low*

Academic class, or *High Social, Low Academic* class vs. the *Low Social, Low Academic*

class.

In summary, these results suggest that in terms of an objective school outcome (i.e.,

cumulative GPA), the worst outcomes are achieved by students who experience a low sense

of *both* social and academic belonging. The pattern of significant results are somewhat more

muddled for students who experience *both* types of belonging or just one type of belonging

(social or academic belonging). However, the difference between the *Low Social, High*

Academic class (M = 3.08) and the *High Social, Low Academic* class (M = 2.92) suggests that

when only one type of belonging is present, academic belonging is potentially more important for objective academic outcomes such as GPA.

Self-Esteem. Students reported the highest self-esteem in the *High Social, High Academic* class ($M = 5.91$) and the lowest self-esteem in the *Low Social, Low Academic* class ($M = 3.63$). Whereas students in the *Low Social, High Academic* ($M = 4.86$) and *High social, Low Academic* class ($M = 4.78$) showed intermediate levels of self-esteem.

Statistical analyses revealed that self-esteem was significantly higher for students in the *High Social, High Academic* class ($M = 5.91$) when compared to students from all of the other classes with the *Low Social, High Academic* ($M = 4.86$; $M_{DIFF} = 1.05$, $SE = .13$, $p < .001$), *High Social, Low Academic* class ($M = 4.78$; $M_{DIFF} = 1.14$, $SE = .10$, $p < .001$), and *Low Social, Low Academic* class ($M = 3.63$; $M_{DIFF} = 2.29$, $SE = .10$, $p < .001$). The *Low Social, High Academic* ($M = 4.86$) and *High social, Low Academic* class ($M = 4.78$) were both significantly higher than the *Low Social, Low Academic* class ($M = 3.63$; $M_{DIFF} = 1.23$, $SE = .18$, $p < .001$ and $M_{DIFF} = 1.15$, $SE = .15$, $p < .001$) respectively. There was no significant difference between the The *Low Social, High Academic* ($M = 4.86$) and *High social, Low Academic* class ($M = 4.78$; $M_{DIFF} = .08$, $SE = .15$, $p = .565$).

To summarize, these results suggest that in terms of self-esteem, having a sense of *both* academic and social belonging results in the best outcomes, and having a low sense of *both* academic and social belonging results in the worst outcomes. However, either a sense of academic belonging or a sense of social belonging, even when experienced independently of the other type of belonging, provides at least a partial buffering effect in terms of self-esteem, resulting in intermediate self-esteem values. Although not significantly different, we see a similar pattern here to the pattern observed above with GPA; having just academic belonging

compared to having just social belonging is trending toward more positive self-esteem outcomes.

  Stress. Stress was significantly different across all comparisons. Stress was lowest in *High Social, High Academic* class ($M = 3.70$) and highest in the *Low Social, Low Academic* class ($M = 4.83$). Whereas students in the *Low social, High Academic* class ($M = 4.21$) and in the *High Social, Low Academic* class ($M = 4.49$) showed intermediate levels of stress. Here again, we see that experiencing high levels of *both* types of belonging results in the best outcomes in terms of stress and experiencing low levels of both types of belonging results in the worst outcomes. There is also a significant difference between the *Low social, High Academic* class ($M = 4.21$) and the *High Social, Low Academic* class ($M = 4.49$) when it comes to stress in such a way that students who experience high social belonging but low academic belonging experience *more* stress than students who experience low social belonging but high academic belonging. This pattern of results is similar to the pattern that was trending in terms of our objective academic outcome (ie., GPA) as well as self-esteem. Although having a sense of both types of belonging is associated with the best outcomes in terms of stress, having a high sense of academic belonging seems to be more important than having a high sense of social belonging in situations where students only experience one (or the other) type of belonging.

Figure 4.3. GPA
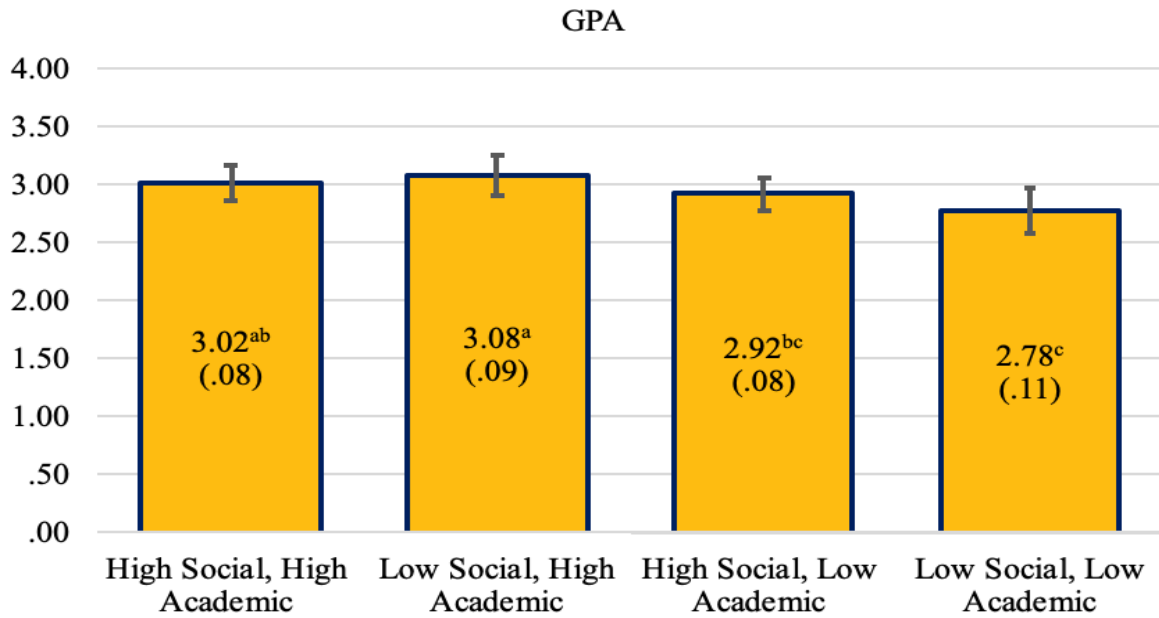
Note. Mean (standard error). Different superscripts indicate significance at p < .05

Figure 4.4 Self-Esteem and Stress
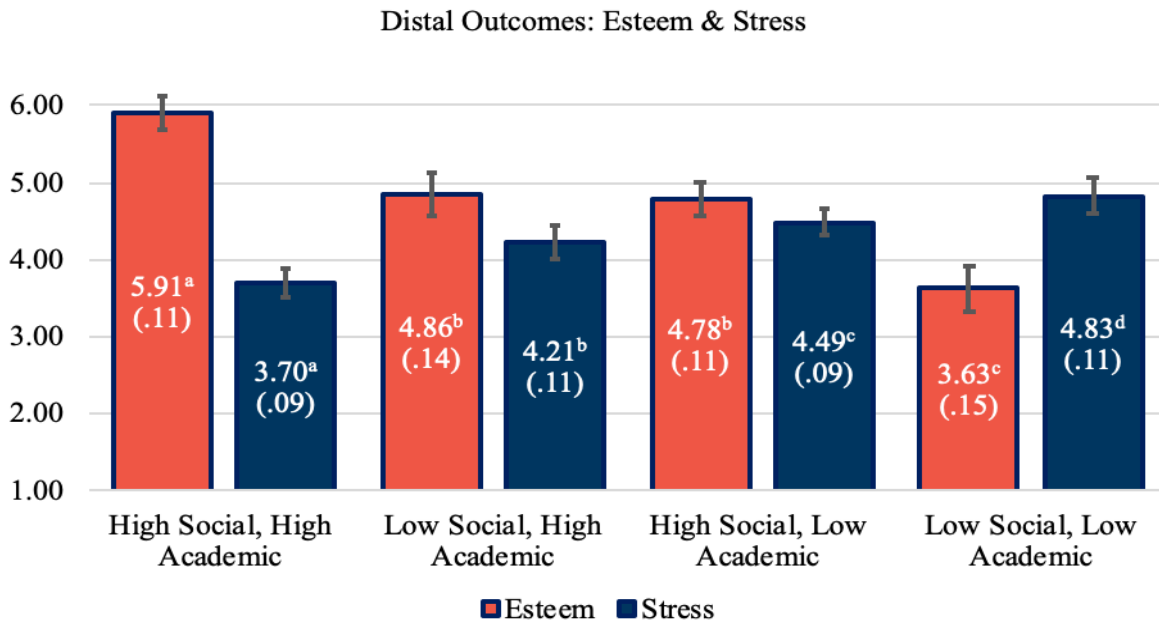
Note. Mean (standard error). Different superscripts indicate significance at p < .05

Discussion

A large and flourishing database on school belonging points to the vital importance of developing belonging among students at various levels of education. An increased sense of belonging has been associated with a panoply of positive outcomes among students. However, subjective school belonging is conceptually complicated and multifaceted, and previous research and interventions have often conflated different facets or types of belonging. In an effort to arrive at greater conceptual clarity, in the present research, we examined whether social belonging and academic belonging can be empirically distinguished and whether these different types of belonging or the interaction of these different types of belonging has implications for both objective (GPA) and subjective (self-esteem and stress) student outcomes on a college campus. This is an early step toward a more nuanced understanding of the interplay between academic and social belonging in different contexts. Ultimately, a finer-grained understanding of different types or facets of belonging could lead to belonging interventions specifically targeted to particular groups of students and their specific needs.

Overall, we found that four distinct profiles or classes of belonging are naturally present on the college campus under investigation. In other words, students do not simply experience high belonging on one end of a pole or low belonging on the other end of the pole in a simple binary way; rather, different unique and distinct combinations of social and academic belonging are experienced by students on a college campus. To various degrees, students belonged to the following four classes: class 1 (*High Social, High Academic* belonging), class 2 (*Low Social, High Academic* belonging), class 3 (*High Social, Low Academic* belonging) and class 4 (*Low Social, Low Academic* belonging). Classes 1 and 3

were roughly the same in size (35% vs. 38% of the sample) and classes 2 and 4 were roughly

the same in size (15% vs. 12% of the sample). Interestingly, more students fell into classes

that included a lowered sense of academic belonging compared to a lowered sense of social

belonging; roughly 27% of students overall reported low subjective social belonging and

roughly 50% of students reported low subjective academic belonging overall.

Generational status (i.e., first- vs. continuing- generation status) and ethnicity were

found to be predictive of group membership. Broadly speaking, continuing-generation

students were more likely to be in the classes that had higher types of both or either types of

belonging compared to first-generation students who made up a large portion of the class low

on both types of belonging. Fewer differences were observed among ethnic groups although

white students were more likely to be in the *High Social, Low Academic* class than in the

Low Social, Low Academic class when compared to non-White students.

Class membership also had implications for both objective and subjective student

outcomes. In terms of GPA, having both or either types of belonging provides benefit,

although when considering the two classes in which students experience just one type of

belonging (social or academic), having *just* academic belonging is trending towards being

more important than having *just* social belonging. Not surprisingly, experiencing low levels

of both types of belonging results in the worst outcomes. In terms of subjective psychological

student outcomes, again experiencing high levels of both types of belonging leads to the best

outcomes whereas experiencing low levels of both types of belonging produces the worst

outcomes. Experiencing only one type of belonging (just social or just academic) but not the

other has buffering effects and produces intermediate results in terms of self-esteem and

stress. However, like with GPA, the results suggest that students who experience *just*

academic belonging (and low social belonging) are somewhat better off than students who experience *just* social belonging (and low academic belonging), and especially when it comes to experienced levels of stress.

Taken together, these results are a first step in establishing that academic and social belonging are experienced by students in different combinations, and that they don't necessarily function the same way in terms of subjective and objective student outcomes. Despite recent empirical and applied focus on social belonging, the current research suggests that more students struggle with feelings of academic belonging, and moreover, lack of academic belonging might be more important than social belonging in terms of objective and subjective student outcomes in college. This research draws attention to the important role of context (person-environment fit); school contexts are different than work, family, or broader social community contexts in that ultimately these are institutions designed to teach academic subjects so academic and social belonging may function differently here than in other contexts.

Like all studies, this research is not without limitations, and we must acknowledge that our sample was from a very specific college environment. Our data was collected from a highly competitive minority-serving institution of higher learning. It is possible that worries about academic belonging were more salient in our findings because of the high academic caliber of the institution where the current data was collected. It is equally possible that fewer students experience diminished social belonging in the current context because of the diversity present on the college campus under investigation. Therefore, it is imperative that in the future, this research be replicated on other school campuses that are more (and less) academically rigorous (e.g., prestigious private schools or community colleges), and more or

less racially, ethnically, generationally (i.e., fewer or more first-generation students) diverse. Although our data included large proportions of students identifying as Asian or Asian-American and Latinx-American, we had only a small sample of Black or African-American participants. This is due to the small percentage of black at the school under investigation. Thus, future studies should also attempt to collect larger samples of Black participants to see how social vs. academic belonging play out in this student group.

It is also possible that academic belonging was more important in the current findings because we measured social belonging in a very broad sense and general sense (overall feelings of social belonging at an institution). However, it is possible that students who experience overall low social belonging on a college campus may nevertheless suffer less dire consequences as long as they have several (or even one) solid relationships with another student, professor, or staff member. Future research should investigate the potential buffering effect of specific relationships on the effects of overall lack of social belonging. It may be possible to have one or several positive relationships, thereby satisfying the need to belong in a general sense, yet still not feel that one is fully accepted socially in a context (Shook & Clay, 2012). For instance, research has found that a social relationship with just one teacher could have benefits for students from black and latinx backgrounds (Gehlbach et. al., 2016) and other research has found that even arbitrary minimal connections to another individual (e.g., finding out you share a birthday with someone else) can provide benefits in terms of student persistence and motivation (Walton et. al., 2012).

General Discussion

A bachelor's degree is the most powerful predictor of one's status in American society, and the divide between the 30% of Americans who have a college degree and the 70% who don't, represents the biggest divide in this country (Markus & Conner, 2013). In recent decades, progress has been made to reduce this gap, but the American system of higher education is still far from equitable. Students of color, students from lower socioeconomic backgrounds, and first-generation students, who are the first in their families to attend a four-year institution, tend to perform worse academically and psychologically, and are, overall, less likely to graduate from college. However, some positive outcomes have been achieved with the recent implementation of "Wise" psychological interventions designed to address and improve the subjective experience of disadvantaged students (for reviews see Walton, 2014; Walton & Wilson, 2018). The current research focused on first-generation students who have received considerably less attention in the psychological literature, despite making up one-third of the university population and being the fastest growing demographic on college campuses.

Many factors contribute to the poor college outcomes of first-generation students (i.e., underperforming high-schools, lack of role models, etc.), however, even when these diverse demographic and enrollment characteristics are factored in, first-generation status remains a risk factor for college success. Nicole Stephens and her colleagues have proposed the Cultural Mismatch Theory (CMT) to explain these findings. According to CMT, first-generation students, who have typically been socialized in a lower socioeconomic cultural environment, bring a more "interdependent" or "collectivistic" self to a college environment that places great emphasis on being "independent" or "individualistic." Students experience a

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clash between their "interdependent" selves and their new "independent" environment which causes them to question their college belonging (Stephens et. al., 2012; Stephens, Fryberg, et. al., 2012).

The current research was designed to better understand the psychological mechanisms that underpin this culture clash and lack of belonging experienced by first-generation students. Originally, I hypothesized that *emotional fit*, that is the degree of similarity between students' personal emotional profiles and the emotional profiles of "majority" or "host" culture college students (i.e., continuing-generation upperclassmen) would, at least in part, contribute to how the culture clash is actually experienced and felt by students. Specifically, I predicted that first-generation students would show lower emotional fit with the majority culture and this would have negative implications for their belonging as well as other, secondary school outcomes. I also hypothesized, that with time, first-generation students would show improvements in emotional fit as they acculturated emotionally to the college environment. The research proposed in the initial dissertation proposal was a single-three wave longitudinal study designed to track the emotional fit of students, as well as their belonging and other academic and psychological school outcomes over the course of their entire first year of college (Fall of Freshman year to Fall of Sophomore year).

Although initially designed as a single study, based on initial missing data analyses, I decided to break up the data into two separate data sets, one containing students who completed all three-waves of the study, and a second data set containing students who completed only one or two waves of the study. The "non-completes" were analyzed in Part I, whereas the "completes" were analyzed in Part II. Part III was an entirely new data set and Part IV used participants from Wave 1 (Part I) but I collected many additional participants.

In Part I, using data from students who only completed one or two waves of the longitudinal study (i.e., the "non-completes"), I found initial evidence that first-generation freshmen have lower emotional fit with continuing-generation upperclassmen (who I took to represent the "majority" or "host" culture on campus), at least in the Negative Disengaged Emotional prompt and in the collapsed or averaged Negative prompt. However, emotional fit at time 1 did not predict cumulative GPA at a later time point (1.5 years later, during students' Winter quarter of their Sophomore year). In fact, none of the psychological variables measured at Wave 1 predicted Wave 4 GPA. Only income and college generational status (i.e. first-generation vs. continuing-generation status) at time 1 predicted Wave 4 GPA. Overall, first-generation students and lower income students had lower GPA in Wave 4.

In Part II, using data form students who completed *all* three waves of the longitudinal study, longitudinal analyses showed that despite initial predictions, there was no evidence of change in emotional fit (either increase or decrease) for either first- or continuing- generation students over the year-long study. These results must be interpreted with a certain amount of caution, however, since drop-out rate was rather large, and the final sample of "completes" analyzed was relatively small (N=81 for the total sample), especially when separated by generational status (N=32 first-generation students and N= 49 continuing-generation students). Retention rate may have been improved in the current study if the surveys employed had been shorter or if the incentives (monetary or otherwise) had been larger. It did not help that a similar longitudinal study with larger incentives was concurrently being run at the same institution.

Part II also involved additional regression analyses to further investigate how psychological variables (and especially emotional fit) measured at either of the three waves

(i.e., Waves 1, 2, and 3) predicted GPA at time 4. Although not central to the current research, results suggested that psychological variables in the early weeks of college (i.e., Time 1) are much less important in predicting cumulative GPA at a later time point, compared to psychological variables measured later in students' academic carriers (i.e., time points 2 and 3). It seems that how students feel when initially entering a college environment is less important than how they feel after they have settled in a bit and gotten a better feel and understanding for their college environment. This is something worth further investigation because it could provide important information about the ideal time points to implement "Wise" education interventions.

Part III involved an additional cross-sectional study that was conducted in order to investigate the importance of *emotional accuracy*, or students' reading and understanding of the emotional patterns of "typical" or "majority" culture students, as a potential psychological mechanism that might explain how first-generation students experience the culture clash on campus. Not surprisingly, in certain emotional prompts, I found some evidence that continuing-generation students underclassmen (freshmen and sophomores) have higher emotional accuracy (i.e. a better understanding of the emotional reactions of continuing-generation upperclassmen) compared to their first-generation counterparts. However, there were no significant differences in emotional fit across first- and continuing-generation students.

The most surprising results were obtained when investigating the relationships between emotional fit and emotional accuracy, and our other measured variables (i.e., self-esteem, belonging, stress, inclusion of other in self, and ability uncertainty) in a structural equation framework. As expected, emotional accuracy had both direct benefits and indirect

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benefits (through self-esteem and belonging) on stress, ability uncertainty, and identity overlap with UCSB (i.e., IOS). However, actual emotional fit had negative implications for stress, ability uncertainty, and IOS either directly or through the mediating roles of self-esteem and belonging. In other words, for both first- and continuing-generation students, emotional accuracy seems to play a more important role in predicting positive student outcomes. This is certainly an area that requires further research, but the findings suggest room for the potential development of another intervention to help first-generation students and other minority students since previous research in the area of Emotional Intelligence has found that emotional accuracy can be taught.

The final study in the current research program, outlined in Part IV, was also not originally outlined in the dissertation proposal. Section IV used latent class analysis with a diverse sample of undergraduates to determine whether distinct profiles of academic and social belonging exist on a college campus and whether these different classes of belonging predict academic and psychological outcomes. Four distinct classes of belonging naturally emerged in our sample: *High Social, High Academic* belonging, *Low Social, High Academic*, *High Social, Low Academic,* and *Low Social, Low Academic* belonging. As expected, students in the *High Social, High Academic* class had the best psychological and academic outcomes (GPA, self-esteem, and stress), and students in the *Low Social, Low Academic* class had statistically the worst outcomes. Interestingly, students in the *Low Social, High Academic* class outperformed students in the *High Social, Low Academic* class both academically and psychologically. These results provide initial evidence that in a school context, a sense of academic belonging may be more important than a sense of social belonging.

Taken together, the four studies in the current dissertation suggest that there may be some differences in emotional fit and emotional accuracy between first-generation and continuing-generation college students and as far as I know, this is the first research to show differences in emotional patterns among SES cultures. The current research also suggests that increased emotional accuracy predicts positive student outcomes, and this leaves open room for the potential development of a new intervention that increases emotional accuracy among first-generation students and other minority groups on campus. The studies also show that emotional fit is somewhat resistant to change, at least over the courses of the current study – the entire first year of students' college experience.

The strengths of current project lie in the diversity of research designs and statistical techniques employed. However, a major limitation, is the large dropout rate for participants in the longitudinal aspects of the work.

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APPENDICES

Appendix	Materials
A	EPQ – Positive Engaged Situation, School (De Leersnyder, Mesquita, & Kim, 2011)
B	EPQ – Positive Disengaged Emotion, School (De Leersnyder, Mesquita, & Kim, 2011)
C	EPQ – Negative Engaged Situation, School (De Leersnyder, Mesquita, & Kim, 2011)
D	EPQ – Negative Disengaged Emotion, School (De Leersnyder, Mesquita, & Kim, 2011)
E	Satisfaction with Life Scale (Diener et. al., 1985)
F	Rosenberg Self-Esteem Scale (Rosenberg, 1965)
G	Sense of Social and Academic Fit Scale (Walton & Cohen, 2007)
H	Perceived Stress Scale (Cohen et. al., 1994)
I	Ability Uncertainty Scale (Lewis & Hodges, 2015)
J	Interpersonal Support Evaluation List (Cohen & Hoberman, 1983)
K	Demographic Information

Emotional Patterns Questionnaire
(De Leersnyder, Mesquita, & Kim, 2011)

Situation: Positive Engaged

Emotional Situations
Sometimes, people find themselves in situations that make them feel good about their relationships with others (for example, feel close, feel respect, friendly feelings, feel happy for another person).

Situation 1
Please think about an occasion **at school** in which you felt **good about your relationship with others** (for example, feel close, feel respect, friendly feelings, feel happy for another person)**.**

Please describe the situation briefly. Provide as much detail as needed for somebody to understand why you felt that way in this situation

_____
_____
_____
_____
_____
_____
_____
_____

To what extent did you feel each of the following emotions?

		Not at all			Somewhat			Extremely
1.	Good	1	2	3	4	5	6	7
2.	Bad	1	2	3	4	5	6	7
3.	Happy	1	2	3	4	5	6	7
4.	Unhappy	1	2	3	4	5	6	7
5.	Aroused	1	2	3	4	5	6	7
6.	Sleepy	1	2	3	4	5	6	7
7.	Upset	1	2	3	4	5	6	7
8.	Guilty	1	2	3	4	5	6	7

9. Irritable	1	2	3	4	5	6	7
10. Ashamed	1	2	3	4	5	6	7
11. Nervous	1	2	3	4	5	6	7
12. Afraid	1	2	3	4	5	6	7
13. Relaxed	1	2	3	4	5	6	7
14. Calm	1	2	3	4	5	6	7
15. Interested	1	2	3	4	5	6	7
16. Strong	1	2	3	4	5	6	7
17. Proud	1	2	3	4	5	6	7
18. Tired	1	2	3	4	5	6	7
19. Bored	1	2	3	4	5	6	7
20. Jealous	1	2	3	4	5	6	7
21. Ill feelings to another	1	2	3	4	5	6	7
22. Close to another	1	2	3	4	5	6	7
23. Respect	1	2	3	4	5	6	7
24. Indebted	1	2	3	4	5	6	7
25. Feel like relying on another	1	2	3	4	5	6	7
26. Feel resigned	1	2	3	4	5	6	7
27. Helpful	1	2	3	4	5	6	7
28. Surprised	1	2	3	4	5	6	7
29. Worthless	1	2	3	4	5	6	7
30. Embarrassed	1	2	3	4	5	6	7

Emotional Patterns Questionnaire
(De Leersnyder, Mesquita, & Kim, 2011)

Situation: Positive Disengaged

Emotional Situations
Sometimes, people find themselves in situations that make them feel good about their relationships with others (for example, feel close, feel respect, friendly feelings, feel happy for another person).

Situation 2
Please think about an occasion **at school** in which you felt **good for yourself** (for example, superior, proud, top of the world)**.**

Please describe the situation briefly. Provide as much detail as needed for somebody to understand why you felt that way in this situation

_____
_____
_____
_____
_____
_____
_____
_____

To what extent did you feel each of the following emotions?

		Not at all			Somewhat			Extremely
1.	Good	1	2	3	4	5	6	7
2.	Bad	1	2	3	4	5	6	7
3.	Happy	1	2	3	4	5	6	7
4.	Unhappy	1	2	3	4	5	6	7
5.	Aroused	1	2	3	4	5	6	7
6.	Sleepy	1	2	3	4	5	6	7
7.	Upset	1	2	3	4	5	6	7
8.	Guilty	1	2	3	4	5	6	7
9.	Irritable	1	2	3	4	5	6	7

10. Ashamed		1	2	3	4	5	6	7
11. Nervous		1	2	3	4	5	6	7
12. Afraid		1	2	3	4	5	6	7
13. Relaxed		1	2	3	4	5	6	7
14. Calm		1	2	3	4	5	6	7
15. Interested		1	2	3	4	5	6	7
16. Strong		1	2	3	4	5	6	7
17. Proud		1	2	3	4	5	6	7
18. Tired		1	2	3	4	5	6	7
19. Bored		1	2	3	4	5	6	7
20. Jealous		1	2	3	4	5	6	7
21. Ill feelings to another		1	2	3	4	5	6	7
22. Close to another		1	2	3	4	5	6	7
23. Respect		1	2	3	4	5	6	7
24. Indebted		1	2	3	4	5	6	7
25. Feel like relying on another		1	2	3	4	5	6	7
26. Feel resigned		1	2	3	4	5	6	7
27. Helpful		1	2	3	4	5	6	7
28. Surprised		1	2	3	4	5	6	7
29. Worthless		1	2	3	4	5	6	7
30. Embarrassed		1	2	3	4	5	6	7

Emotional Patterns Questionnaire
(De Leersnyder, Mesquita, & Kim, 2011)

Situation: Negative Engaged

Emotional Situations
Sometimes, people find themselves in situations that make them feel good about their relationships with others (for example, feel close, feel respect, friendly feelings, feel happy for another person).

Situation 3
Please think about an occasion **at school** in which you **felt bad about your relationships with others** (for example, indebted, ashamed, guilty, sad or sorry for another, afraid of troubling another, awkward).

Please describe the situation briefly. Provide as much detail as needed for somebody to understand why you felt that way in this situation

_____
_____
_____
_____
_____
_____
_____
_____
_____

To what extent did you feel each of the following emotions?

		Not at all			Somewhat			Extremely
1.	Good	1	2	3	4	5	6	7
2.	Bad	1	2	3	4	5	6	7
3.	Happy	1	2	3	4	5	6	7
4.	Unhappy	1	2	3	4	5	6	7
5.	Aroused	1	2	3	4	5	6	7
6.	Sleepy	1	2	3	4	5	6	7
7.	Upset	1	2	3	4	5	6	7
8.	Guilty	1	2	3	4	5	6	7

		1	2	3	4	5	6	7
9.	Irritable	1	2	3	4	5	6	7
10.	Ashamed	1	2	3	4	5	6	7
11.	Nervous	1	2	3	4	5	6	7
12.	Afraid	1	2	3	4	5	6	7
13.	Relaxed	1	2	3	4	5	6	7
14.	Calm	1	2	3	4	5	6	7
15.	Interested	1	2	3	4	5	6	7
16.	Strong	1	2	3	4	5	6	7
17.	Proud	1	2	3	4	5	6	7
18.	Tired	1	2	3	4	5	6	7
19.	Bored	1	2	3	4	5	6	7
20.	Jealous	1	2	3	4	5	6	7
21.	Ill feelings to another	1	2	3	4	5	6	7
22.	Close to another	1	2	3	4	5	6	7
23.	Respect	1	2	3	4	5	6	7
24.	Indebted	1	2	3	4	5	6	7
25.	Feel like relying on another	1	2	3	4	5	6	7
26.	Feel resigned	1	2	3	4	5	6	7
27.	Helpful	1	2	3	4	5	6	7
28.	Surprised	1	2	3	4	5	6	7
29.	Worthless	1	2	3	4	5	6	7
30.	Embarrassed	1	2	3	4	5	6	7

Emotional Patterns Questionnaire
(De Leersnyder, Mesquita, & Kim, 2011)

Situation: Negative Disengaged

Emotional Situations
Sometimes, people find themselves in situations that make them feel good about their relationships with others (for example, feel close, feel respect, friendly feelings, feel happy for another person).

Situation 4
Please think about an occasion **at school** in which you **felt bad about things that happened to you personally** (for example, angry, frustrated, sulky feeling, jealous).

Please describe the situation briefly. Provide as much detail as needed for somebody to understand why you felt that way in this situation

_____
_____
_____
_____
_____
_____
_____
_____

To what extent did you feel each of the following emotions?

		Not at all			Somewhat			
Extremely								
1. Good		1	2	3	4	5	6	
7								
2. Bad		1	2	3	4	5	6	7
3. Happy		1	2	3	4	5	6	7
4. Unhappy		1	2	3	4	5	6	7
5. Aroused		1	2	3	4	5	6	7
6. Sleepy		1	2	3	4	5	6	7
7. Upset		1	2	3	4	5	6	7
8. Guilty		1	2	3	4	5	6	7

		1	2	3	4	5	6	7
9.	Irritable	1	2	3	4	5	6	7
10.	Ashamed	1	2	3	4	5	6	7
11.	Nervous	1	2	3	4	5	6	7
12.	Afraid	1	2	3	4	5	6	7
13.	Relaxed	1	2	3	4	5	6	7
14.	Calm	1	2	3	4	5	6	7
15.	Interested	1	2	3	4	5	6	7
16.	Strong	1	2	3	4	5	6	7
17.	Proud	1	2	3	4	5	6	7
18.	Tired	1	2	3	4	5	6	7
19.	Bored	1	2	3	4	5	6	7
20.	Jealous	1	2	3	4	5	6	7
21.	Ill feelings to another	1	2	3	4	5	6	7
22.	Close to another	1	2	3	4	5	6	7
23.	Respect	1	2	3	4	5	6	7
24.	Indebted	1	2	3	4	5	6	7
25.	Feel like relying on another	1	2	3	4	5	6	7
26.	Feel resigned	1	2	3	4	5	6	7
27.	Helpful	1	2	3	4	5	6	7
28.	Surprised	1	2	3	4	5	6	7
29.	Worthless	1	2	3	4	5	6	7
30.	Embarrassed	1	2	3	4	5	6	7

Appendix E

Satisfaction with Life Scale
(Diener et.al., 1985)

DIRECTIONS: Below are five statements with which you may agree or disagree. Using the 1-7 scale below, indicate your agreement with each item by placing the appropriate number in the line preceding that item. Please be open and honest in your response.

1 = Strongly Disagree

2 = Disagree

3 = Slightly Disagree

4 = Neither Agree or Disagree 5 = Slightly Agree

6 = Agree

7 = Strongly Agree

1) In most ways my life is close to my ideal.

2) The conditions of my life are excellent.

3) I am satisfied with life.

4) So far I have gotten the important things I want in life.

5) If I could live my life over, I would change almost nothing.

Rosenberg Self-Esteem Scale
(Rosenberg, 1965)

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by circling how often you felt or thought a certain way.

Scale: 0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often 1.

1) In the last month, how often have you been upset because of something that happened unexpectedly?

2) In the last month, how often have you felt that you were unable to control the important things in your life?

3) In the last month, how often have you felt nervous and "stressed"?

4) In the last month, how often have you felt confident about your ability to handle your personal problems?

5) In the last month, how often have you felt that things were going your way?

6) In the last month, how often have you found that you could not cope with all the things that you had to do?

7) In the last month, how often have you been able to control irritations in your life?

8) In the last month, how often have you felt that you were on top of things?

9) In the last month, how often have you been angered because of things that were outside of your control?

10) In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

Appendix G

Sense of Social and Academic Fit
(Walton & Cohen, 2007)

Answer the following questions about *what [school name] is like for you*. Indicate the extent to which you agree or disagree with each statement using the scales below.

Scale: 1(Strongly Disagree) – 7(Strongly Agree)

1) People at [school name] accept me.

2) I feel like an outsider at [school name].

3) Other people understand more than I do about what is going on at [school name].

4) I think in the same way as do people who do well at [school name].

5) It is a mystery to me how [school name] works.

6) I feel alienated from [school name].

7) I fit in well at [school name].

8) I am similar to the kind of people who succeed at [school name].

9) I know what kind of people [school name] professors are.

10) I get along well with people at [school name].

11) I belong at [school name].

12) I know how to do well at [school name].

13) I do not know what I would need to do to make a [school name] professor like me.

14) I feel comfortable at [school name].

15) People at [school name] like me.

16) If I wanted to, I could potentially do very well at [school name].

17) People at [school name] are a lot like me.

*** Note [school name] was replaced with "UCSB" in the current study.

Perceived Stress Scale
(Cohen et. al., 1994)

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by circling how often you felt or thought a certain way.

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often

1) In the last month, how often have you been upset because of something that happened unexpectedly?

2) In the last month, how often have you felt that you were unable to control the important things in your life?

3) In the last month, how often have you felt nervous and "stressed"?

4) In the last month, how often have you felt confident about your ability to handle your personal problems?

5) In the last month, how often have you felt that things were going your way?

6) In the last month, how often have you found that you could not cope with all the things that you had to do?

7) In the last month, how often have you been able to control irritations in your life?

8) In the last month, how often have you felt that you were on top of things?

9) In the last month, how often have you been angered because of things that were outside of your control?

10) In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

Ability Uncertainty Scale
(Lewis & Hodges, 2015)

Answer the following questions about *what [school name] is like for you*. Indicate the extent to which you agree or disagree with each statement using the scales below.

Scale: 1(Strongly Disagree) – 7(Strongly Agree)

1) I worry my abilities aren't good enough to do well at [school name].

2) I often wonder if I have what it takes to succeed at[school name].

3) I feel confident about my abilities at [school name].

4) I sometimes feel like other students at [school name] have skills that I don't.

5) When I'm doing my work at [school name] I feel a sense of competence.

6) [school name] requires some abilities that I'm not sure I possess.

7) I worry that no matter how hard I try, I wont be able to perform successfully at [school name].

8) When doing work at [school name] I feel I have the skills that I need.

9) I know what kind of people [school name] professors are.

10) I'm not sure that I'm cut out for [school name].

11) I have no doubts that I possess or can acquire the abilities [school name] requires.

12) I'm not sure I "fit in" intellectually at [school name].

*** Note [school name] was replaced with "UCSB" in the current study.

Appendix J

Interpersonal Support Evaluation List
(Cohen & Hoberman, 1983)

This scale is made up of a list of statements each of which may or may not be true about you. Please indicate how true or false each statement is about you.

1) If I wanted to go on a trip for a day (for example, to the country or mountains), I would have a hard time finding someone to go with me.

2) I feel that there is no one I can share my most private worries and fears with.

3) If I were sick, I could easily find someone to help me with my daily chores.

4) There is someone I can turn to for advice about handling problems with my family

5) If I decide one afternoon that I would like to go to a movie that evening, I could easily find someone to go with me.

6) When I need suggestions on how to deal with a personal problem, I know someone I can turn to.

7) I don't often get invited to do things with others.

8) If I had to go out of town for a few weeks, it would be difficult to find someone who would look after my house or apartment (the plants, pets, garden, etc)

9) If I wanted to have lunch with someone, I could easily find someone to join me.

10) If I was stranded 10 miles from home, there is someone i could call who could come and get me.

11) If a family crisis arose, it would be difficult to find someone who could give me good advice about how to handle it.

12) If I needed some help in moving to a new house or apartment, I would have a hard time finding someone to help me.

Appendix K

Demographics

Please answer the following questions.

SEX   Male   Female   Other

AGE_____

YEAR IN SCHOOL _____

      a. Freshman

      b. Sophomore

      c. Junior

      d. Senior

ARE YOU A TRANSFER STUDENT?

      a. Yes

      b. No

MOTHER'S HIGHEST LEVEL OF EDUCATION _____

      a. Primary-school

      b. GED

      c. High-school

      d. Some college

      e. Associate's Degree

      f. Bachelor's Degree

      g. Master's Degree, Doctorate, or other advanced degree

FATHER'S HIGHEST LEVEL OF EDUCATION _____

      a. Primary-school

      b. GED

      c. High-school

      d. Some college

      e. Associate's Degree

      f. Bachelor's Degree

      g. Master's Degree, Doctorate, or other advanced degree

SIBLINGS' HIGHEST LEVEL OF EDUCATION _____

    a. Primary-school

    b. GED

    c. High-school

    d. Some college

    e. Associate's Degree

    f. Bachelor's Degree

    g. Master's Degree, Doctorate, or other advanced degree

YOUR IMMEDIATE FAMILY IS (please circle one)

    a) lower class   b) lower middle class

    c) solidly middle class   d) upper middle class   e) upper class

WHAT IS YOUR FAMILY'S INCOME? _____

    a. under $50,000

    b. between $50,000 - $100,000

    c. between $100,000 - $250,000

    d. over $250,000

    e. I don't know

PLEASE TELL US ABOUT YOUR ETHNICITY _____

    a. Asian; Asian-American (please specify.

    b. Black; African-American (please specify.

    c. Hispanic; Latino-American (please specify.

    d. Native American (please specify.

    e. Native Pacific Islander (please specify.

    f. White; Caucasian-American (please specify.

    g. Other (please specify.

WHERE WERE YOU BORN? _____

    a. In the U.S.

    b. Outside of the U.S.