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When Ambitions Aren't Enough: The Role of Motivation,
Self-Regulation, and Individual Agency in Higher-Education Goal Pursuit
DISSERTATION

submitted in partial satisfaction of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

in Psychology and Social Behavior

by

Brandilynn Villarreal

Dissertation Committee:
Professor Jutta Heckhausen, Ph.D., Chair
Professor Chuansheng Chen, Ph.D.
Professor Susan Charles, Ph.D.

2017

DEDICATION

To

my mother who taught me how to write

my father who inspired in me the love of education

my soul mate Diane

This accomplishment is as much yours as mine. I love you.

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Thank you to the staff and faculty at Santa Ana College and Irvine Valley College for allowing me to visit your classroom and send emails to your students. Thank you to the students who participated in this study, some of whom have now graduated with their bachelor's degrees and are on their way to advanced education or a promising career. You are a source of inspiration and pride for me.

Financial support was provided by the University of California, Irvine through the Social Ecology Dean's Dissertation Writing Fellowship, the Martha Newkirk Award for Excellence in Research, the Alison Clarke-Stewart Graduate Dissertation Award in Developmental Psychology, and the Undergraduate Research Opportunities Program.

CURRICULUM VITAE

Brandilynn Villarreal

EDUCATION

- 2017 Doctorate of Philosophy in Psychology
 Concentration in Developmental Psychology
 Minors in Social Psychology, Quantitative Psychology
 University of California, Irvine (UCI)
- Dissertation: When Ambitions Aren't Enough: The Role of Motivation, Self-
 Regulation, and Individual Agency in Higher-Education Goal Pursuit
 Advisor: Jutta Heckhausen, PhD
- 2009 Master of Arts in Clinical Psychology
 California State University, Dominguez Hills (CSUDH)
- 2006 Bachelor of Arts in Psychology
 Minor in Women's Studies
 University of California, Los Angeles (UCLA)

ACADEMIC APPOINTMENTS

- 2016-2017 Instructor of Record, Irvine Valley College (IVC)
2014-2017 Teaching Associate, UCI
2011-2015 Teaching Assistant, UCI

HONORS AND AWARDS

- 2015, 2016 Martha Newkirk Award for Excellence in Research, School of Social Ecology,
 UCI, \$2,000 total
- 2012-2016 Graduate Student Mentoring Award, School of Social Ecology, UCI
2015 Social Ecology Dean's Dissertation Writing Fellowship, UCI, \$11,668.50
- 2014, 2015 Pedagogical Fellow, Center for Engaged Instruction, UCI, \$3,000 total
- 2013, 2014 Mini-Grant, Chancellor's Doctoral Incentive Program, California State
 University, \$4,000 total
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- 2014 Honorable Mention, Society for Personality and Social Psychology Diversity
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- 2010 School of Social Ecology Merit Fellowship, UCI, \$16,635
- 2009 Chancellor's Doctoral Incentive Program (CDIP) recipient, California State
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2009 Phi Kappa Phi Scholarship, \$1,000
2009 Outstanding Master's Degree Student in Psychology, CSUDH

FIELD OF STUDY

Lifespan development, particularly adolescent development; motivation and self-regulation; goal-setting and goal-pursuit in higher education; traditionally underrepresented and first-generation college students

PUBLICATIONS

- Kriegbaum, K., Villarreal, B., Heckhausen, J., & Wu, V. (2016). Parents still matter: Patterns of shared agency with parents predict college students' academic motivation and achievement. *Motivation Science, 2*(2), 97-115. doi:10.1037/mot0000033
- Villarreal, B., & Heckhausen, J. (2016). Control striving and control perception in a lifespan developmental framework. In J. Reich & F. Infurna (Eds.), *Perceived control: Theory, research, and practice in the first 50 years*. Oxford University Press.
- Villarreal, B., Lessard, J., Heckhausen, J., Greenberger, E., & Chen, C. (2015). High-school seniors' college enrollment goals: Costs and benefits of ambitious expectations. *Journal of Adolescence, 45*, 327-340. doi:10.1016/j.adolescence.2015.08.012
- Villarreal, B., & Heckhausen, J. (2015). Lifespan development, theory of. In: James D. Wright (ed.), *International Encyclopedia of the Social & Behavioral Sciences*, (2nd ed., Vol. 14, pp. 100-107). Oxford: Elsevier. doi:10.1016/B978-0-08-097086-8.34019-3
- Maddi, S. R., Matthews, M. D., Kelly, D., Villarreal, B., & Bach, S. H. (2015). The continuing role of hardiness and grit in performance and retention in West Point cadets. *Military Psychology*.
- Paxton, K. C., Villarreal, B., & Hall, N. M. (2013). Increasing knowledge of HIV transmission: An important ingredient in HIV risk reduction among young African American women attending community college. *Journal of HIV/AIDS & Infectious Diseases, 2*, 1-7.
- Maddi, S. R., Erwin, L., Carmody, C., Villarreal, B., White, M., & Gunderson, K. K. (2013). Relationship of hardiness, grit, and emotional intelligence to internet addiction, excessive consumer spending, and gambling. *Journal of Positive Psychology, 8*(2), 128-134. doi:10.1080/17439760.2012.758306
- Maddi, S. R., Matthews, M. D., Kelly, D. R., Villarreal, B., & White, M. (2012). The role of hardiness and grit in predicting performance and retention of USMA cadets. *Military Psychology, 24*, 19-28.

MANUSCRIPTS UNDER REVIEW

Villarreal, B., Kriegbaum, K., Heckhausen, J., & Wu, V. (in preparation). Parents matter, but so does culture: Ethnicity influences how shared agency affects academic motivation and achievement.

CONFERENCE PAPER PRESENTATIONS

Limas, I., Villarreal, B., & Heckhausen, J. (2016, May). *Academic stress in university students and its relationship to motivation and mental and physical health*. Paper presented at the 22nd Annual University of California, Irvine Undergraduate Research Symposium, Irvine, CA.

Villarreal, B., Kriegbaum, K., Heckhausen, J., & Wu, V. (2015, April). *The role of shared/non-shared agency in college motivation and achievement*. Paper presented at the 95th Annual Meeting of the Western Psychological Association, Las Vegas, NV.

Villarreal, B., Heckhausen, J., & Lessard, J. (2014, May). *College enrollment goals for the year after high school: Costs of failure and benefits of ambition*. Paper presented at the 7th Annual Meeting of the Society for the Study of Motivation, San Francisco, CA.

Villarreal, B., Heckhausen, J., & Lessard, J. (2014, May). *High-school seniors' short-term educational goals: Do the costs of failing one's goals outweigh the benefits of ambitious goal setting?* Paper presented at the 26th Annual Convention of the Association for Psychological Science, San Francisco, CA.

Villarreal, B. (2014, April). *College enrollment goals for the year after high school: Costs of failure and benefits of ambition*. Paper presented at the 1st Annual University of California, Irvine Associate Graduate Student Symposium, Irvine, CA.

Villarreal, B., & Heckhausen, J. (2013, May). *What's in a quarter: Adjusting and re-engaging with course aspirations after mid-quarter feedback*. Paper presented at the 6th Annual Meeting of the Society for the Study of Motivation, Washington, DC.

Wu, V., Villarreal, B., & Heckhausen, J. (2013, May). *Shared agency in academic motivation and achievement*. Paper presented at the 20th Annual University of California, Irvine Undergraduate Research Symposium, Irvine, CA.

Villarreal, B. (2013, March). *Missing the mark: Responses to negative feedback in a difficult course*. Paper presented at the Developmental Psychology Brown Bag Series, Department of Psychology and Social Behavior, University of California Irvine, Irvine, CA.

Villarreal, B. (2012, May). *What's in a quarter? The impact of feedback on students' course aspirations and goal engagement behaviors*. Paper presented at the Department of Psychology and Social Behavior Colloquium Series, University of California Irvine, Irvine, CA.

- Shirinian, G., Markarian, I., Simpliciano, L., Villarreal, B., & Heckhausen, J. (2012, May). *Motivation and self-regulation in transfer students: Relations to beliefs about future career*. Paper presented at the 19th Annual University of California, Irvine Undergraduate Research Symposium, Irvine, CA.
- Villarreal, B. (2009, February). *Sensation-seeking and high-risk sexual behavior among urban college students*. Paper presented at the 3rd Annual Student Research Day at California State University Dominguez Hills, Carson, CA.
- Villarreal, B. (2009, February). *Negative attitudes toward condoms predicts loneliness among young African-American women*. Paper presented at the 3rd Annual Student Research Day at California State University Dominguez Hills, Carson, CA.
- Villarreal, B., Mehdiyoun, N. F. (2008, May). *Aphrodisiac knowledge and preferences: Classic vs. contemporary*. Paper presented at the 32nd Annual Meeting of the Social Science Research and Instructional Council, Long Beach, CA.

CONFERENCE POSTER PRESENTATIONS

- Golbodaghi, A., Hernandez, G., Merino, M., Yau, P. S., Villarreal, B. J., & Heckhausen, J. (2016, May). *Motivation, employed community college students, and transfer goal-pursuit*. Poster presented at the 22nd Annual University of California, Irvine Undergraduate Research Symposium, Irvine, CA.
- Kim, K. M., Tibbetts, V., Villarreal, B. J., & Heckhausen, J. (2016, April). *A qualitative analysis of psychological factors that influence transfer student motivation*. Poster presented at the 96th Annual Meeting of the Western Psychological Association, Long Beach, CA.
- Limas, I., Villarreal, B. J., Cross, M., & Heckhausen, J. (2016, April). *Academic stress, motivation, and mental and physical health in university students*. Poster presented at the 96th Annual Meeting of the Western Psychological Association, Long Beach, CA.
- Merino, M., Hernandez, G., Golbodaghi, A., Yau, P. S., Villarreal, B. J., & Heckhausen, J. (2016, April). *Motivation and employment in community college students*. Poster presented at the 96th Annual Meeting of the Western Psychological Association, Long Beach, CA.
- Lee, Y. M., Mansoorian, E., Villarreal, B., & Heckhausen, J. (2015, May). *The role of congruent motives in community college student success*. Poster presented at the 21st Annual University of California, Irvine Undergraduate Research Symposium, Irvine, CA.
- Hernandez, G., Limas, I., Merino, M., Wang, Y., Villarreal, B., & Heckhausen, J. (2015, May). *Motivation, self-regulation, and individual agency in higher-education goal pursuit*. Poster presented at the 21st Annual University of California, Irvine Undergraduate Research Symposium, Irvine, CA.

- Villarreal, B., Kriegbaum, K., Wu, V., & Heckhausen, J. (2015, March). *Shared and non-shared agency as predictors for academic achievement and motivation*. Poster presented at the 1st Annual International Convention of Psychological Science, Amsterdam, The Netherlands.
- Villarreal, B., Heckhausen, J., & Lessard, J. (2015, February). *Ambitiousness in college enrollment goals: Is it worth it?* Poster presented at the 16th Annual Meeting of the Society for Personality and Social Psychology, Long Beach, CA.
- Wu, V., Villarreal, B., Heckhausen, J., & Kriegbaum, K. (2015, February) *Shared and non-shared agency in academic motivation and achievement*. Poster presented at the 16th Annual Meeting of the Society for Personality and Social Psychology, Long Beach, CA.
- Farzanmehr, B., Savino, S., Saifabad, N., Shirmohammadi, M., Villarreal, B., & Maddi, S. (2015, February). *Hardiness and excessive gambling behaviors*. Poster to be presented at the 16th Annual Meeting of the Society for Personality and Social Psychology, Long Beach, CA.
- Mendoza, Y., Villarreal, B., & Heckhausen, J. (2014, May). *A cross-ethnic comparison of motivation and goal engagement in community college students*. Poster presented at the 20th Annual University of California, Irvine Undergraduate Research Symposium, Irvine, CA.
- Puthran, D., Villarreal, B., & Heckhausen, J. (2014, May). *Matching student obstacles with discrepancies in time to transfer*. Poster presented at the 20th Annual University of California, Irvine Undergraduate Research Symposium, Irvine, CA.
- Patihis, L., & Villarreal, B. (2014, March). *Hierarchical linear modeling: The effect of smoking and statewide maternal education on infant birth weight*. Poster presented at Hierarchical Linear Modeling Statistics Session, University of California, Irvine, CA.
- Maddi, S. R., Gunderson, K. K., Savino, S. C. M., & Villarreal, B. (2013, August). *Multivariate analysis of hardiness and grit on cadet performance at USMA, West Point*. Poster presented at the 121st Annual Convention of the American Psychological Association, Hawaii.
- Wu, V., Villarreal, B., & Heckhausen, J. (2013, May). *Shared agency with parents in academic motivation and achievement*. Poster presented at the 6th Annual Meeting of the Society for the Study of Motivation (SSM), Washington, DC.
- Villarreal, B., & Heckhausen, J. (2013, May). *The impact of feedback on students' course aspirations and goal engagement behaviors*. Poster presented at the 25th Annual Convention of the Association for Psychological Science, Washington, DC.

- Bubolz, V., Mendoza, Y., Poissant, D., Puthran, D., Villarreal, B., & Heckhausen, J. (2013, May). Is it worth it? The impact of changing majors on students' motivation, well-being, and academic performance. Poster presented at the 19th Annual University of California, Irvine Undergraduate Research Symposium, Irvine, CA.
- Maddi, S. R., Gunderson, K. K., Savino, S. C. M., Villarreal, B. (2013, April). *USMA West Point cadet's performance predicted by hardiness: A longitudinal study*. Poster presented at the 93rd Annual Convention of the Western Psychological Association, Reno, NV.
- Maddi, S. R., Mathews, M. D., Kelly, D. R., Resurreccion, N., Villarreal, B. J. (2010, August). *The relationship between hardiness and performance in challenging environments*. Poster presented at the 118th Annual Convention of the American Psychological Association, San Diego, CA.
- Villarreal, B., & Ruiz, P. (2010, February). *The relationship between risk behavior, sensation-seeking, and daily spiritual experiences*. Poster presented at the 5th Annual Student Research Day at California State University Dominguez Hills, Carson, CA.
- Villarreal, B., & Paxton, K. (2009, April). *The relationship between mental health variables and sexual risk behavior among young African-American women*. Poster presented at the 89th Annual Convention of the Western Psychological Association, Portland, OR.
- Mehdiyoun, N. F., Villarreal, B., De Villers, L., & Sneed, C. D. (2008, April). *Demographic differences in aphrodisiac use, preferences, and beliefs: Results from an online survey*. Poster presented at the 88th Annual Convention of the Western Psychological Association, Irvine, CA.
- Mehdiyoun, N. F., Villarreal, B., De Villers, L., & Sneed, C. D. (2007, November). *Online survey research: Classic and contemporary aphrodisiac food and libation preferences as related to demographic variables*. Poster presented at the 2nd Annual Student Research Day at California State University Dominguez Hills, Carson, CA.
- Ghavami, N., Villarreal, B., & Badgen, M. (2006, April). *Implications of gay and lesbian identity exploration and identity commitment for psychological well-being*. Poster presented at the 86th Annual Convention of the Western Psychological Association, Palm Springs, CA.

RESEARCH EXPERIENCE

- 2010-2017 Graduate Student Researcher, UCI
Life Span Development and Motivation Laboratory
 Supervisor: Jutta Heckhausen, Ph.D.
 Proposed and implemented several projects on the motivational and self-regulatory strategies of community college and transfer students, and the role of shared and non-shared agency with parents in college students' academic motivation and achievement. Supervised undergraduate research projects.

- 2008-2014 Graduate Student Researcher, UCI
Hardiness Research Laboratory
 Supervisor: Salvatore Maddi, Ph.D.
 Proposed and implemented research projects on the relationship between hardiness and creativity, stereotype threat, and sensation-seeking, as well as hardiness as a predictor of military cadet performance. Supervised undergraduate research projects.
- 2008-2009 Graduate Student Researcher, CSUDH
Sexual Health and Community-based Psychological Wellness Laboratory
 Supervisor: Keisha Paxton, Ph.D.
 Conducted a literature review, generated research hypothesis, coded data, developed a sexual-risk index, ran analyses, presented research, and published a manuscript on the mental health of young African-American women with high risk sexual behavior.
- 2008-2009 Graduate Student Researcher, CSUDH
Neuropsychology Laboratory
 Supervisor: Karen Mason-Wilson, Ph.D.
 Conducted a literature review, generated research hypothesis, coded data, ran analyses, and presented research on sensation-seeking and high-risk sexual behavior among college students. Supervised undergraduate research projects.
- 2007-2008 Graduate Student Researcher, CSUDH
 Supervisor: Linda De Villers, Ph.D.
 Conducted a literature review, coded data, ran analyses, and presented research on demographic differences in aphrodisiac use, preferences, and beliefs.
- 2005-2006 Research Assistant, UCLA
 Faculty Mentor: Anne Peplau, Ph.D. and Paul G. Davies, Ph.D.
 Conducted a literature review, ran preliminary data analyses, and presented research on the identity formation and well-being of ethnic and sexual minority individuals.

TEACHING INTERESTS

Lifespan Development	Gerontology	Motivation
Adolescent Development	Developmental Psychology	Research Methods
Adult Development	Introductory Psychology	Statistics

TEACHING QUALIFICATIONS

- 2016-2017 Instructor of Record, IVC
 Courses: *Introduction to Psychology, Developmental Psychology*
 Created and graded quizzes and exams, Messageboards, and extra credit; managed course website and gradebook; weekly office hours.

- 2014-2017 Teaching Associate, UCI
 Courses: *Introduction to Psychology*, *Psychological Statistics (upper-division)*, *Naturalistic Field Research (upper-division writing intensive)*, *Motivation Across the Lifespan (upper-division developmental)*, *The Hardiness Approach to Stress Management (upper-division social)*
 Managed graduate student teaching assistants; created and graded quizzes, exams, and assignments; managed Messageboards, i-Clicker questions, and extra credit; managed course website, gradebook, and TurnItIn; weekly office hours.
- 2011-2015 Teaching Assistant, UCI
 Courses: *Motivation*, *Life-Span Development (in-person and online)*, *Infant Development*, *Gerontology*, *Naturalistic Field Research*, *The Hardiness Approach to Stress Management*, *Personality*, *Introduction to Psychology (online)*
 Ran weekly discussion sections and exam review sessions; created study guides and quizzes; managed course website, attendance, messageboards, i-Clicker participation, and gradebook; graded quizzes, assignments, final papers, and exams; weekly office hours.
- 2007-2009 Teaching Assistant, CSUDH, Chaffey College, Santa Monica College
 Courses: *Advanced Research Methods (Graduate)*, *Advanced Research Methods in Social Psychology*, *Community Psychology (Graduate)*, *Human Sexuality (Graduate and Undergraduate)*, *Introduction to Neuropsychology*, *Health Psychology*
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GUEST LECTURES/SERVICE PRESENTATIONS

- 2016 “Mentoring Across Differences,” Mentoring Excellence Program, Graduate Resource Center, UCI
- 2015 “Pathways to Success: The Role of Motivation, Self-Regulation, and Individual Agency in Higher Education Goal Pursuit,” Psych Talk, Saddleback College
- 2015 “The Power of a Growth Mindset,” Youth Group, Archangel Michael Church, Santa Ana, CA
- 2014 “Research at the University,” Introduction to Research Methods, IVC
- 2014 “National Science Foundation Graduate Research Fellowship Program Workshop” and “Personal Statement Workshop,” McNair Scholars Program, CSUDH
- 2009 “Personal Statements,” McNair Scholars Program Retreat, CSUDH
- 2008 “Academic Poster Presentations” and “Annotated Bibliographies,” McNair Research Methods Course, CSUDH
- 2008 “Gender and sexuality,” Human Sexuality, CSUDH

- 2007 “Sexuality and the Life Cycle: Childhood and Adolescence” and “Sexual Behavior on TV,” Human Sexuality, CSUDH
- 2007 “Prejudice” and “Scales and indexes,” Advanced Research Methods in Social Psychology Lab, CSUDH

RELEVANT EXPERIENCE

- 2011-2017 Graduate Student Mentor, UCI
Supervised undergraduate honors theses and research projects; mentored students in research design, analysis, and write up; assisted with funding applications and conference submissions; edited personal statements.
- 2014-2015 Pedagogical Fellow, Center for Engaged Instruction, UCI
Supervisor: De Gallow, Vice Provost's Academic Executive Director
Designed and implement a 2-day discipline-specific training for new TAs; served as a consultant for TAs; received advanced pedagogical training and job market preparation.
- 2014 Consultant, McNair Scholar Program, CSUDH
Edited personal statements and fellowship applications; provided academic preparation workshops.
- 2013 Contributor, Psychology Today
Editor: Jane Nussbaum
Author of “Aspire, Perspire, Repeat”: an online blog on the role of motivation and goal-setting in education
- 2008-2010 Program Coordinator, McNair Scholar Program, CSUDH
Supervisor: Michelle Waiters, Director
Academic advising; assisted with graduate application process, fellowship applications, and conference submissions; edited personal statements and research projects; created workshops and ran weekly meetings; assisted with research course.
- 2007-2009 Graduate Assistant, Master’s in Clinical Psychology Program, CSUDH
Supervisor: Karen Mason, Ph.D., Program Coordinator
Corresponded with prospective students; managed a database of applicants and alumni; provided statistical reports; updated list of internship sites and forms; assisted with new student orientation.
- 2008 Graduate Assistant, McNair Scholars Program, CSUDH
Supervisor: Michelle Waiters, Director
Assisted with graduate application process, fellowship applications, and conference submissions; edited personal statements and research projects; teaching assistant for the research course and seminar series.

DEPARTMENTAL AND UNIVERSITY SERVICE

- 2016 Panelist, “The Role of Undergraduate Research in Graduate Admissions,” Southern California Forum for Diversity in Graduate Education
- 2015, 2016 Panelist and Recruiter, “Behavioral Science,” Southern California Forum for Diversity in Graduate Education
- 2015 Panelist, New Graduate Student Orientation, School of Social Ecology, UCI
- 2015 Panelist, Online Teaching Panel, Center for Engaged Instruction, UCI
- 2014 Graduate representative on search committee for Lecturer with Potential for Security of Employment, UCI
- 2014 Designed and implemented a two-day training program for new Teaching Assistants in the School of Social Ecology, UCI
- 2014 Panelist, “Graduate Student Panel,” Latina/o Student Psychological Association, UCI
- 2013, 2014 Volunteer, Southern California Forum for Diversity in Graduate Education
- 2014 Panelist, Graduate Student Panel, Graduate Resource Center, UCI

PROFESSIONAL SERVICE

- 2013-2016 Mentor, Association for Psychological Science Mentoring Program
- 2016 Panelist, “How to Get Into and Through Graduate School,” Western Psychological Association Annual Conference
- 2015 Ad Hoc Manuscript reviewer, Australian Journal of Psychology
- 2014 Panelist, Graduate Student Panel, Promoting Excellence in Graduate Studies Program, CSUDH
- 2014 Panelist, “Surviving Graduate School,” Association for Psychological Science Annual Conference

PROFESSIONAL DEVELOPMENT

- 2015 Attended Workshop on Designing Better Test Questions for Assessing Student Learning, Center for Engaged Instruction, UCI
- 2015 Attended the 18th annual California State University (CSU) Symposium on University Teaching, a two-day teaching conference at CSU Los Angeles
- 2015 Attended the Society for the Teaching of Psychology (STP) Preconference at Society for Personality and Social Psychology annual convention
- 2010 Teaching Assistant Professional Development Program: Completed a two-day training program for new Teaching Assistants in the School of Social Ecology, UCI

PROFESSIONAL AFFILIATIONS

- 2013-2016 Society for the Study of Motivation
- 2008-2016 Western Psychological Association
- 2014 Society for Personality and Social Psychology
- 2013-2014 Association for Psychological Science

2011 American Psychological Association, Division 7
2009 Phi Kappa Phi
2008 American Psychological Association, Division 53 & 37
2008 Psi Chi – National Honor Society in Psychology, Secretary

ABSTRACT OF THE DISSERTATION

When Ambitions Aren't Enough: The Role of Motivation,
Self-Regulation, and Individual Agency in Higher-Education Goal Pursuit

By

Brandilynn Villarreal

Doctor of Philosophy in Social Ecology

University of California, Irvine, 2017

Professor Jutta Heckhausen, Chair

There is a growing disconnect between youth's expectations to attend and graduate from college on the one hand and their ability to follow through on these plans on the other. This discrepancy is pronounced at the community college, especially among low-income, first-generation, and underrepresented students. What is missing in the current community college literature is an investigation of the role of agency in facilitating transfer among community college students. Based on theoretical work, low-structured environments like the community college require a substantial amount of individual agency to attain long-term goals (Heckhausen et al., 2010). Thus, students must depend heavily on their own internal, motivational resources to reach their educational goals.

Two studies examined motivational and self-regulatory strategies, specifically goal engagement and compensatory secondary control (composed of goal adjustment and self-protection), among community college students aspiring to transfer. Goal engagement strategies aid in the successful pursuit of goals, while compensatory secondary control strategies are responses to setbacks or obstacles in goal pursuit. Study 1 assessed students within one year of

transferring to a university, while Study 2 assessed first-year community college students over a two-year period. Participants included 163 students in Study 1 and 193 students in Study 2 from two local community college districts. The sample was largely comprised of women and was ethnically diverse.

Regression-based analyses investigated the impact of motivational and self-regulatory strategies on academic behavior, transfer-related behavior, transfer outcomes, well-being and satisfaction variables. Across Study 1 and Study 2, goal engagement strategies were associated with positive outcomes. Compensatory secondary control strategies had fewer significant relationships with variables of interest and relationships were negative. Additionally, the interaction between compensatory secondary control and selective primary control (a goal engagement subscale) influenced transfer behaviors and outcomes. Significant ethnic differences emerged in goal engagement with Latino students reporting higher levels of goal engagement than Asian American or European American students, despite poorer academic performance and taking longer to transfer to a university. The results of both studies can be used to implement cost-effective and short-term psychological interventions that maximize students' motivational resources and facilitate transfer to a university.

INTRODUCTION

Today's young people expect to attain some form of post-secondary education in their lifetime. This expectation is endorsed almost universally among young people, despite variations in prior academic performance, socioeconomic status, or knowledge about college procedures. It is likely that conceptions of America as the land of opportunity play a role in the universality of college expectations among today's youth. Not surprisingly, the nation's educational system, and in particular the community college (also known as junior or two-year colleges), echo the ideas of the American Dream: accessibility and mobility. The community college represents the opportunity for social mobility through higher education.

The California Master Plan is often used as a model for the country and served as the educational system of interest in this dissertation. California has implemented an extensive system of over 100 community colleges. Although California has streamlined the transfer process to the four-year university, a substantial number of community college students never transfer. This is unfortunate because community colleges enroll large numbers of low-income, first-generation, and traditionally underrepresented college students.

This dissertation proposed a person-situation interaction framework to understand the factors leading to a successful or unsuccessful transfer to a four-year university among community college students. Several interconnected background and performance characteristics of community college students combine to significantly decrease their chances of obtaining higher levels of education. These individual characteristics are further exacerbated by a lack of institutional resources and other forms of support at the community college. In this type of environment, it is hypothesized that personal agency, motivation, and self-regulation are disproportionately facilitative in promoting transfer to the four-year university. Understanding

the process through which some students overcome disadvantages and barriers using their own motivational resources has the potential to inform future interventions that facilitate transfer.

The proposed dissertation addressed the following research questions using two short-term longitudinal studies: (1) How does community college students' engagement with educational goals and use of motivational and self-regulatory strategies relate to (a) persistence despite obstacles, (b) resilience to distraction from employment and other sources, and (c) transfer to a four-year university; and (2) How does community college students' use of compensatory secondary control strategies to failure or other temporary setbacks relate to (a) persistence, (b) resilience to distraction from employment and other sources, and (c) transfer to a four-year university?

CHAPTER 1: THEORETICAL CONTEXT

Lifespan Development

Lifespan developmental psychology is the study of individual development from conception until death (Baltes, 1987, 1997). As a broad framework for understanding development, one of its goals is to outline the structure and sequence of development as it unfolds over the lifespan (Baltes, Lindenberger, & Staudinger, 2006). Essential in this approach is the recognition that development proceeds as a dynamic, bidirectional interaction between the individual and his or her social ecology. In other words, an individual is exposed to, and simultaneously influences, the unique configuration of social, cultural, and institutional contexts present throughout the lifespan.

As individuals develop in their social ecology, they encounter changing biological and socially-constructed opportunities and constraints. It is these factors, traditionally identified as nature and nurture, that dominated early developmental thinking in the U.S. (Lerner, 2002). However, modern approaches to lifespan development recognize a third central propeller of human development: the individual agent. As co-producers of their own development (Lerner & Busch-Rossnagel, 1981), individuals actively regulate their lives according to opportunities and constraints in the environment with the ultimate goal of optimizing development across the life span.

Although this dissertation used lifespan development psychology as a theoretical framework, a life-course sociological approach would also be appropriate (Elder, 1974, 1985; Havighurst, 1948, 1973; Neugarten, 1969). Lifespan developmental psychology and life-course sociology developed parallel to one another and were heavily influenced by developmental systems theories. Both fields emphasize the individual as an active agent in his or her

development and the dynamic, bidirectional interactions between the individual and the environment over the lifespan. The main difference between the two fields is that lifespan psychology emphasizes the mechanisms and processes of individual behavioral and mental development, whereas life-course sociology focuses on sociostructural and social-institutional conditions for shaping individual life courses.

In the lifespan development approach, life transitions are an especially interesting area to study because they capture rapid changes both at the individual and societal level. As these changes unfold, they provide the catalyst for substantial developmental change. Life transitions occur throughout the lifespan and include the transition to early schooling for young children, the onset of puberty (which marks the transition from childhood to adolescence), and the transition to the workforce for adolescents or young adults, among many others. Because these transition periods are accompanied by important biological and socioemotional changes in the individual and changes in social roles or expectations, they provide a significant amount of stress for the individual.

Of importance to this dissertation, individuals react and adapt differently to the simultaneity of changes in life transitions. This heterogeneity is exhibited through different rates and directions of developmental change that are specific to certain life domains (Baltes, 1979, 1987). Ultimately, the adaptiveness of the individual's response is a result of the unique interaction between biology, society, and individual agency, and leads to divergent developmental paths for the individual.

Individual Agency in Development

There are three major approaches to individual agency in development: the selection, optimization, and compensation (SOC) model proposed by Paul Baltes and Margaret Baltes and

their colleagues (Baltes, 1987, 1997; Baltes & Baltes, 1990); the dual-process model of assimilation and accommodation proposed by Brandtstädter (1989, 2009); and the motivational theory of lifespan development proposed by Heckhausen, Wrosch, and Schulz (2010).

As a group, the theories of lifespan development aim to describe, explain, predict, and optimize human development across the lifespan. Similar to developmental systems theories, these theories stress the important role of individuals and dynamic person-context relations in influencing human development. Individuals are able to regulate their development according to opportunities and constraints in their social ecology. They actively seek to regulate the use of motivational strategies to optimize development across the life span.

Selection, Optimization, and Compensation. The SOC Model (Baltes & Baltes, 1990; Baltes et al., 1998; Freund & Baltes, 2002) provides a meta-theoretical framework for understanding developmental regulation across the life span. The processes of goal-selection, goal-pursuit, and goal-maintenance are sustained through the use of selection, optimization, and compensation strategies. A key aspect of this model is that individuals engage in these processes in a coordinated manner to extract the most from their environments and achieve adaptive developmental outcomes.

Elective selection involves the construction of a goal hierarchy and commitment to a set of goals and preferred activities. Individuals focus on goals that are important to them in a particular life stage. Goal priorities change throughout the lifespan, but adaptive individuals select goals and optimize gains in domains they can excel in. Optimization refers to the investment of resources in the selected activity or goal. For example, pursuing a goal may require acquiring new skills. Compensation occurs when individuals experience a shortcoming. In these cases, individuals invest more resources and use compensatory strategies to maintain an

adaptive level of functioning and achieve their goals. For instance, efforts could be made to redistribute available resources to areas of need. Lastly, the SOC model specifies adaptive loss-based selection strategies that individuals use when functional loss has occurred. In these cases, individuals can adjust current standards and goal hierarchies to facilitate future goal pursuits.

Dual-process Model of Assimilation and Accommodation. While the SOC model views the fundamental function of developmental regulation as the maximization of gains and minimization of losses, the dual-process model emphasizes the need to preserve self-consistency across the lifespan (Haase, Heckhausen & Wrosch, 2013). As an action theory of development, Brandtstädter's (1989, 2009) model postulates self-concept as the organizing and guiding force of development. Development is regulated via a self-organizing process to minimize discrepancies between desired and actual goal states. Individuals seek to reduce self-discrepancies and emotional distress through the use of two developmental regulatory processes: assimilation and accommodation.

Assimilation refers to an individual's active and intentional efforts to attain desired developmental goals and outcomes by changing the environment. For example, an individual may strive tenaciously to achieve a valuable goal, such as a successful career or happy family. Assimilation is most adaptive when opportunities to pursue to the goal, goal importance, and resources are high. Accommodation, on the other hand, is most adaptive when resources are scarce and the goal is less important and easily substituted. Accommodation involves subconscious cognitive processes that reduce the discrepancy between actual and desired goal states. Two strategies can be used: individuals can reappraise their actual goal state as more positive or reappraise the desired goal state as less positive. Accommodation strategies are particularly salient when challenges emerge or when goals can no longer be attained. In these cases,

individuals should use accommodative cognitions to flexibly adjust goals, re-evaluate the self, or find meaning in failure.

Assimilation and accommodation processes have the same goal: to reduce discrepancy and distress in the self. However, they operate in opposing ways, such that the use of one process inhibits the other (Brandtstädter & Rothermund, 2002). While assimilative processes emphasize the role of intentionality in forming goals, values, beliefs, and volitions, accommodative processes are largely beyond conscious awareness.

Motivational Theory of Lifespan Development. The motivational theory of lifespan development (MTD) uses a motivational and action-theoretical perspective to conceptualize what individuals do to regulate their development across the life course. Developed over two decades of theoretical and empirical scholarship by Heckhausen and colleagues (Heckhausen et al., 2010), the theory integrates the original life-span theory of control (Heckhausen, 1999; Heckhausen & Schulz, 1995; Schulz & Heckhausen, 1996), the Model of Optimization in Primary and Secondary Control (OPS; Heckhausen & Schulz, 1993), and the Action-Phase Model of Developmental Regulation (Heckhausen, Wrosch & Fleeson, 2001; Wrosch & Heckhausen, 1999).

The life-span theory of control specifies that throughout life, individuals strive to maximize control of the environment and their development (Heckhausen & Schulz, 1993, 1995; Schulz & Heckhausen, 1996). As defined by Rothbaum, Weisz, and Snyder (1982), primary control processes are directed at changing the environment in accordance with one's goals, such as directing resources to a goal. Secondary control, on the other hand, refers to processes directed by the individual to align one's goals with the environment. This might require the individual to change some aspect of his- or herself, such as cognitive or motivational processes, to be more

aligned with the environment. This is typically needed when it is no longer feasible to pursue a valued goal.

As specified in the life-span theory of control, primary and secondary control strivings follow different developmental trajectories across the lifespan (see Figure 1). The trajectory for primary control striving is continuously high and stable throughout the lifespan (Heckhausen, 1999). Individuals are constantly striving to control their environment as much as possible, even if their actual ability to control the environment is low. Primary control potential, or the actual ability of individuals to control their environment, follows an inverted U-shape across the lifespan. Due to a dependence on others at birth, primary control potential starts off low early in life and gradually increases until midlife, when the ability to influence one's environment is at a maximum. From midlife onward, primary control potential decreases due to increasing biological and ecological constraints.

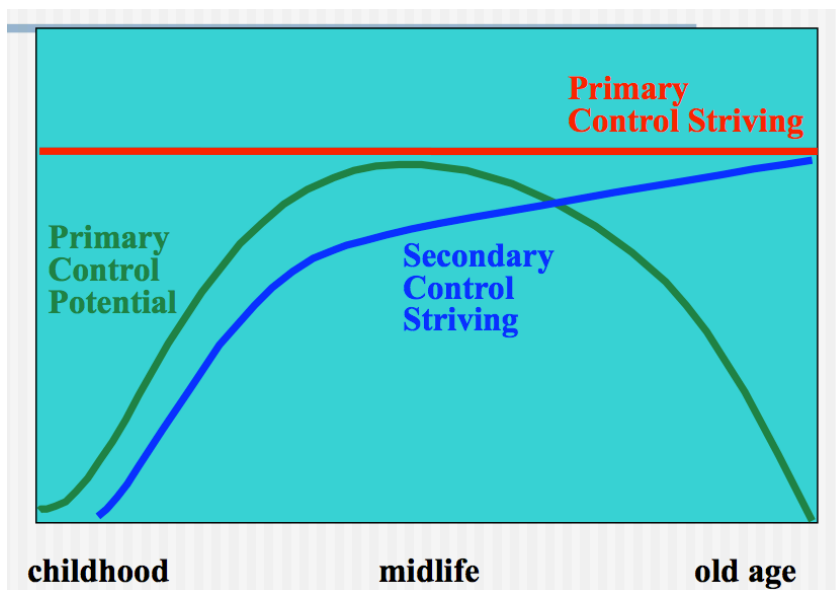


Figure 1. Hypothetical life-course trajectories: processes of primary and secondary control (Heckhausen et al., 2010)

In contrast, secondary control strategies are used increasingly throughout the life course. Secondary control strivings are expected to increase during childhood, but at a lower rate than primary control potential. Around midlife, secondary control strivings begin to increase more steeply and eventually approach primary control striving levels in old age. It is important to note that primary and secondary control strivings can be used at the same time. In fact, secondary control strivings may be used to reinforce primary control strivings (Heckhausen et al., 2010).

Individuals regulate their development by engaging with appropriate developmental goals and disengaging from goals that have become too costly or are no longer available. According to the OPS model, individuals select the most adaptive and age-appropriate developmental goals using a higher-order self-regulatory process called optimization (Heckhausen, 1999; Heckhausen & Schulz, 1993). The optimization of goal-choice, which differs from optimization in the SOC model, is a regulatory strategy that helps individuals determine the ideal time to pursue goals, taking into account both the opportunities available to the individual as well as the consequences and trade-offs for pursuing one goal over another.

Goal pursuit is only adaptive if sufficient opportunities in the developmental ecology exist to facilitate its attainment (Heuristic 1). Thus, goal pursuit should be congruent with age-graded opportunity structures and developmental timetables. Equally important when choosing developmental goals is to consider the broader context and impact of pursuing the goal for overall functioning and long-term development (Heuristic 2). Pursuing the goal should not negatively impact the attainment of concurrent or future goals. At the same time, the individual should maintain a minimum diversity of goals to guard against developmental dead-ends if the goal is not attained or if goal pursuit is no longer possible (Heuristic 3). These heuristics work

together to support goal engagement as opportunities in the environment arise, and goal disengagement as opportunities fade away.

The action-phase model of development proposed by Heckhausen (1999) outlines the motivational and self-regulatory strategies used to regulate development throughout the lifespan, as it is organized into cycles of goal selection, goal engagement and goal disengagement. These processes are especially important when challenges or difficulties arise in goal pursuit. Goal engagement strategies are adaptive and augment an individual's behavioral and motivational resources. Behavioral resources include the investment of effort, time, strategies, and persistence in attaining the goal. Individuals can also seek additional sources of support if needed. Motivational resources refer to the level of commitment and importance associated with the goal as well as the ability to stay focused despite attractive alternatives.

Goal disengagement is adaptive when the goal has been successfully attained or it can no longer be pursued. If the goal was successfully met, the individual can begin a new goal cycle of selection and engagement. If the goal was not attained but it is still possible to attain the goal, it is adaptive to use two types of compensatory secondary control strategies to continue pursuing the goal. Goal disengagement is a third type of compensatory secondary control strategy that is not adaptive in this context. In one type of strategy, individuals can adjust the goal (goal adjustment). In conjunction with goal adjustment, individuals can use self-protection strategies to safeguard motivational resources and self-esteem after failure or setbacks, such as comparing the self to someone who is worse off or blaming others. In these two cases, compensatory secondary control strategies would encourage continued goal pursuit of the original goal, or a slightly altered goal.

Compensatory secondary control strategies, especially self-protection strategies, can also help individuals pursue new goals when disengaging from the original goal. Individuals who continue to pursue goals after they are no longer attainable have worse mental and physical health than individuals who disengage from goals. This relationship holds for goals in various domains, such as childbearing, romantic relationships, and health status (Heckhausen et al., 2001; Wrosch & Heckhausen, 1999; Wrosch, Schulz & Heckhausen, 2002). Through the coordinated use of goal engagement and disengagement strategies, individuals actively regulate the pursuit of life goals.

Despite facing several challenges over the life course, individuals have the ability to continue pursuing long-term goals while maintaining a sense of personal agency. The extent to which individuals successfully overcome temporary setbacks and challenges is dependent on their adaptive use of motivational and self-regulatory processes over the life course. When pursuing a goal, individuals enact various behavioral and motivational resources depending on the demands of the task. Importantly, some individuals are more adept at knowing when to use these strategies and are more efficient in using them compared to others.

The MTD recognizes the importance of motivational and self-regulatory processes in unstructured environments and long-term goal pursuit (Heckhausen et al., 2010). As we will see, this type of environment characterizes the community college, which is the educational institution of interest in this dissertation. Thus, the MTD is the ideal lens to examine the problem of why more community college students are not transferring to four-year universities.

CHAPTER 2: LITERATURE SURVEY

The Transition to Adulthood

The transition to adulthood is a time of significant developmental change in a young person's life. In the U.S., the transition coincides with several legal changes at age 18 that grant the individual more freedom and responsibilities. The transition corresponds to the end of compulsory schooling, or high school graduation, for most adolescents at ages 17 or 18. Although legally the adolescent is considered an adult at age 18, there are several reasons to believe the transition to adulthood is gradual and asynchronous for today's young people. There is not a general agreed upon age that marks the end of the transition to adulthood; estimates range from age 18 to age 25 to age 30, or beyond.

It is clear that the transition period ends with the attainment of adult roles and responsibilities. Sociologists have traditionally measured adulthood as the attainment of behavioral milestones, such as completing school, leaving home, becoming financially independent, marrying, and having a child. Psychologists have taken a step beyond these objective measures to include the subjective feelings of the individual as a valid measurement of adult status. Despite cultural differences, there is generally agreement across cultures on the behavioral and subjective markers of adult status, at least in industrialized countries: accepting responsibility for oneself, making independent decisions, and becoming financially independent (Arnett, 2007).

In general, the transition to adulthood is associated with increased opportunities to pursue divergent developmental paths, with few constraints. The decisions made during this period of life often have important lifelong implications. The following section outlines the unique

biological, societal, and individual agency changes that occur during this transition, as well as the important interactions between them.

Biology. In general, biological factors set timetables for developmental milestones that influence the course of development. In the transition to adulthood, important biological changes occur in brain function and structure, particularly in the prefrontal cortex. The prefrontal cortex is responsible for executive cognitive functions such as planning, aspects of self-regulation, and cognitive control capacity. Researchers speculate that maturation of the prefrontal cortex is not complete until young adulthood, sometime during the mid-twenties or later (Huttenlocher, 1979; Rakic, Bourgeois, & Goldman-Rakic, 1994, Sowell et al., 2003).

During this time, developmental changes in brain volume and structure are also related to the refinement of and increased projections to and from prefrontal and subcortical regions (Hare et al., 2008). Thus, there are substantial structural and functional changes in cortical-subcortical circuitry. As individuals progress through the transition to adulthood, they are better able to plan and implement goals with goal-directed actions while suppressing irrelevant or inappropriate actions and goals (Casey, Galvan, & Hare, 2005). Both cognitive control and self-regulatory competence increases, which has important implications for pursuing life goals.

Society. Although biology plays a role in guiding development in the transition to adulthood, this dissertation is primarily focused on societal and individual agency factors and their interaction in producing development. The society in which an individual lives influences development in many ways: through age-graded cultural timetables, social institutions (e.g., the educational system or legal regulations), and social structures (e.g., social inequality, segregation of social strata, etc.). Social factors affecting development span several levels of influence, including families, neighborhoods, schools, churches, cities, and countries, and are best

understood with a systems theory approach (Bronfenbrenner, 1977, 1979). For example, an individual is embedded in one of the above-mentioned social contexts, which is further influenced by other levels as well as historical, economic, social, and cultural factors that change over time. The following sections address the broadest, most pervasive social influences on development and move toward more micro factors that influence development.

Developmental Timetables. Similar to biological influences, societal factors also set timetables that shape development. Age or developmental timetables are normally defined expectations for the sequence and timing of milestones and transitions in life (Settersen & Hagestad, 1996a, 1996b). They define the social roles, norms, and behavior appropriate for individuals of a given age in a given culture (Wrosch & Freund, 2001). These generally agreed-upon expectations and norms have important implications for how the lifespan is structured. For example, individuals expect to experience significant life events at certain points in their lives, such as graduating from school or college, marrying, having their first child, and retiring (Heckhausen, 1999; see Figure 2).

These guidelines are responsible for the common life paths of individuals in a given society. It is important to note, however, that societies differ in the rigidity of their cultural timetables. Normative timetables and age-related expectancies have become more permeable and less defined in past decades in Western cultures, and this is not specific to one period of the life course (Riley, Kahn, & Foner, 1994). The U.S., for example, is currently experiencing a period of relaxed or extended age ranges for certain life events and tasks as a result of various social changes. Age-graded norms still exist, but have weakened (Ravanera, Rajulton, & Burch, 2004). In particular, the distinction between adolescent and adult status, characterized by the transition to adulthood, has become blurry (Buchmann, 1989).

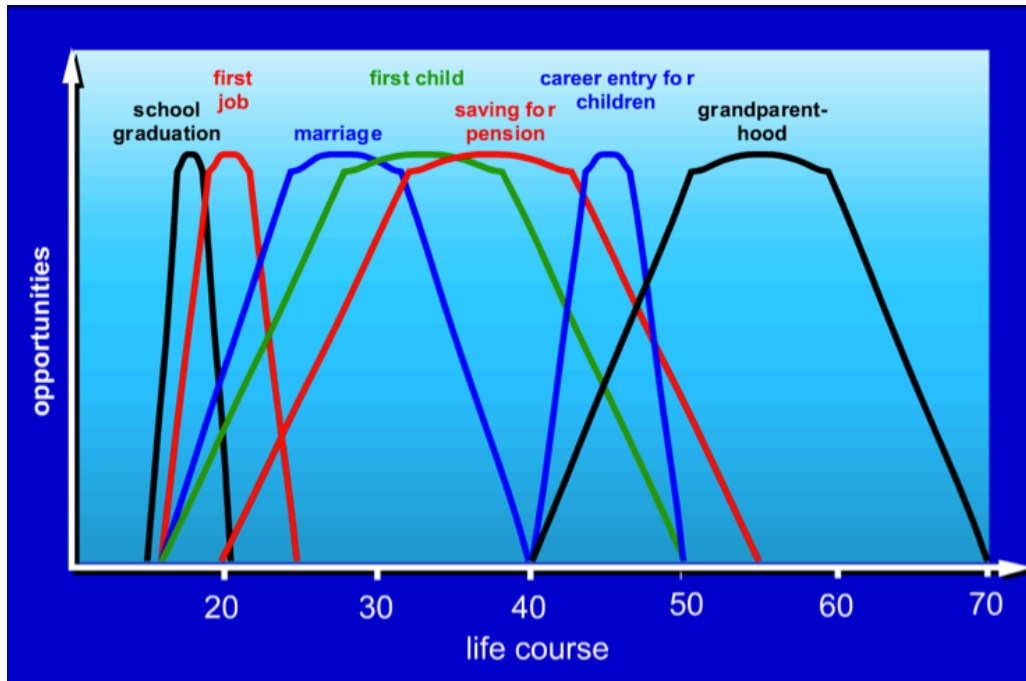


Figure 2. Hypothetical age-graded sequencing of opportunity curves for major developmental goals (Heckhausen, 2001)

Wrosch and Freund (2001) define the “deregulation of the life course” as the general decay or weakening of external structures responsible for guiding life paths and goal pursuit. There are two types of weakening: diachronic weakening and synchronous weakening (Freund, Nikitin, & Ritter, 2009). Synchronous weakening of regulatory social norms is defined by an increase in the number of perceived options in important life domains, such as career, marriage, and lifestyle. For example, those in the transition to adulthood face more life choices than ever before, such as what type of higher education institution to attend, if any, and where; whom to live with; etc. Synchronous weakening is a product of globalization and primarily affects those in the transition to adulthood up to middle adulthood. Although the concept of deregulation has important implications for understanding development across the lifespan, researchers disagree about the magnitude of such changes and their impact on people’s everyday lives (Brückner & Mayer, 2005).

There is some evidence that synchronous weakening of social norms is occurring in industrialized countries. Demographic trends showcase the lengthening phase of indecision regarding work and family among young people. One of the clearest examples is in marriage and childbearing. Since the 1970s, marriage and birth rates have been declining in Western, industrialized countries (Bumpass, Sweet, & Cherlin, 1991; Goldstein & Kenney, 2001). Most countries have experience a postponement in childbearing, primarily as a result of longer time spent in post-secondary education (Lesthaeghe, 2000). In the U.S. in 2010, the median age for first marriage was 28.2 for men and 26.1 for women (U.S. Bureau of the Census, 2010). This increase from 2000, from 26.8 years for men and 25.1 years for women, continues the long-term trend of postponing marriage in the U.S., dating back to the mid-1950s. Interestingly, the postponement phenomenon is least strong in the U.S. compared to other Western nations (Lesthaeghe, 2000).

Diachronic weakening of regulatory social norms is the blurring of normative timetables as a result of longer time periods in which goals can be pursued. Thus, it influences the sequencing and timing of goals. Here, we also see the lengthening of the transition to adulthood influencing the postponement of career and family-related goals. Although the time period has lengthened to pursue these milestones, it is important to note that many developmental tasks still need to be pursued in young adulthood (Havighurst & Albrecht, 1953). It has been argued that the tasks of young adulthood (e.g., finishing education, starting a career, finding a romantic partner, and starting a family) cannot be postponed until middle adulthood. Therefore, although individuals transitioning to adulthood may experience relaxed social norms at the beginning of the transition, they experience a strong compression and pressure as they near the end of young adulthood. For this reason, ages 27 to 35 are referred to as the “rush hour” of life (Bittman & Wajcman, 2000). Career and family-related goals are vigorously pursued during this time.

It is clear that traditional markers of adulthood (i.e., stable work, marriage, parenthood, purchasing a house, and being financially independent) are being postponed in the U.S. and other industrialized countries. This has led to greater variability in the timing of developmental milestones in the transition to adulthood as well as a shift in the “normal” age to pursue such tasks (Rindfuss, 1991). Freund et al. (2009) cited one cause for this profound change: globalization. Others have cited labor market demands and the state of the economy, as well as an absence of wartime, in influencing work and educational decisions (Rindfuss, Swicegard, & Rosenfeld, 1987; Stier & Lewin-Epstein, 2003). The decision to pursue post-secondary education among today’s youth is primarily a response to the changing job market with fewer entry-level jobs, and the need for more training and education as a result of an information-based economy (Arnett, 2007).

Arnett (2000) considers the period of extended adolescence in industrialized societies to be a new phenomenon: a new period of the life course situated between adolescence and adulthood. “Emerging adulthood” roughly corresponds to ages 18-25, but may continue into the late 20s, and is essentially a prolonged transition to adulthood in which youth theoretically have the opportunity to explore and postpone adult roles. It is based on the premise that after high school graduation, youth rarely have dependents to support. In addition, it is generally accepted that parents will continue to support the young person financially, especially if higher education is involved (Vuolo, Staff, & Mortimer, 2012). Arnett’s work has been widely criticized as a theory specific to those in the upper-and middle-classes. Thus, lower-class youth may not have the same opportunities for exploration and postponement of work roles.

Despite the controversy (see Hendry & Kloep, 2007), the postponement of adult roles and, in particular, the extended period of post-secondary education is a reality for many young

people today. The U.S. experienced sharp increases in the proportion of young people attending post-secondary education in the mid-20th century (Arnett & Taber, 1994; Bianchi & Spain, 1996). This demographic trend is consistent with current developmental timetables and widely held cultural expectations for today's youth. The collective expectation for young people to attend and graduate from college has been termed the "college-for-all mentality" (Rosenbaum, 2001). That is, the vast majority of youth in U.S. high schools (over 90%) expect to pursue post-secondary education despite variations in educational performance, resources, and opportunities (Uno, Mortimer, Kim, & Vuolo, 2010). Thus, on a broad level, society has shifted the roles and expectations for youth who have graduated from high school. These expectations have been accepted and internalized by today's youth.

In sum, cultural timetables provide important guidelines for the developmental goals individuals pursue at different points in their lives. For young people, the current zeitgeist supports a postponement of adult roles and a prolonged period of post-secondary education among today's youth that is consistent with demographic trends. Thus, the timeline for education as seen in Figure 2 has extended beyond adolescence to encompass the record-breaking numbers of young people attending college. In our current society, higher educational pursuits are given priority as an on-time developmental goal for individuals transitioning to adulthood. Individuals who pursue off-time developmental goals, such as starting a family, may experience more constraints and less support.

Educational System. Social institutions play an important role in structuring the opportunities available to individuals throughout the lifespan. Given the postponement of adult roles discussed above, the institution of higher education may be the most important social structure shaping the development of young people in the transition to adulthood. For most

young people, educational opportunities are maximized in the transition to adulthood (Vuolo et al., 2012). Opportunities for advancement in higher education vary widely by country, even in industrialized nations. In the U.S., youth who perform poorly in high school or who have parents who did not graduate from high school have the opportunity to obtain post-secondary education.

In the U.S., California has the largest and most prominent plan for higher education (California State Department of Education, 1960). The plan is often used as a model for the country and serves as the educational system of interest in this dissertation. The California Master Plan emphasizes the access and affordability of quality higher education for all students through the implementation of a multi-tier educational system. Both the University of California (UC) and California State University (CSU), also known as four-year universities, grant bachelor's degrees and have selective admission criteria. On the other hand, California community or two-year colleges serve a wider purpose and do not grant bachelor's degrees. Some of their offerings include: continuing educational classes, vocational and certificate programs, associate's degrees, and the opportunity to transfer to a four-year university. Nationwide, more than one-third of community college students enroll with the intention to transfer to a four-year university; the percentage is typically much higher in California (Horn & Nevill, 2006). California's multi-tier educational system offers high school graduates alternative paths to the bachelor's degree and beyond. One of the advantages of the California Master Plan is a streamlined and facilitative transfer function from the two-year college to the four-year university.

Despite the many opportunities in the system, there are also constraints. High school seniors with poor grades and standardized test scores are limited in the types of schools they can attend. In addition, CSUs and UCs are exponentially more expensive to attend than community

colleges. High-performing, but low-income students may be lured by the affordability of the community college or by the opportunity to save money by living at home as there are many more community colleges than CSUs or UCs.

Thus, although theoretically, disadvantaged high school graduates can attend any tier of the educational system, the truth is they do not. The vast majority of first-generation, low-income, and traditionally underrepresented college students (i.e., African American, Latino, and Native American students) are concentrated in community colleges (Shulock & Moore, 2005). Because of the Master Plan, however, it is possible for these students to achieve education levels similar to students who start at universities.

Social Structure. Social status and background shape an individual's development in important ways by limiting the opportunities to pursue developmental goals across the lifespan. In particular, living in poverty creates an environment that has a strong negative influence on an individual's growth, development, and adjustment (Leventhal & Brooks-Gunn, 2000). Overall, low socioeconomic status (SES), compared to high SES, is linked to poorer physical, emotional, behavioral, and cognitive functioning in children and adults (Conger & Donnellan, 2007).

Neighborhood poverty is associated with a host of factors that negatively influence development directly and indirectly, such as high rates of crime, unemployment, physical and social disorder, gang violence, prostitution, residential instability, and poor role models (Murry, Berkel, Gaylord-Harden, Copeland-Linger, Nation, 2011). Schools located in poor communities are unable to provide quality education due to a lack of resources and less experienced teachers. These schools are plagued by low student achievement and several other factors that prevent the pursuit of higher education, such as teenage pregnancy (Browning, Leventhal, & Brooks-Gunn, 2005). Unfortunately, ethnic minority youth, in particular Latino and African American youth,

are more likely to live in poverty than European American youth. Neighborhood effects may be strongest during early childhood and late adolescence. In late adolescence, the influence of neighborhoods on development may increase due to increasing autonomy and greater exposure to influences outside the family (Elliot et al., 1996).

Concentrated poverty moves through communities and makes its way down to the family level. Family SES has powerful effects on developmental outcomes over and above neighborhood effects (Murry et al., 2011). Low SES families are unable to provide the financial, social, and educational resources, opportunities, and experiences that promote children and adolescents' successful development (Wickrama, Merten, & Elder, 2005). In addition, lower family SES is associated with less effective parenting styles, less affectionate parenting, and sub-optimal learning environments (Bradley, Corwyn, McAadoo, & Garcia Coll, 2001). It is possible for effective parenting and collective socialization to protect against some of these negative outcomes, but by-and-large, low family SES leads to adverse outcomes.

Living in a low SES environment in adolescence has been linked to increased mental and physical health problems during the transition to adulthood, and economic difficulties and poor social outcomes in young adulthood. Many of the negative outcomes of growing up in poverty significantly alter life paths in the transition to adulthood (D'Amico, Ellickson, Collins, Martino, & Klein, 2005).

Individual Goals, Expectations, and Beliefs. Important individual factors, beyond biology, influence development across the lifespan, particularly with respect to educational goals and pursuits. Although a discussion of all individual-level factors is beyond the scope of this dissertation, it is necessary to discuss the role of motivation and attitudes toward learning in educational goal pursuit in the transition to adulthood. In particular, the following theories

provide an explanation for different reactions to academic challenges, including failure, that influence motivation and persistence in goal pursuit.

Implicit Theories of Intelligence/Ability. Individuals hold different theories about the nature of intelligence or ability (Dweck & Legett, 1988). These theories are held at an individual level, but are also more or less endorsed in cultures, schools, and classrooms. Entity theory posits that intelligence or ability is fixed and cannot change with time or effort, while incremental theory views intelligence or ability as malleable and something that can be strengthened over time. The type of theory an individual endorses has implication for how he or she responds to achievement-related challenges. In the classroom, students who endorse an entity theory typically respond negatively and experience reduced motivation as a result of negative performance feedback (Dweck, 1999). These individuals may withdraw effort instead of working to improve their performance. Conversely, students who endorse incremental theories do not believe feedback reflects absolute ability and are likely to increase effort in response to negative feedback. These individuals are more likely to persist in pursuing their goals and use additional strategies or resources to improve their performance. Thus, theories of intelligence or ability strongly influence persistence in goal pursuit, particularly when difficulties arise.

Achievement Goal Orientations. Students approach and engage with achievement tasks differently (Pintrich, 2003). Achievement goal theory outlines the different goal types, or orientations, available in an achievement setting and the associated outcomes of adopting different achievement goals (Dweck, 1986; Elliot, 1997; Nicholls 1984; Pintrich, 2000). Early theorists distinguished performance goals from mastery goals. Performance goals highlight the importance of competence and ability, especially compared to peers; mastery goals, on the other hand, emphasize learning and comprehension as measured by self-referenced standards (Pintrich,

2003). Traditionally, mastery goals, but not performance goals, have been linked to positive motivational and behavioral outcomes, such as increased intrinsic motivation and academic performance (Ames, 1992; Dweck & Leggett, 1988).

Current theorizing of achievement goals incorporates a second dimension, approach and avoidance, to produce a 2 x 2 framework of achievement goals (Elliot, 1997, 1999; Pintrich, 2000). Students with approach goals strive to achieve success; students with avoidance goals strive to avoid failure. Thus, performance-approach goals are concerned with demonstrating high ability compared to others, while performance-avoidance goals are concerned with avoiding the demonstration of low ability compared to others. Examples of performance-approach goals include the desire to outperform others on exams or to be perceived as gifted and talented. Examples of performance-avoidance goals include desires to avoid performing worse than others or to avoid appearing “dumb” (Senko, Hulleman, Harackiewicz, 2011). Mastery-approach goals are similar to mastery goals while mastery-avoidance goals involve the fear of not learning (or misunderstanding), or not meeting one’s self-standards for learning or performance.

Students arrive in a particular classroom context with an achievement goal orientation, or achievement goal profile, that influences the course-specific goals they set for themselves, their level of motivation, and their performance in the course. Goal orientations contribute to an initial level of motivation in the classroom as well continued motivation through strategy use and persistence. Performance and mastery goals in a course predict academic outcomes, such as course grades, even after controlling for past performance (Grant & Dweck, 2003). Although it is generally accepted that mastery goals are associated with positive outcomes, the specific effects of performance goals as well as the combinations of performance and mastery goals have yet to be fully understood. In the literature, performance goals are associated with higher grades or

lower grades among students, depending on the specifics of the sample (Barron & Harackiewicz, 2001). It may be that performance-avoidance goals are associated with lower motivation and performance, while approach goals in general are positively associated with performance (Grant & Dweck, 2003). However, even performance-approach goals show different relationships to academic outcomes.

Achievement goal theory helps explain students' differential responses to challenges or setbacks (Dweck, 1986; Nicholls, 1984). Achievement goals have a strong impact on students' motivation and performance when the task, or course, is difficult and when students value the task or outcome (Grant & Dweck, 2003). Upon encountering difficulties, students with learning goals (similar to mastery goals) were more likely to persist, reported greater intrinsic motivation, and engaged in deeper and more self-regulated learning strategies (Ames, 1992; Dweck & Legget, 1998; Pintrich, 2000). In some cases, these students performed better, although this was not always the case (see Elliot & Church, 1997). In contrast, students with performance goals demonstrated helplessness and debilitation when faced with difficult tasks (Ames & Archer, 1988; Elliott & Dweck, 1988).

Achievement goal orientations are influenced by individual characteristics like dispositions and implicit theories of ability mentioned above. Although research typically focuses on the stability of achievement goals over time due to personality characteristics and stable aspects of classrooms, achievement goals also have the potential to change over time (Ames, 1992; Elliot & Church, 1997; Harackiewicz, Barron, & Elliot, 1998).

Expectancy-value Model. Several models combine the expectancy, or likelihood, of goal attainment with a value component, or how much the goal is desired, to predict motivation. These models are especially important when there are attractive alternatives or distractions from

goals. Freund et al. (2009) outline different concepts in the literature that increase the likelihood of goal attainment or the value placed on the goal: self-efficacy beliefs (Bandura, 1995), control beliefs (Skinner, Chapman, & Baltes, 1988), the perceived likelihood of the realization of the goal (Heckhausen, 1989), and the value of the option compared to others (Lewin, 1935). Collectively, these concepts form the basis of expectancy-value theories (Lewin, 1938; Rotter, 1954; Atkinson, 1957).

Eccles and Wigfield's expectancy-value model is a comprehensive model of the development of achievement motivation (for a review, see Eccles, 2005). Similar to achievement goal theory, the expectancy-value model is measured in a subject domain-specific manner. Expectancies are similar to competence beliefs or self-efficacy (Bandura, 1995). Values are broken down into four types: attainment value, intrinsic value, utility value, and costs. Importantly, the model differs from previous value conceptualizations in that the perceived value of an activity is not solely determined by its difficulty level. Thus, the value construct is expanded to include other types of motivators, such as how the task is perceived by others. Intrinsic value, or the inherent enjoyment or pleasure an individual gains from a task, is similar to mastery goals. Attainment value refers to the importance an individual places on performing well while utility value refers to the tasks' relevance to life and future goals. Costs describe consequences of engaging in the task, such as something being taken away from the individual or the environment.

Expectancy and value are positively related and positively influence one another. Together, expectancy and value significantly predict achievement-related outcomes in children, adolescents, and young adults, including course selection, persistence, and course grades. In the

transition to adulthood, expectancies and values influence important decisions, such as choice of educational institution, major, and career (Wigfield & Musu-Gillette, in press).

Individual Agency. Current conceptualizations of lifespan development emphasize the role of the individual as a co-producer of development (Lerner and Busch-Rossnagel, 1981) and active agent of change (Brandtstädter, 1999; Heckhausen, 1999). Individuals actively influence their development through the selection and pursuit of developmental goals according to opportunities and constraints in their environment (Heckhausen, 1999). Individuals can optimize their development by choosing to invest in adaptive developmental paths and using motivational and self-regulatory strategies that maximize the likelihood of goal attainment. Successful developmental outcomes across the lifespan depend on an individual's ability to control the environment, seize opportunities as they become available, learn from others, and explore novel behaviors (Freund & Baltes, 1998; Brandtstädter, 2006). Importantly, individuals differ in their ability to actively set, pursue, and persevere in life goals, despite difficulties.

As youth enter the transition to adulthood, they have a large amount of control over their environment. This control allows them to actively shape their social ecology through the friends they make, the colleges they choose (if applicable), and the careers they pursue. Although college courses are difficult, post-secondary education is a high-control environment. Students choose their major, which classes to take, how often they attend classes, and how much effort they invest in their courses. Students have much control, or influence, over their college performance such that effort, persistence, and other investments greatly influence course outcomes.

Before discussing the major theories of individual agency in development in depth, it is essential to consider the important ways that societal factors interact with individual agency to produce development across the lifespan.

Societal x Individual Agent Interactions. One of the core propositions of lifespan development is that development proceeds as a transaction between the individual and his or her social ecology. The interaction between socioinstitutional factors and individual agency is the core of this dissertation. The interplay between these two factors is complex (Freund, 2006). The individual's ability to actively influence his or her development is constrained by age-graded opportunity structures and social structures. For example, certain roles or expectations are instrumentally and socially supported at different ages. The most propelling environment for goal attainment occurs when society's roles and expectations match individuals' personal beliefs and goals.

The expectancy-value model (Eccles 1994, 2005; Eccles & Wigfield, 2002) was previously discussed in terms of individual factors, although it is more accurately represented as a person-by-situation model. The value that a young person places on an educational goal is based on an interconnected web of factors. In addition to individual characteristics, such as a preference for activities or subjects, social contextual variables play an important role in influencing educational choices. For example, peers and parents have a strong influence on the value young people ascribe to educational goals, as do gender roles and expectations. For a young, low-income, ethnic minority man, attending college may be perceived as less valuable than other culturally valued roles, such as being a provider. Young people take all these factors into account when deciding upon the best goal to pursue. Thus, the individual plays an active

role by choosing an achievement-related goal, but his or her actions are also strongly influenced by social contexts and others' expectations.

Elias (1969) described a dynamic relationship between societal regulation of behavior and individual regulation of behavior. As one increases the other decreases. When societal constraints are few or non-specific, the individual must invest more in regulating his or her development by seeking to control the environment. And conversely, when societal constraints are more severe, the individual does not need to internalize rules and norms. Thus, when there is less external regulation of the life course, internal regulation and self-regulatory skills are needed.

As previously mentioned, age-graded or developmental timetables have weakened in the U.S., particularly for the transition to adulthood. When the normative events of a developmental time period are fewer or pushed back, there is a higher degree of self-regulatory skills required for successful development (Wrosch & Freund, 2001). In this case, the social expectation is for individuals to go to college, but there are many options within this decision. Even more options exist after college graduation. Young people today are increasingly expected to take responsibility for planning their future and being proactive in pursuing education and employment opportunities. Setting clear educational and career goals provides structure when external structure is not present. In general in the U.S., young people are experiencing higher demands on their self-regulation and individual agency.

This relationship holds on a broad level with developmental timelines and for more specific institutions, such as the educational system. Although the U.S. educational system encourages flexibility and mobility, this is not the case for many other countries. In Germany, for example, youth are placed in different education and career trajectories early on with little

opportunity for advancement. Thus, developmental trajectories in education are more structured and rigid in Germany than in the U.S. With greater sociostructural constraints in the environment, there is less of a need for individual agency to compensate for a lack of social structure. At the same time, however, it is harder for individuals to achieve social mobility and overcome social inequalities.

Agency in the Transfer from Community College to University

There is a growing disconnect between youth's expectations to attend and graduate from college on the one hand and their ability to follow through on these plans on the other. This discrepancy is especially pronounced at the community or junior college. The community college consistently fails to produce proportionate numbers of students transferring to four-year universities, especially among low-income and traditionally underrepresented college students (Moore & Shulock, 2010). Compared to four-year universities, community college enrollment has grown exponentially in the past decade, yet the number of transfer students from community colleges has remained fairly level (CPEC, 2002). On average only 20-25% of community college students transfer to the university (CPEC, 2007). Large numbers do not persist for more than one academic semester (Goldrick-Rab, 2010).

The challenges facing community college students has garnered the attention of researchers in several disciplines, all with the goal of preventing drop-out and increasing the likelihood of transfer to the university. Attempts by researchers in education, sociology, and psychology have put forth models to capture multiple levels of influence, from the micro-level to the macro-level of analysis (e.g., Melguizo, Hagedorn, & Cypers, 2008; Tinto, 1993). Thus far, the majority of research has investigated the role of social and institutional factors, such as the

role of social support from family and peers, the role of instructors and guidance counselors, and the impact of facilitative programs and financial resources at the community college.

Although these factors are important, they do not acknowledge the often-underestimated power of the individual to significantly influence his or her own development (Heckhausen et al., 2010). The consideration of the individual as an active agent is different from passive individual-level characteristics, which are sometimes lumped with psychological factors, such as demographic variables and prior performance. This dissertation expands upon current research by investigating the role of motivational and self-regulatory strategies in facilitating transfer among community college students. Empirical investigations of these processes in predicting students' persistence and resilience to distraction have remained scarce although they may be particularly important for community college students (Heckhausen et al., 2010).

Demographics of Community College Students. Because the community college caters to members of the community, a range of students are represented. However, even when restricting the sample to recent high school graduates, community college students are qualitatively distinct from university students in a number of ways beyond academic performance. Demographic variables combine to produce simultaneous disadvantages for community college students (Sanchez, Esparza, Colon, & Davis, 2010). Compared to university students, community college students are less familiar with higher educational systems, less academically prepared, and face greater financial pressures (Hagedorn, Cypers, & Lester, 2008). Collectively, these factors greatly increase the risk of premature drop-out before transferring to a university.

Students at the community college are more likely to come from lower SES backgrounds. Many community college students are the first in their family to attend college and have minimal

guidance from their families. For these students, too many degree offerings and programs may be overwhelming and undermine motivation (Dougherty, 2002). When students are confronted with multiple possibilities for courses or programs of study, they make less effective choices (Person, Rosenbaum & Deil-Amen, 2006). In addition to being unfamiliar with college procedures, many community college students come from neighborhoods with fewer resources and lower quality high schools, making them less prepared for college (Richardson & Skinner, 1992). As a result, community college students often take remedial courses, which not only delays transfer, but may also discourage students from persisting (Hagedorn et al., 2008).

Last, many community college students are low-income and work part-time or full-time. As a result, in the Los Angeles Community College District, a majority of students attend community college part-time and during the evening (Hagedorn et al., 2008). Many community college students prioritize work over school or otherwise fail to see college as a long-term commitment (Salinas & Llanes, 2003; Hagedorn, Maxwell, Chen, Cypers, & Moon, 2002). In addition to work obligations, many students have significant family obligations, such as caring for young children or contributing financially to the household (Fuligni, Tseng, & Lam, 1999; Goldrick-Rab, 2010). As previously mentioned, traditionally underrepresented ethnic groups in higher education (Latinos, African Americans, and Native Americans) are overrepresented in community colleges compared to other types of institutions. These same ethnic groups have strong cultural values and family ties that promote a sense of shared financial and household responsibility (Juang & Syed, 2010).

Although underrepresented families may be a source of encouragement for pursuing a college degree, they may unknowingly undermine opportunities for advancement and make it more difficult to succeed in higher education (Sanchez et al., 2010). “Family obligation” represents the

belief that children should assist and support the family based on a sense of duty and respect (Fuligni, 2007). Family obligation can greatly influence life decisions, such as the decision to reside with the family while attending college, the decision to work while in college, or the decision to forgo college entirely to support the family.

As a result of these responsibilities, low-income underrepresented students often take on adult roles earlier than their peers. These roles may be equally important as, or more important than, the role of student. Filling an adult role at a young age is a stress-producing and challenging experience (Sanchez et al., 2010). Youth may feel torn between achieving individual success and doing what is best for the family (Fuligni, 2007). As a result, school competes for time and resources among other important life domains. Stress from multiple roles negatively affects relationships, success in college, and well-being (Trillo, 2004).

In a study of urban community colleges, Latino low-income students felt they were missing out on the “typical” college experience because they had to work long hours to pay for school and help their family (Sanchez et al., 2010). Because many students attend community college part-time, live at home, and commute, the total time spent on campus is typically less than university students. Campus involvement in clubs and organizations is an indicator of social integration, which is strongly associated with successful transfer to the university. Thus, physical distance and lack of campus involvement are additional barriers to transfer.

Community colleges are extremely attractive for first-generation, low-income, or traditionally underrepresented students. They allow students to save money on tuition, continue to live with parents, and often keep the same job. At the same time, however, community colleges face substantial institutional disadvantages that negatively affect transfer rates to four-year universities.

Institutional Disadvantages. Community colleges are severely underfunded (Shulock & Moore, 2005). In particular, California has severely reduced funds for public higher education institutions and the community college is no exception. In the Los Angeles Community College District, there is one advisor for as many as 2,000 students (Hagedorn et al., 2008). In addition to poor academic advising, some community colleges do not have the resources to offer important student informational services, such as orientation, that would greatly benefit first-generation college students (Perez, 1999). A related problem is reduced course offerings at the community college. Students either have to wait for courses to be offered or take classes at multiple community colleges to complete the required courses. This has the potential to delay transfer or discourage students from enrolling in courses altogether (Shulock & Moore, 2005).

In general, the community college is much less structured than the four-year university, making it more difficult to successfully navigate. Students at the community college differ widely in the number of units taken per semester, with a large number of students attending less than full-time. Students at a university enter a freshmen cohort, attend full-time, and are expected to graduate in four years. In addition, universities have on-campus dormitories or housing that promotes a sense of cohesiveness among students. Without this structure and in addition to fewer counselors, community college students may not feel obligated or motivated to transfer to a university within two years.

Combined Effect of Disadvantages and the Role of Individual Agency. Several institutional factors of the community college combine with student characteristics to create high drop-out rates and low probability of transfer to the four-year university. Without sufficient external resources, structural support, or incentives to transfer, students are dependent on their own internal resources to reach their goals. In fact, the amount of scaffolding students receive is

directly and inversely related to demands on their own willpower and resourcefulness (Heckhausen & Chang, 2009). Thus, the institutional environment of the community college requires increased agency and motivational resources to successfully transfer to a four-year university.

Although there are some factors that are out of an individual's control when entering the community college (e.g., English and Math placement scores and the number of courses being offered), the student has control over many aspects of his or her community college experience. To be successful, the student must have a strong internal desire to meet his or her educational goals as well as the motivational resources required to actively pursue the goal. The most successful students are those who seek out resources that will aid in their successful transfer. Long-term goal pursuit involves persisting in goal-related actions and disregarding other important or attractive goals that also require resources (Freund et al., 2009). To succeed, students need to maintain or increase motivation when they encounter obstacles or attractive alternatives, such as the option to increase hours at work and take fewer units. Inconsistent enrollment is associated with prolonged time to transfer or drop-out (Hagedorn et al., 2008). Successful community college students must shield themselves from distractions that will prolong their stay at the community college or lead them away from their goals.

Summary of Research

Theories of lifespan development showcase the impressive ability of individuals to optimize their development across the lifespan. As co-producers of their development, individuals construct an action field of shifting life opportunities and constraints in biology and society to select the most adaptive developmental goals. Individuals maximize the likelihood of

goal attainment through the use of adaptive motivational and self-regulatory strategies, and use additional strategies to adjust for setbacks or compensate for goals that can no longer be attained.

To understand the successful transfer of community college students to the university, we must appreciate both societal and institutional disadvantages specific to the community college as well as individual characteristics that may exacerbate these disadvantages. As an institution, community colleges do not provide a compelling context for on-time completion of educational goals. The lack of structural support and resources provide students with few incentives to transfer. In addition, many community college students come from educational and social backgrounds that make it difficult for them to succeed in this type of environment. Having multiple roles and responsibilities leaves students prone to factors that can distract and pull them away from their educational goals. Thus, the community college environment requires high motivation and the use of various regulatory strategies to transfer to a four-year university.

CHAPTER 3: PRESENT STUDY

There are a number of reasons to be concerned about community college students not meeting their educational goals. Perhaps one of the most important is the clear and convincing relationship between post-secondary education and adaptive adult outcomes, such as a higher income and career success, as well as good physical health and emotional well-being (Blossfeld, Klijzing, Mills, & Kurz, 2005; Garg, Kauppi, Lewko, & Urajnik, 2002; Ross & Reskin, 1992). In addition, there is a strong relationship between advanced degrees and the success of our nation (e.g., Superville, Gorski, & Turner, 2010). The rapidly changing technology-based job market relies on the education, expertise, and experience of its citizens.

Studying the predictors associated with degree attainment and college success is not new. Neither is studying the predictors of successful transfer to a four-university. However, studying a broad range of predictors of success at the community college is critical due to low transfer rates at these institutions. The body of literature examining predictors of success at the community college is focused on individual and family-level disadvantages, such as prior performance and having parents who did not graduate from college. Additionally, some studies consider the lack of external resources and structural support available to community college students. These factors, taken together, contribute to a significant amount of variance in predicting transfer to a four-year university.

However, what is missing in the literature is an investigation of the role of agency in the successful transfer of community college students. Based on theoretical work on the importance of agency in pursuing developmental goals, low-structured environments like the community college are expected to require a substantial amount of individual agency to attain long-term goals (Heckhausen et al., 2010). Thus, students must depend heavily on their own internal,

motivational resources to reach their educational goals. The current literature on successful community college transfer does not include an investigation into the role of motivational and self-regulatory strategies and their ability to facilitate academic behavior, transfer-related behavior, and transfer outcomes.

The purpose of the dissertation was to examine the motivational and self-regulatory strategies used by community college students aspiring to transfer to a four-year university. It was hypothesized that students who are better able to regulate their academic and transfer-related behavior through the use of specific motivational strategies would be more likely to transfer to a university. In order to understand the impact of different motivational and self-regulatory strategies on community college students' academic and transfer outcomes, a distinction was made between strategies that promote engagement with educational goals and strategies that are responses to setbacks or obstacles in goal pursuit. Goal engagement strategies combine behavioral resources (selective primary control), motivational resources (selective secondary control), and additional support or creative means of attaining the goal (compensatory primary control) to bolster goal pursuit and attainment.

Because the goal of transferring to a four-year university is attainable and controllable, goal disengagement is not adaptive and is not a focus of this dissertation. Compensatory secondary control strategies, which are one component of goal disengagement, are comprised of goal adjustment and self-protection strategies and are adaptive when combined with additional goal-seeking behavior. However, compensatory secondary control strategies without additional investment and effort may indicate accumulating difficulties on a path to poorer performance or goal disengagement.

Specifically in this dissertation, goal engagement strategies were expected to promote academic behavior and transfer-related behavior that lead to positive transfer outcomes, well-being, and satisfaction with life. Due to the nature of the community college (i.e., a low-structure environment and poorer advising) and the typical demographic of community college students (i.e., low-income, first-generation, and traditionally underrepresented), we expected compensatory secondary control strategies to be an indication of difficulties at the community college and to have a negative relationship with academic behavior, transfer-related behavior, transfer outcomes, well-being, and satisfaction with life.

According to the MTD, secondary control strategies can be used to reinforce primary control strategies, especially when goal pursuit becomes difficult (Heckhausen et al., 2010). It is likely that community college students experience setbacks in goal pursuit, whether it be academic (e.g., taking remedial courses, courses not being offered, or more challenging courses), financial (e.g., high prices of textbooks), or personal challenges (e.g., increased autonomy and distractions from education or problems with time management). Compensatory secondary control strategies are hypothesized to be adaptive at the community college if they are combined with goal engagement, specifically selective primary control strategies. In this case, the interaction of compensatory secondary control and selective primary control should be positively associated with academic behavior, transfer-related behavior, transfer outcomes, well-being, and satisfaction variables. This hypothesis was tested with an interaction term combining compensatory secondary control and selective primary control. Students from local community colleges participated in two short-term longitudinal studies that assessed motivational strategies and transfer-related behaviors at critical points during the academic year.

The aim of Study 1 was to provide preliminary data to support the hypothesis that goal engagement, compensatory secondary control (composed of goal adjustment and self-protection strategies), and the interaction between compensatory secondary control and selective primary control are related to academic behavior at the community college, transfer-related behavior, transfer outcomes, well-being, and satisfaction variables. Because this study only included community college students planning to transfer to a university in the next year, it was a very select sample. Participants in Study 1 already successfully completed a large number of academic units. They are not representative of all community college students.

The purpose of Study 2 was to expand the investigation to include community college students who were further away from their transfer goal. Thus, Study 2 was a prospective study in which first-year community college students were followed over time. Because of the high-risk nature of the community college, it is expected that many students will drop courses, fail courses, or drop-out entirely, while others will persist and succeed in their coursework. A select group will transfer to a university.

Regression-based analyses investigated the impact of motivational and self-regulatory strategies on academic behavior, transfer-related behavior, transfer outcomes, well-being and satisfaction variables. The results of Study 1 and Study 2 can be used to implement cost-effective and short-term psychological interventions that maximize students' motivational resources.

Research Questions

Broadly, Study 1 and Study 2 addressed the following research questions using two short-term longitudinal designs: (1) How does community college students' engagement with academic goals and use of motivational strategies relate to (a) persistence despite obstacles, (b) resilience to distraction from employment and other sources, and (c) transfer to a four-year

university; and (2) How does community college students' use of compensatory secondary control strategies to failure or other temporary setbacks relate to (a) persistence, (b) resilience to distraction from employment and other sources, and (c) transfer to a four-year university?

Hypotheses

Study 1. Study 1 measured motivational and self-regulatory strategies among community college students within one year of transferring to a four-year university. Time 1 corresponded to the spring semester while Time 2 corresponded to the summer of 2014.

Hypothesis 1. Self-reported goal engagement at Time 1 was expected to be significantly positively associated with academic behaviors and transfer-related behaviors at the community college as well as satisfaction with life and well-being variables measured at Time 1. Self-reported compensatory secondary control at Time 1 was expected to be significantly negatively associated with the above-mentioned variables.

Hypothesis 2. Time 1 goal engagement was expected to positively predict Time 2 transfer behaviors and outcomes, satisfaction with life, and well-being variables over and above other predictor variables. Time 1 compensatory secondary control was expected to be a significant negative predictor of the above-mentioned variables.

Study 2. The prospective nature of Study 2 allowed a stronger test of the above hypotheses. First-year community college students completed a total of four assessments over a two-year period. Time 1 corresponded to the first semester of community college, while Time 2 corresponded to the second semester of community college. Time 3 occurred during the third semester of community college and Time 4 occurred at the end of the fourth semester of community college, after two academic years.

Hypothesis 1. Time 1 self-reported goal engagement was expected to positively predict

academic behavior at Time 2, while self-reported compensatory secondary control at Time 1 was expected to negatively predict academic behavior at Time 2. Academic behaviors included: GPA, full-time status, accumulated units, average units taken per semester, average hours spent in classes each semester, average hours spent on studying and homework outside of class, and the frequency of attending lectures each semester.

Hypothesis 2. Time 2 goal engagement was expected to positively predict transfer-related behavior at Time 3, while compensatory secondary control at Time 2 was expected to negatively predict transfer-related behavior at Time 3. Transfer-related behaviors at Time 3 included: total years to transfer, the frequency of meeting with a college counselor to discuss transfer, whether or not the student was applying to transfer universities, and whether or not the student started working on transfer applications. Additionally, Time 3 goal engagement and compensatory secondary control were used to predict the following Time 4 transfer-related behaviors: participation in the TAG program and participation in transfer programs other than TAG.

Hypothesis 3. Time 3 goal engagement was expected to positively predict transfer outcomes at Time 4, while compensatory secondary control at Time 3 was expected to negatively predict transfer outcomes at Time 4. Transfer outcomes included: educational aspirations, whether or not the student applied to transfer universities, and if so the total number of universities applied to, the total number of universities accepted to, the ratio of total universities accepted to vs. applied to, the quality of the chosen transfer university based on rank, and whether or not the student is attending his/her first-choice transfer university.

Hypothesis 4. Time 4 goal engagement was expected to positively predict well-being and satisfaction variables at Time 4, while compensatory secondary control at Time 4 was expected to negatively predict well-being and satisfaction variables at Time 4. The following well-being

and satisfaction variables were analyzed: depressive symptoms, perceived stress, physical symptoms, and satisfaction with life overall, educational progress, community college grades, and community college experience.

Method

Study 1. The purpose of Study 1 was to examine the relationship between motivational variables and successful transfer to a four-year university. Specifically, Study 1 examined the relationship between motivational and self-regulatory strategies and: (1) academic behaviors, (2) transfer-related activities and outcomes, and (3) satisfaction with life and well-being variables among community college students who were within one year of transferring to a university. The participants were a select sample of community college students nearing the end of their community college journey. The time span of Study 1 covered the spring semester and summer of 2014.

Participants. Participants included 163 community college students from two southern California community college districts, South Orange County Community College District [i.e., Irvine Valley College (IVC) and Saddleback College] and Rancho Santiago Community College District [i.e., Santa Ana College (SAC) and Santiago Canyon College (SCC)]. Students were recruited from the two primary campuses, SAC and IVC, although students frequently attend classes at sister community colleges in the same district.

SAC and IVC are geographically similar (i.e., located in neighboring cities in the same county), but differ in specific student demographics (see Table 1). However, because they are located in Southern California, both community colleges are ethnically diverse. The SAC student body is a majority Latino with European American and Asian American students comprising the next most populous ethnicities (Rancho Santiago Community College District, 2014). The

majority of IVC students are of European American decent, followed closely by Asian American students, and last, Latino students (California Community Colleges Chancellor’s Office, 2011).

The average age of students at IVC resembles that of four-year university students.

Approximately one-fourth of students (26.0%) are 19 years of age or less and another one-fourth of students (26.0%) are between 20 and 24 years of age (California Community Colleges Chancellor’s Office, 2011). On average, students at SAC are older than students at four-year universities. Thirty-one percent of students (the largest percentage) at SAC are between the ages of 22 and 29 (Rancho Santiago Community College District, 2014).

Table 1

Institutional Comparison of Santa Ana College (SAC) and Irvine Valley College (IVC)

Variables	SAC	IVC
Ethnicity		
European American	14%	48%
Hispanic/Latino	64%	12%
Asian American	12%	29%
African American	2%	2%
Other/Decline to state	10%	9%
State-aid	75%	33%
Federal-aid	43%	21%
Transfer goal ^a	65%	44%
Completed transfer goal		
Transferred to UC	9%	42%
Transferred to CSU	50%	58%
Other ^b	41%	--

Note. ^a As part of a response to educational goals. For SAC, other options were Vocational Certificate (3%), Work related (10%), Improve basic skills (2%), Educational development (2%), Credit for 4-year students (3%), other (3%), and undecided (13%). For IVC, other options included personal development (24%), career (13%), undecided (11%), GED/Basic Skills (5%), and Degree or Certificate (3%). ^b Private or out-of-state university. Number not reported for IVC.

The majority of SAC students are low-income, with almost half receiving financial assistance from the state or federal government (Rancho Santiago Community College District, 2014). Well below half of IVC students receive state or federal aid (California Community Colleges Chancellor's Office, 2011). For both colleges, the most prominent educational goal while attending community college was to transfer, although a significant minority of IVC students attended community college for personal development. Of students who transferred to a university from SAC, almost all transferred to a CSU or a private or out-of-state university. By contrast, IVC had a much higher percentage of students transferring to a UC. Due to the size of the school, a greater number of students transfer from SAC to a four-year university than from IVC to a four-year university, but IVC has the highest transfer rate of community colleges in Orange County and the second highest transfer rate in California (Irvine Valley College, 2014).

Out of the 163 community college students in Study 1, just over half of participants (52.5%) came from South Orange County Community College District (either IVC or Saddleback College); the remaining half (47.2%) came from Rancho Santiago Community College District (either SAC or SCC). The year participants enrolled in a community college varied widely, but all participants intended to transfer to a four-year university within the next academic year. Table 2 provides a summary of demographic variables for Study 1 participants. On average, participants were slightly older than four-year university students. The sample was largely comprised of women and was ethnically diverse with the largest number of participants identifying as Latino, closely followed by Asian American, and last, European American students. More than half of participants first spoke a language other than English.

The majority of participants attended community college full-time and took an average of 12 units per semester. Almost half of participants (45.4%) reported that the primary reason

for attending community college was cost (i.e., it was less expensive than a university). Other common responses were: they were not accepted to a four-year university (11.0%), they did not meet requirements for a four-year university (12.9%), and the community college was close to their family (9.2%).

In terms of parents' educational backgrounds (the highest of either parent), about one-fourth of participants' parents did not graduate from high school. Approximately two-thirds of participants were first-generation college students, meaning neither parent attained a bachelor's degree (see Table 2). Table 3 summarizes participants' long-term educational aspirations and parents' educational aspirations for their children. Approximately two-thirds of students aspired to earn more than a bachelor's degree. Parents' expectations were almost as high as students' aspirations for themselves.

Approximately two-thirds of students qualified for financial aid at the community college, indicating financial need (see Table 2). The vast majority of students in Study 1 were working with a sizably minority (12.5%) working exclusively full-time. Among students who worked, the average number of hours worked per week was 23.60 ($SD = 10.75$) with a range of 2 to 60 hours per week. Although students reported working for many reasons, the top reasons were: to pay bills (29.8%), to pay for school (20.6%), to earn spending money (17.6%), and to support their family (16.8%).

When asked to rank the importance of different life domains, participants reported school and family as extremely important to them and job/career as less important (see Table 2). When asked to compare the importance of the three domains, 61.9% of participants ranked family as the most important, 54.7% ranked school as second most important, and 77.7% ranked job as third most important in their life currently.

Table 2

Study 1: Demographic Variables (N = 163)

Variables	<i>M</i>	<i>SD</i>	<i>Range</i>
Age	22.63	(5.16)	18-47
Units per semester	12.54	(2.84)	4.5-20
Importance of			
School/education	9.28	(1.20)	4-9
Family	9.19	(1.71)	2-9
Job/career	7.52	(2.52)	1-10
		Percentage	
Ethnicity			
European American		18.4%	
Latino		41.7%	
Asian American		30.1%	
African American		1.8%	
Native American		1.2%	
Multi-ethnic		3.7%	
Other/Decline to state		1.8%	
Gender (women)		61.5%	
First language not English		58.4%	
Parents' educational level ^a			
Less than high school		26.8%	
High school		20.4%	
College – no degree		8.9%	
Vocational/trade school		2.5%	
Associate's degree		8.9%	
Bachelor's degree		21.7%	
Master's degree		7.6%	
Professional degree		3.2%	
Financial aid		67.3%	
Working & attending college		81.9%	
Attend community college			
Full-time		71.0%	
Part-time		14.2%	
Both		14.8%	

Note. ^a Highest educational level of either parent.

Table 3

Study 1: Students' and Parents' Perceived Educational Aspirations (N = 163)

Highest level of education	Student's Educational Aspirations	Parent's Educational Aspirations for Child
Associate's degree	5.5%	5.0%
Bachelor's degree	20.2%	29.4%
Master's degree	33.7%	16.3%
Professional degree	34.4%	30.6%
Other/do not know	6.1%	16.3%

Design. The proposed study followed a short-term longitudinal design. Participants completed an online assessment in the spring semester between January and April of 2014. At the end of the survey at Time 1, participants were asked if the researcher could contact them to participate in additional studies. A total of 146 participants (91.3%) agreed to be re-contacted by the researcher. Participants who agreed to be re-contacted were re-assessed in the summer between June and July of 2014.

Of the participants who agreed to be re-contacted, 58.9% answered at least one question at Time 2. Independent sample *t*-tests assessed differences between the sample at Time 1 and Time 2 on key study variables. Several differences emerged between the two groups (see Table 4). Participants at both time points had higher community college GPAs, accumulated more units, were more likely to attend lectures and/or labs, and expected to take less time to transfer to a university than participants who only completed one time point. Participants who dropped out at Time 2 were similar to students who completed both time points on the following variables: units taken each semester, hours spent in classes, hours spent on assignments and studying, frequency of meeting with a counselor to discuss transfer, total years to transfer to a university, age, and high school GPA.

Regarding employment, students who worked and completed both time points worked fewer hours ($M = 21.16$, $SD = 10.26$) than participants who only completed Time 1 ($M = 26.59$, $SD = 10.66$), $t(125) = 2.91$, $p = .004$. There were no differences in the rated importance of family and job/career between the two groups. However, participants who completed both time points reported school as marginally more important than other domains than participants who only completed Time 1, $t(140.25) = -1.94$, $p = .055$.

Table 4

Study 1: Attrition Analysis

Variables	Participated at Time 1 only ($N = 77$)		Participated at Time 1 & Time 2 ($N = 86$)	
	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)
Academic behavior				
CC GPA	3.21*	(0.48)	3.38	(0.38)
Cumulative units	66.22*	(23.45)	73.70	(17.84)
Attend lecture/lab	5.97 [†]	(1.45)	6.38	(1.21)
Transfer-related behavior				
Expected time to transfer	2.74***	(0.88)	2.26	(0.61)
Actual time to transfer	3.75	(1.83)	3.32	(1.88)
Motivation				
Goal engagement	4.18**	(0.60)	4.42	(0.40)
CSC	2.87*	(0.91)	2.58	(0.76)
Well-being				
Satisfaction with				
Life overall	5.07 [†]	(1.37)	5.50	(1.40)
Progress ed. goals	5.07**	(1.39)	5.68	(1.30)
CC grades	4.80*	(1.57)	5.35	(1.45)
CC experience	5.25	(1.35)	5.41	(1.68)
Depressive symptoms	13.42**	(6.15)	10.46	(6.18)
Perceived stress	11.25**	(2.18)	10.99	(3.29)

Note. CSC = Compensatory secondary control. CC = Community college. Ed. = Educational.
[†] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Goal engagement levels were higher for participants who completed both time points than participants who only completed Time 1 (see Table 4). Compensatory secondary control levels were higher for participants who dropped out after Time 1 than participants who completed both time points. For well-being variables, participants who completed both time points reported lower depressive symptoms and perceived stress than participants who only completed Time 1. Last, participants who completed both time points were more satisfied with their lives, progress toward educational goals, and community college grades, but not community college experience, than participants who only completed Time 1.

Procedure. The proposed study was approved by the Institutional Review Board at the University of California, Irvine as well as the institutional research offices at SAC and IVC.

Recruitment. For both community colleges, the lead researcher contacted the Transfer Student Center for assistance with recruitment. Transfer center staff distributed an email to the population of interest containing a URL to the online survey. In addition, transfer center staff shared the email with colleagues with a request to forward the message to their students. At IVC, instructors were contacted via email and asked to forward a message describing the study to their students and colleagues. The email contained a link to the online survey.

At SAC, research assistants also contacted professors via email. With permission from the instructor, research assistants made brief classroom announcements to advertise the study. Interested students wrote their contact information (i.e., e-mail addresses and names) on a piece of paper. The lead researcher contacted interested students via e-mail and provided them with the study URL.

Online Survey. Interested participants visited the study website SurveyMonkey. Upon arriving at the study website, participants were presented with a welcome page which briefly

described the study. The next page contained the study information sheet. Participants indicated they agreed to the study conditions by advancing to the next page. At this point, an eligibility question was asked to confirm that participants intended to transfer to a four-year university within the next academic year. If participants did not meet eligibility requirements, they could not continue the survey. The only identifying information required of participants was an email address used to compensate participants and a phone number to re-contact participants if they agreed to be re-contacted.

The survey took no longer than 30 minutes to complete. At the end of the survey, students were required to respond to a question that asked if they would like to participate in future studies by the lead researcher. Upon completion of the study, participants received an email from the lead researcher thanking them for participating. Shortly after, participants received an email from Amazon.com containing a link to a \$5 online gift card.

Participants who agreed to be re-contacted by the lead researcher received an email in the summer (i.e., June and July) containing a link to the follow-up survey. Participants received a phone call reminder if they did not complete the second assessment in the designated period of time. The protocol for the second assessment was identical to the first assessment.

Measures. Table 5 provides an overview of key variables.

Demographics. Participants answered basic demographic questions as well as questions about their high school performance and current employment. Participants also answered questions about their parents' education and background.

Academic Variables. Participants specified how many units, on average, they take each semester as well as the total units accumulated at the community college. Participants also indicated if they attend community college part-time, full-time, or both part-time and full-time.

Participants answered several open-response course-related questions such as how many hours, on average, they spent in classes or labs each semester as well as how many hours they spent studying, reading, writing papers, or doing homework outside of classes each semester. In addition, participants were asked how often they attend lectures or labs each semester with responses ranging from *Less than 10% of the time* to *More than 95% of the time*.

Table 5

Study 1: Overview of Key Variables

	Motivation	Academic behaviors	Transfer-related variables	Well-being
Time 1	Goal engagement Compensatory secondary control	CC GPA Hours inside classes Hours outside classes How often attend classes Units per semester	Participation in TAG Participation in other transfer programs Visit college counselor Applied to universities # of universities applied to Confidence accepted to top 3 universities Confidence accepted to any universities Expected time to transfer Total years at CC	Satisfaction with: Life overall Progress ed. goals CC grades CC experience Depressive Symptoms Perceived Stress
Time 2		CC GPA	Total universities accepted to Applied/accepted ratio Ranking of transfer university Attending first-choice university	Satisfaction with: Life Progress ed. goals CC grades CC experience Depressive Symptoms Perceived Stress

Note: # = Number. CC = Community college. Ed. = Educational.

For the first assessment, participants reported their cumulative community college grade point average (GPA) as of fall semester 2013. For the follow-up assessment, participants reported their cumulative GPA as of spring semester 2014.

Transfer variables. Participants reported on transfer-related behaviors, such as participating in transfer programs or the transfer admission guarantee (TAG) program, visiting a college counselor or advisor to discuss transfer, whether or not students applied to universities and if so, the total number of universities applied to and the names of universities applied to. Names were used to determine the types of universities students applied to (i.e., UC, CSU, private, or out-of-state university). Participants reported the frequency with which they met with a college counselor or advisor to discuss their academic progress or transferring. Response options were 1 = *Never*, 2 = *Less than once a year*, 3 = *Once a year*, 4 = *Once a semester*, 5 = *Once every couple of months*, 6 = *Once a month*, and 7 = *More than once a month*.

Participants were asked to specify the top three universities they aspired to transfer to and their confidence level of being accepted to their top three universities, as well as any university. Responses were measured on a Likert-type scale that ranged from 1 = *Not at all confident* to 10 = *Completely confident*.

During the follow-up assessment, participants reported on the outcomes of the admissions process. Participants specified the names and the total number of universities they were accepted to as well as the total number of years spent at the community college. A ratio variable was created to calculate the total number of universities accepted to vs. the total number of universities applied to. Larger numbers indicated that participants were accepted to a higher proportion of universities. Participants also indicated the name and type of university they chose

to attend (i.e., CSU, UC, private university, or other university) and whether or not this was their first-choice university.

Rankings for transfer universities were calculated using U.S. News & World Report Best Colleges Rankings for 2017 (U.S. News & World Report, 2017) and America's Top Colleges List by Forbes (Forbes, 2016). For both ranking systems, lower rankings corresponded to higher rated or better quality universities. Specific to the U.S. News & World Report rankings, which has several lists, the transfer university was first located on the National University Rankings list, which contains the top 310 universities nationwide. If a university was not listed here, we used the Regional Universities West Rankings list, which included a total of 141 universities. To calculate a rank for regional universities, the total number of national universities (310) was added to the regional ranking number.

Well-being and satisfaction variables. Questions that measured well-being and satisfaction with life were presented to participants during the first assessment and again at the follow-up assessment.

Participants were presented with four questions that assessed satisfaction with: life overall, progress toward educational goals, community college grades, and community college experience. Responses ranged from 1 = *Very unsatisfied* to 7 = *Very satisfied*.

Depressive symptomatology was one indicator of well-being. The Center for Epidemiologic Studies–Depression Scale (CESD; Radloff, 1991) is a widely used 20-item scale in which participants are asked to rate the frequency of symptoms experienced within the past month. In the interest of time and space, a shortened 10-item CESD Scale was used. This version of the CESD, CESD-10, has high agreement with the original scale (Kappa = .97; $p < .001$) (Andresen, Malmgren, Carter, & Patrick, 1994). Responses were measured on a four-point scale

and ranged from 0 = *Rarely or none of the time* to 3 = *All of the time*. A sample item is: “I was bothered by things that usually don’t bother me.” Items were reverse-coded as needed and summed to create a total score with higher numbers indicating more depressive symptoms. The original measure was validated with college students (Radloff, 1991). In Study 1, Cronbach’s alpha for CESD-10 was good at Time 1 ($\alpha = 0.85$) and acceptable at Time 2 ($\alpha = 0.73$).

The perceived stress scale (PSS) measures the extent to which life situations are appraised as stressful (Cohen, Kamarck, & Mermelstein, 1983). This scale is global, rather than event-specific, and targets life situations that have occurred within the last month. The original scale contains 14 items, has good reliability ($\alpha = .85$), and is valid with a diverse population (Cohen et al., 1983). To be economical and brief, the PSS-4 was used (Cohen & Lichtenstein, 1990). The PSS-4 is a short-version of the PSS and has adequate reliability ($\alpha = .60$). Four items begin with the same phrase: “In the past month, how often have you felt...?” A sample item is: “...that you were unable to control the important things in your life?” Responses were measured on a five-point scale with 1 = *Never*, 2 = *Almost never*, 3 = *Sometimes*, 4 = *Fairly often*, 5 = *Very often*. Items were summed (two items were reverse-coded) to create a total score with higher scores representing greater amounts of perceived stress. In Study 1, Cronbach’s alpha for the PSS-4 at Time 1 was good ($\alpha = .79$); however at Time 2, Cronbach’s alpha was not acceptable ($\alpha = .48$).

Motivation. Motivational and self-regulatory strategies were assessed with two separate constructs: goal engagement and compensatory secondary control. The Optimization in Primary and Secondary Control (OPS) scale was originally created to measure domain-general primary and secondary control strivings (Wrosch, Heckhausen, & Lachman, 2000). Domain specific

versions of the OPS scale have since been developed to assess specific domains such as education (Heckhausen & Tomasik, 2002).

Three subscales (12 items) combine to create the goal engagement scale. The selective primary control subscale contains five items that measure behavioral resources in goal attainment, such as the investment of time and energy into goals. A sample item is: “I will work hard to get a good education.” The compensatory primary control subscale contains three items and measures additional, often creative, means of engaging with the goal, such as seeking assistance from others or pursuing detours if needed. A sample item is: “If I have difficulties with my schoolwork I will get help from others.” The last subscale of goal-engagement measures selective secondary control. This four-item subscale measures additional motivational resources that are particularly needed when difficulties arise. A sample item is: “I often tell myself that I will be successful in reaching my educational goals.”

Two subscales (7 items) combine to create the compensatory secondary control scale. The goal adjustment subscale contains two items; a sample item is: “If I cannot attain my desired educational goals, I will settle for the next best option.” The self-protection subscale contains five items; a sample item is: “Whenever I encounter difficulties with my schoolwork, I keep in mind that others are struggling, too.” Although goal adjustment and self-protection represent distinct constructs, they are moderately correlated ($r = .48, p < .001$). Both indicate the student has encountered an obstacle or challenge in goal pursuit. Use of these strategies can be adaptive when combined with additional behavioral and motivational strategies. However, use of these strategies does not guarantee success. In Study 1, scale reliability when combining both subscales was higher than each of the scales alone ($\alpha = .56$ for goal adjustment; $\alpha = .77$ for self-

protection, $\alpha = .79$ for the combined scale). Thus, items were combined to create a compensatory secondary control score.

For both scales, responses were measured using a 5-point Likert response scale (1 = *Strongly disagree* to 5 = *Strongly agree*). The mean score of each scale was used in analyses. The modified OPS scale has demonstrated adequate reliability and validity (Heckhausen & Tomasik, 2002). Internal consistency scores are above .80 (Haase, Heckhausen, & Köller, 2008). In Study 1, Cronbach's alpha for the goal engagement and compensatory secondary control scales were high (.83 and .79, respectively).

Hypotheses. Hypothesis 1 used data from the first assessment to assess motivation and concurrent academic and transfer-related behavior at the community college. Hypothesis 2 used data from the first and second assessment to predict transfer outcomes. In the event that motivation variables (goal engagement and compensatory secondary control) were not significantly associated with key Study 1 variables, analyses were run using motivational subscales (selective primary control, selective secondary control, and compensatory primary control for goal engagement and goal adjustment and self-protection for compensatory secondary control).

Hypothesis 1a. Goal engagement strategies were expected to have a positive relationship with academic behaviors at the community college. Compensatory secondary control strategies were expected to have a negative relationship with academic behaviors at the community college. Pearson product moment-correlations were calculated for the following variables: goal engagement, compensatory secondary control, GPA, average units taken each semester, total units accumulated, average hours spent in classes each semester, average hours spent on studying and homework outside of classes, the frequency of attending lectures each semester, and the

perceived importance of school, family, and job.

Hypothesis 1b. Goal engagement strategies were expected to have a positive relationship with transfer-related behaviors. Compensatory secondary control strategies were expected to have a negative relationship with transfer-related behaviors. Pearson product moment-correlations were calculated for the following variables: goal engagement, compensatory secondary control, the frequency of meeting with a college counselor, participation in the TAG program (dichotomous variable), participation in a transfer program other than TAG (dichotomous variable), whether the student applied to universities this year (dichotomous variable), the total number of universities applied to, the total number of UCs, CSUs, and “other” universities applied to, respectively, and the confidence level of being accepted to one of the participants’ top three university choices or any university.

Hypothesis 1c. Goal engagement strategies were expected to have a positive relationship with satisfaction with life and well-being variables. Compensatory secondary control strategies were expected to have a negative relationship with satisfaction with life and well-being variables. Pearson product moment-correlations were calculated for the following variables: goal engagement, compensatory secondary control, depressive symptoms, perceived stress, and the four satisfaction with life variables (life overall, educational progress, community college grades, and community college experience).

Hypotheses 2a. Goal engagement and compensatory secondary control strategies were expected to be a significant predictor of transfer behavior and outcomes, over and above other predictors and covariates. A series of linear regression models examined the relationship between goal engagement and compensatory secondary control, respectively, and the following variables: total years to transfer, total number of universities applied to, total number of

universities accepted to, the ratio of total universities accepted to vs. total universities applied to, and the quality of the transfer university based on rank. Logistic regression models examined the relationship between goal engagement and compensatory secondary control, respectively, and two dichotomous variables: applied to a university and being accepted to one's first-choice university.

Proposed covariates in the regression models were community college GPA, age, gender, ethnicity, parents' highest education (of either parent), community college district, eligibility for fee waivers when applying to universities, and participation in the TAG program or other transfer programs. Unfortunately, the total number of covariates included in the linear and logistic regression models were restricted by the small sample size. A general rule is to have approximately 10 cases per predictor variable in linear regression analysis. An even larger number of cases per predictor variable are needed for logistic regression. A general rule of thumb is at least 50 cases per predictor variable. Not all proposed covariates were included in Study 1 models. Covariates that did not contribute to the model may have been removed to increase the statistical power of the analysis. Because dummy-coding ethnicity would lead to the creation of many variables, the researcher created a dichotomous variable to represent ethnicity. For this variable, traditionally underrepresented students were labeled as "1" and all other students were labeled as "0." Specific covariates used in regression models are denoted in the results section.

Hypotheses 2b. Goal engagement and compensatory secondary control strategies were expected to be a significant predictor of satisfaction with life and well-being variables, over and above other predictors and covariates. A series of linear regression models examined the relationship between goal engagement and compensatory secondary control, respectively, and the following variables: depressive symptoms, perceived stress, and the four satisfaction with life

variables (life overall, educational progress, community college grades, and community college experience). Other variables in the models included baseline scores (depressive symptoms, perceived stress, and satisfaction with life variables measured at Time 1) as well as some predictor variables and covariates identified in Hypothesis 2a. Specific covariates used in regression models are denoted in the results section. Similar to the previous regression models, the total number of variables included was restricted by the small sample size.

Study 2. As a reminder, the aim of Study 1 was to provide preliminary support that goal engagement, compensatory secondary control (composed of goal adjustment and self-protection strategies), and the interaction between compensatory secondary control and selective primary control are related to community college students' academic behaviors, transfer-related behaviors, and transfer outcomes. Study 1 explored these relationships in community college students who were within one year of transferring to a university. As a group, these students were not representative of all community college students and likely had higher GPAs and higher academic motivation than students who were farther away from their transfer goals.

The aim of Study 2 was to explore the relationships between goal engagement and compensatory secondary control and various outcome variables, respectively, among first-year community college students. These students were expected to vary widely in academic performance and motivation. Over the long-term, not all students in Study 2 will successfully transfer to a four-year university. The time span of Study 2 was two academic years, a time frame in which students can transfer to a university, although it is unlikely. It was expected that students who transferred within two years had greater levels of goal engagement and lower levels of compensatory secondary control than students who did not transfer within two years.

Participants. Participants were recruited from the same community colleges listed in Study 1: IVC and SAC. In the fall semester of their first year of community college, 124 students participated in Study 2. At Time 2 during spring semester, an additional 68 participants were recruited to bring the total number of participants to 193 students. To be eligible to participate, students had to be at least 18 years of age and in their first year of community college. In addition, students must have had the intention to transfer to a four-year university. Students enrolled at the community college for credential or vocational programs without the explicit intent to transfer to a four-year university were excluded from the study.

Although participants were recruited from IVC and SAC, students in the same community college district often attend courses at sister community colleges. Thus, Study 2's sample also including students from SCC and Saddleback College. Just over half of participants (52.4%) came from Rancho Santiago Community College District (either SAC or SCC). The remaining half (47.6%) came from South Orange County Community College District (either IVC or Saddleback College). Table 6 contains a summary of Study 2 demographic variables.

Participants in Study 2 were on average three years younger than participants in Study 1. Most students ($n = 112$) were 18 years of age. The sample was a majority women. Similar to Study 1, the sample was ethnically diverse with the largest number of participants identifying as Latino and Asian American. Almost half of participants identified a language other than English as their first language.

Table 6

Study 2: Demographic Variables (N = 193)

Variables	<i>M</i>	<i>SD</i>	<i>Range</i>
Age	19.23	(3.00)	18-40
Units per semester	12.60	(3.07)	2-22
Importance of			
School/education	8.94	(1.51)	1-10
Family	9.21	(1.69)	1-10
Job/career	7.43	(2.73)	1-10
		Percentage	
Ethnicity			
European American		18.8%	
Hispanic/Latino		44.3%	
Asian American		27.6%	
African American		1.6%	
Native American		0.0%	
Multi-ethnic		5.7%	
Other/Decline to state		1.8%	
Gender (women)		64.4%	
First language not English		47.8%	
Parents' educational level ^a			
Less than high school		26.5%	
High school		19.2%	
College – no degree		12.6%	
Vocational/trade school		0.7%	
Associate's degree		4.0%	
Bachelor's degree		24.5%	
Master's degree		9.3%	
Professional degree		3.3%	
Financial aid		66.3%	
Working & attending school		51.3%	
Attend community college			
Full-time		81.9%	
Part-time		10.6%	
Both		7.5%	

Note. ^a Highest educational level of either parent.

The vast majority of participants in Study 2 attended community college full-time. Students took an average of 12 units each semester, representing a full-time course load. When asked to choose the primary reason they attended community college, 52.1% responded that it was less expensive than a university. Other common responses were because they did not meet requirements for a four-year university (12.5%), they were not accepted to a four-year university (9.4%), and the community college was close to their family (7.3%).

Parents' educational backgrounds were similar to Study 1; over half of participants were first-generation college students. Furthermore, one-fourth of participants reported that their parents did not graduate from high school. Compared to Study 1, participants in Study 2 were slightly less ambitious in their long-term educational aspirations with fewer participants reporting they wanted to attain a professional degree (see Table 7). Parents' expectations for their children's education were high, almost as high as students' aspirations for themselves.

Table 7

Study 2: Students' and Parents' Perceived Educational Aspirations

Highest level of education	Student's Educational Aspirations ^a	Parent's Educational Aspirations for Child ^b
High school diploma	--	4.2%
Associate's degree	6.3%	4.9%
Bachelor's degree	35.4%	31.7%
Master's degree	33.9%	30.3%
Professional degree	24.4%	28.2%
Other	--	0.7%

Note: ^a Assessed at Time 4. ^b Assessed at Time 2.

Approximately two-thirds of students qualified for financial aid at the community college (see Table 6). One of the largest discrepancies between the sample in Study 1 and the sample in Study 2 was in employment and work hours. Only about half of participants were working while attending community college in Study 2, but two-thirds of students were

working and attending community college in Study 1. Of students who were working in Study 1, a larger percentage (29.3%) were working full-time. In Study 2, the majority (70.7%) were working part-time. On average, students in Study 2 who worked put in 22.64 hours per week ($SD = 10.72$) with a range of 4 to 70 hours a week. The median amount of hours worked was 20.00 hours. Study 2 did not collect data on why students worked in an effort to reduce the length of the questionnaire.

At Time 2, when asked about the importance of school/education, family, and job/career on a 10-point scale, participants in Study 2 rated education as slightly less important than participants in Study 1 (see Table 7). Ratings for the importance of family and job were similar in Study 1 and Study 2. When asked to compare the importance of the three domains in Time 2, 67.5% of participants ranked their family as the most important, 56.9% ranked school as their second most important, and 76.3% ranked job as the third most important in their life currently.

At Time 2, 95 of the original 124 students (77%) completed the survey. An additional 68 students joined the study at Time 2, making the total number of Time 2 participants 163. Including the original and added wave of participants, 136 students (70.0% of previous participants) participated at Time 3 and 137 students (71.0% of previous participants) participated at Time 4.

Design. The research design was prospective and longitudinal such that participants were followed over time to determine which students successfully transferred to a four-year university within a two-year time frame. Participants completed a total of four online assessments over the course of two academic years. Assessments occurred each semester and included fall semester 2014, spring semester 2015; fall semester 2015; and spring semester 2016. The final assessment

technically took place after spring semester 2016 had ended to ensure students received their spring semester grades and university acceptances, if applicable. At the final assessment, students indicated whether or not they were transferring to a four-year university and if so, which university they were transferring to.

Originally, data recruitment was expected to conclude after Time 1. However, due to lower than expected student participation, recruitment was extended into Time 2. Thus, Time 2 contained responses from participants in Time 1 and a new cohort of participants.

Attrition analyses. Independent sample *t*-tests assessed differences between the samples at Time 1, Time 2, Time 3, and Time 4 on key study variables. Of students who participated at Time 1, 95 of them (75.8%) also participated at Time 2. Independent samples *t*-tests and chi-squared tests indicated that students who participated at Time 1 but not Time 2 were not significantly different from students who completed Time 1 and Time 2 on Time 1 key study variables including: goal engagement and compensatory secondary control, GPA, perceived stress, depressive symptoms, age, gender, units taken each semester, community college district, certainty of transferring by specified date or at all, and the importance of school, family, and job, respectively.

Participants at Time 3 were more likely to have parents with lower levels of education than students who did not participate at Time 3, $t(149) = 2.45, p = .015$. Using chi-squared tests, students at Time 3 were more likely to be from SAC or SCC (57.0%) than IVC or Saddleback College (43.0%) than students who did not participate at Time 3 (41.1% from SAC or SCC; 58.9% from IVC or Saddleback College), $\chi^2(1) = 4.05, p = .044$. Many more women than men participated at Time 3 (69.6%) than students who did not participate at Time

3 (51.8%), $\chi^2(1) = 5.50, p = .019$. Other than these findings, there were no significant differences between students who participated at Time 3 and students who did not.

For the most part, there were more similarities than differences between students who participated at Time 4 and students who did not. Time 4 participants had a higher high school GPA than students who did not participate at Time 4, $t(148) = -3.52, p = .001$. In terms of academic behavior, participants at Time 4 were more likely to attend lectures or labs each semester than students who did not participate at Time 4, $t(41.96) = -2.16, p = .037$.

Participants at Time 4 were also more certain they would transfer by the date they specified or eventually than students who did not participate at Time 4, $t(188) = -2.02, p = .044$ and $t(71.40) = -2.10, p = .039$, respectively.

While there were important differences between different time points, it was also important to test differences between participants entering at Time 1 of the study and those entering at Time 2. A total of 124 students participated in in Time 1 (Cohort 1) while, while 68 additional students joined the study at Time 2 (Cohort 2). Independent samples *t*-tests and chi-squared tests assessed differences between Cohort 1 and Cohort 2 (see Table 8). Several demographic or background variables are important to notes. According to a Pearson Chi-squared test, the largest difference between Cohort 1 and Cohort 2 was that participants from Cohort 2 were much more likely to be from the Rancho Santiago Community College District (i.e., SAC or SCC) than South Orange County Community College District (i.e., IVC or Saddleback College), $\chi^2(1) = 11.89, p < .001$. More than half of participants in Cohort 2 (69.1%) were from SAC or SCC compared to 43.1% in Cohort 1. Across the two cohorts, the total number of students from each community college district was similar: 52.4% attending SAC or SCC vs. 47.6% attending IVC or Saddleback College.

The second set of attrition analyses examined the differences between entering the study at Time 1 (Cohort 1) and entering the study at Time 2 (Cohort 2) (see Table 8). In terms of demographic variables, Cohort 1 and Cohort 2 did not differ in age, gender, parents' educational expectations, high school GPA, work status, or average hours worked for students who worked. Participants in Cohort 1 had a greater percentage of students whose first language was English than participants in Cohort 2, $\chi^2(1) = 6.51, p = .011$. Students in Cohort 1 had parents with a higher level of education than students in Cohort 2, $t(146.73) = -3.65.42, p = .001$. Parents of students in Cohort 1 averaged an Associate's Degree while parents of students in Cohort 2 averaged just below "did not graduate from college." In addition, Cohort 2 had a higher number of students who qualified for financial aid than Cohort 1, $\chi^2(1) = 9.87, p = .002$. At Time 4, students from Cohort 2 were much more likely to qualify for application fee waivers than students from Cohort 1, $\chi^2(1) = 6.87, p = .009$.

In terms of the relative importance of school, family, and job at Time 2, Cohort 2 rated their current job/career as more important than Cohort 1, $t(157) = 2.10, p = .037$. At Time 3 and Time 4, Cohort 1 rated family as significantly less important than Cohort 2, $t(108.47) = 3.20, p = .002$ and $t(131.70) = 2.53, p = .013$, respectively.

For academic behavior, the two cohorts did not differ in hours spent in classes, hours spent outside of classes on studying and homework, or the frequency of attending lectures or labs. At Time 2, Cohort 1 had a significantly higher GPA than Cohort 2, $t(128.66) = -2.34, p = .021$. Students in Cohort 1 was taking marginally more units at Time 2 than students in Cohort 2, $t(157) = -1.93, p = .055$. A Chi-squared test found significant differences between Cohort 1 and Cohort 2 in full-time student status, $\chi^2(1) = 4.18, p = .041$. Cohort 2 was comprised of 86.0% of full-time students, while Cohort 1 was only comprised of 70.4% full-time students.

Cohort 1 and Cohort 2 were significantly different from each other on all transfer-related variables, except frequency of visits to a college counselor to discuss transfer. At Time 2, Cohort 1 expected it to take fewer years to transfer to a university than Cohort 2, $t(156) = 2.37, p = .019$. Cohort 1 also reported being less certain they would transfer to a university eventually than Cohort 2 at Time 2, $t(180.04) = 2.14, p = .033$, and Time 3, $t(119.96) = 2.04, p = .044$.

At Time 3, out of students applying to transfer, more students in Cohort 1 had started working on transfer applications than students in Cohort 2, $\chi^2(1) = 4.63, p = .031$. A chi-squared test revealed significant differences between Cohort 1 and Cohort 2 in who planned to transfer to a university at Time 4, $\chi^2(1) = 4.24, p = .039$. All students in Cohort 2 still planned to transfer at Time 4 compared to 92.0% of students in Cohort 1. In separate chi-squared tests, a greater percentage of students in Cohort 2 participated in the TAG program as well as transfer programs other than TAG than students in Cohort 1, $\chi^2(1) = 6.42, p = .011$ and $\chi^2(1) = 11.30, p = .001$, respectively.

There were differences in well-being between Cohort 1 and Cohort 2, particularly in depressive symptoms and physical symptoms. At Time 2 and Time 4, students from Cohort 1 reported greater depressive symptoms than students from Cohort 2, $t(152) = -2.17, p = .032$ and $t(127) = -2.27, p = .025$, respectively. At Time 3, students from Cohort 1 also reported more physical symptoms than students from Cohort 2, $t(111.73) = -2.68, p = .008$. Differences in satisfaction with life variables and perceived stress were not found.

Last, there were no significant differences in motivation variables (goal engagement or compensatory secondary control) between Cohort 1 and Cohort 2, except at Time 4. At this time point, Cohort 1 had significantly lower goal engagement scores than Cohort 2, $t(132) =$

2.25, $p = .026$. The difference between Cohort 1 and Cohort 2 in goal engagement scores at Time 2 approached statistical significance, $t(160) = 1.75, p = .082$.

Table 8

Study 2: Attrition Analyses: Cohort 1 vs. Cohort 2

Variables	Cohort 1			Cohort 2		
	<i>M</i>	(<i>SD</i>)	Percentage	<i>M</i>	(<i>SD</i>)	Percentage
Parental education	4.24***	(2.35)	--	2.90	(2.17)	--
English first language	--	--	56.5%*	--	--	36.2%
Qualify for financial aid	--	--	66.7%**	--	--	89.7%
Importance of school	8.87	(1.33)	--	9.04	(1.73)	--
Importance of family	9.02	(1.84)	--	9.45	(1.45)	--
Importance of job	7.03*	(2.84)	--	7.94	(2.51)	--
Academic behavior						
Community college GPA	3.29*	(0.64)	--	3.06	(0.52)	--
Units per semester	13.45 [†]	(3.17)	--	12.44	(3.40)	--
Transfer-related behavior						
Expected time to transfer	2.26*	(0.73)	--	2.55	(0.84)	--
Certain transfer by date	7.37	(2.34)	--	7.73	(2.14)	--
Certain transfer eventually	8.94*	(1.78)	--	9.41	(1.22)	--
Working on applications ^b	--	--	66.7%*	--	--	35.3%
Planning to transfer ^c	--	--	92.0%*	--	--	100.0%
Participated in TAG ^c	--	--	65.8%*	--	--	86.0%
Participated in other program ^c	--	--	23.1%**	--	--	52.0%
Qualify for fee waiver ^c	--	--	35.3%**	--	--	75.0%
Motivation						
Goal engagement ^c	4.14*	(0.60)	--	4.39	(0.64)	--
Well-being						
Depressive symptoms ^a	13.27*	(6.41)	--	11.03	(6.29)	--
Physical symptoms ^b	70.22**	(26.03)	--	58.89	(19.24)	--

**Note.* All variables measures at Time 2 unless otherwise noted. ^a = Measured at Time 2. ^b = Measured at Time 3. ^c = Measured at Time 4.

Altogether, although there were several differences between Cohort 1 and Cohort 2, a majority of these differences can be attributed to the demographics of students who attend the different community colleges. Cohort 2 had more students from SAC and SCC than Cohort 1. The findings are in line with differences between community college districts reported in institutional statistics and Study 1 demographics.

Procedures. Participants in Study 2 were not identified through the Transfer Student Center. Instead, it was important for student retention that the researchers had direct contact with the participants. Research assistants, some of whom were former community college students, visited classrooms at SAC and IVC in the fall semester of 2014. The lead researcher visited classrooms in the spring semester of 2015 to recruit additional participants. Similar to Study 1, research assistants contacted professors via email to make a brief classroom announcement advertising the study. During the classroom announcements, interested students wrote their contact information (i.e., e-mail addresses and names) on a piece of paper. The lead researcher contacted interested students via e-mail and provided them with a link to the study. In addition, at IVC, the lead researcher contacted instructors via email and asked them to forward a message describing the study to their students. The email contained a link to the online survey.

The online survey procedures were similar to Study 1. One difference was that students were required to electronically sign and date an informed consent sheet. Although identifying information was collected to identify and compensate participants across the four time points, study data was kept confidential.

Measures. The measures in Study 1 were identical to the measures in Study 2, with the addition of an additional indicator of well-being: physical health symptoms. Table 9 provides an overview of Study 2 key variables. Scale reliabilities in Study 2 were similar to Study 1

(see Table 10 for a summary of alpha reliabilities). Cronbach’s alphas for CESD-10, PSS-4, goal engagement, and compensatory secondary control were good.

Table 9

Study 2: Overview of Key Variables

Study Variables	Time 1	Time 2	Time 3	Time 4
Motivation	Goal engagement	Goal engagement	Goal engagement	Goal engagement
	CSC	CSC	CSC	CSC
Academic behaviors	Units per semester	CC GPA	CC GPA	CC GPA
		Units per semester	Units per semester	Units per semester
		Hours in classes	Hours in classes	Hours in classes
		Hours outside classes	Hours outside classes	Hours outside classes
		How often attend classes	How often attend classes	How often attend classes
Transfer-related variables	Total years to transfer	Total years to transfer	Total years to transfer	Expected years to transfer
		Visit college counselor	Visit college counselor	Total years to transfer
			Applying to universities	Visit college counselor
			Working on transfer apps	Participation in TAG
				Participation in other transfer programs
				Applied to universities
				# of universities applied to
			# of universities accepted to	
			Applied/accepted ratio	
			Ranking of transfer university	
			Accepted to first-choice uni.	
Well-being	Depressive symptoms	Depressive symptoms	Depressive symptoms	Depressive symptoms
	Perceived stress	Perceived stress	Perceived stress	Perceived stress

	Physical symptoms	Physical symptoms	Physical symptoms	Physical symptoms
Satisfaction with:	Life	Life	Life	Life
		Progress ed. goals	Progress ed. goals	Progress ed. goals
		CC grades	CC grades	CC grades
		CC experience	CC experience	CC experience

*Note: CSC = Compensatory secondary control. CC = Community College. # = number. Uni. = University. Apps = Applications.

Physical health. Participants' physical well-being was assessed using the Cohen-Hoberman Inventory of Physical Symptoms scale (CHIPS; Cohen & Hoberman, 1983). CHIPS measures 33 physical and psychosomatic symptoms experienced within the past two weeks, such as back pain, headaches, or nausea. Items are rated on a 5-point Likert scale based on the degree to which symptoms bothered or distressed the participant. A score of "0" indicated participants "have not been bothered by the problem" while a score of "4" indicated the participant "had been extremely bothered by the problem." Cronbach's alphas for the CHIPS scale were very high (see Table 10).

Table 10

Study 2: Cronbach's Alpha Reliabilities for Outcome Variables

Variable	Time 1	Time 2	Time 3	Time 4
Depressive symptoms	0.84	0.84	0.87	0.86
Perceived stress	0.66	0.71	0.78	0.82
Goal engagement	0.86	0.89	0.89	0.88
Compensatory secondary control	0.73	0.79	0.77	0.73
Physical symptoms	0.95	0.95	0.94	0.94

Hypotheses. Linear and logistic regression models assessed the relationship between goal engagement, compensatory secondary control, and the interaction between compensatory secondary control and selective primary control on the one hand and academic behavior,

transfer-related behavior, transfer outcomes, and well-being and satisfaction variables on the other hand at various time points. Compensatory secondary control indicates the use of adjustment and self-protection strategies in response to poor performance or lack of motivation in long-term goal pursuit. These strategies are especially effective when combined with selective primary control strategies (i.e., putting in the effort, time, energy, and persistence to attain one's goals). It was hypothesized that the interaction of compensatory secondary control and selective primary control would be positively associated with academic behavior, transfer-related behavior, transfer outcomes, well-being, and satisfaction variables.

The following covariates were entered into the regression models for Hypotheses 1 - 4: age, gender, traditionally underrepresented in academia, community college district, parental education (highest of either parent), and eligibility for financial aid at the community college. Additional covariates are specified in each hypothesis. Because dummy coding ethnicity would lead to the creation of many variables, the researcher created a dichotomous variable to represent ethnicity. For this variable, traditionally underrepresented students were labeled as "1" and all other students were labeled as "0."

Originally, path models would investigate the unfolding of transfer behaviors and outcomes over time. However, with the exception of whether or not students applied to transfer universities at Time 4, transfer outcome variables were restricted by sample sizes of fewer than 50 participants. The small sample of students who successfully transferred to a university after two years also prevented the investigation of a mediational model between goal engagement, goal-directed behaviors (i.e., academic or transfer-behaviors), and transfer outcomes.

Hypothesis 1: Goal engagement strategies were expected to positively predict academic behaviors at the community college. Compensatory secondary control strategies were expected

to negatively predict academic behaviors at the community college. Originally, linear and logistic regression models would use Time 1 goal engagement and compensatory secondary control to predict Time 2 academic behaviors. However, after additional participants were added at Time 2, the revised analyses used goal engagement and compensatory secondary control scores at Time 2 to predict academic behaviors at Time 3. A series of linear regression models examined the relationship between goal engagement and compensatory secondary control, respectively, and the following variables: GPA, full-time status, accumulated units, average units taken per semester, average hours spent in classes each semester, average hours spent on studying and homework outside of class, and the frequency of attending lectures each semester. The baseline levels of academic behavior at Time 2 were included as covariates in the models at Time 3.

Hypothesis 2: Goal engagement strategies were expected to positively predict transfer-related behaviors at the community college. Compensatory secondary control strategies were expected to negatively predict transfer-related behaviors at the community college. A series of linear and logistic regression models examined the relationship between goal engagement and compensatory secondary control at Time 2, respectively, and the following transfer variables at Time 3: total years to transfer, the frequency of meeting with a college counselor, whether or not the student was applying to transfer universities (dichotomous variable), and whether or not the student started working on transfer applications (dichotomous variable).

Additional regression models examined the relationship between goal engagement and compensatory secondary control at Time 3, respectively, and the following transfer variables at Time 4: the frequency of meeting with a college counselor, participation in the TAG program

(dichotomous variable), and participation in transfer programs other than TAG (dichotomous variable).

In addition to the covariates included in all regression models, two additional predictor variables that influence specific transfer behavior, participation in the TAG program and participation in transfer programs other than TAG, were added to the following regression models in Hypothesis 2: the frequency of meeting with a college counselor, whether or not the student was applying to transfer universities, and whether or not the student started working on transfer applications. Last, baseline levels of transfer-related behavior were included as covariates in the following models: total years to transfer at Time 2 and Time 3 and frequency of meeting with a college counselor at Time 2 and Time 3.

Hypothesis 3: Goal engagement strategies were expected to positively predict transfer outcomes at the community college. Compensatory secondary control strategies were expected to negatively predict transfer outcomes at the community college. A series of linear and logistic regression models examined the relationship between goal engagement and compensatory secondary control at Time 3, respectively, and the following variables at Time 4: educational aspirations, whether or not the student applied to transfer universities (dichotomous variable), and if so the total number of universities applied to, the total number of universities accepted to, the ratio of total universities accepted to vs. applied to, the quality of the chosen transfer university based on rank, and whether or not the student was accepted to his/her first-choice transfer university (dichotomous variable).

In addition to the covariates included in all regression models, two additional predictor variables that influence specific transfer outcomes, participation in the TAG program and participation in transfer programs other than TAG, were added to the regression models in

Hypothesis 3, except for educational aspirations. The number of universities participants applied to was included as an additional covariate in the models predicting the number of universities participants were accepted to and the ratio of universities accepted to vs. applied to.

Hypothesis 4: Goal engagement strategies were expected to have a positive relationship with well-being and satisfaction with life variables. Compensatory secondary control strategies were expected to have a negative relationship with well-being and satisfaction with life variables. A series of linear regression models examined the relationship between goal engagement and compensatory secondary control at Time 4, respectively, and the following variables at Time 4: depressive symptoms, perceived stress, physical symptoms, and the four satisfaction variables (life overall, educational progress, community college grades, and community college experience). Baseline levels of well-being and satisfaction at Time 3 and whether or not participants applied to a transfer university at Time 4 were included as additional covariates in the models at Time 4.

CHAPTER 4: RESULTS AND DISCUSSION

Study 1 Results

Descriptive Statistics. Means, standard deviations, and frequencies were calculated for demographic variables, predictor variables, and outcome variables.

Academic performance. Average GPAs for Time 1 and Time 2 were equivalent to a B+ average (88.0%; see Table 11). A paired samples *t*-test determined that GPAs at Time 1 and Time 2 were not statistically different from one another.

Transfer-related behavior. Although all students initially indicated they would be transferring to a university in the upcoming year, only approximately two-thirds of students (76.1%) in Study 1 applied to universities this year. The mean number of universities applied to varied widely but averaged around 4 universities: approximately 2 UCs and 2 CSUs (see Table 11). Out of students who applied, 57.7% of them qualified for fee waivers, demonstrating financial need. Students reported being very confident that they would be admitted to one of their top three universities or at least one of the universities they applied to (see Table 11).

While at the community college, 30.4% of the sample participated in the Transfer Admission Guarantee (TAG) program and 40.5% of the sample participated in competitive transfer programs.

Transfer outcomes. Participants were asked to think back to when they started community college to report on expected transfer times. Looking back, 55.9% of the students in the sample expected it to take two years or less to transfer to a university. Approximately one fourth of the sample (25.5%) expected it to take three years to transfer. The mean time expected to transfer to a university was about two-and-a-half years, while the mean time it

actually took students to transfer was approximately one year longer than expected (see Table 11). It is important to note that not all students had transferred at this time so this number may be a conservative estimate. Only 18.6% of the sample transferred to a university in two years or less.

As expected, given participants were recruited to be within one year of transferring to a university, the vast majority of participants (93.0%) reported transferring to a university in the fall. On average, students were accepted to approximately three of the four universities they applied to (see Table 11). Approximately three-fourths (76.4%) of students were accepted to their first-choice university.

Well-being variables. Absolute mean scores for depressive symptoms and perceived stress are reported in Table 11. To aid interpretation, on the original scale of 0 to 3, the average score for depressive symptoms was a 1.17 for Time 1 ($SD = 0.63$; range: 0.00-2.80) and 0.93 for Time 2 ($SD = 0.47$; range: 0.00-1.90). A paired samples t -test determined that depressive symptoms at Time 1 and Time 2 were not statistically different from one another.

Calculated on the original scale of 1 to 5, the average score at Time 1 for perceived stress was 2.57 ($SD = 0.81$; range: 1.00-4.75) and 2.41 for Time 2 ($SD = 0.63$; range: 1.00-3.50). A paired samples t -test determined that perceived stress scores at Time 1 and Time 2 were not statistically different from one another.

At Time 1 and Time 2, students reported being between *somewhat satisfied* and *satisfied* with their life overall, progress toward educational goals, community college grades, and community college experience (see Table 11). Paired samples t -tests determined that satisfaction variables at Time 1 and Time 2 were not statistically different from one another.

Table 11

Study 1: Descriptive Statistics

Variables	Time 1 (<i>N</i> = 163)			Time 2 (<i>N</i> = 86)		
	<i>M</i>	(<i>SD</i>)	Range	<i>M</i>	(<i>SD</i>)	Range
Academic behavior						
Community college GPA	3.30	(0.44)	2.00-4.00	3.38	(0.38)	2.46-4.00
Transfer-related behavior						
# of universities applied to	4.37	(2.47)	1.00-12.00	--	--	--
UCs	1.98	(2.01)	0.00-7.00	--	--	--
CSUs	2.13	(1.64)	0.00-6.00	--	--	--
“Other” universities	0.26	(0.75)	0.00-5.00	--	--	--
Confidence admitted to:				--	--	--
Top 3 universities	8.14	(2.22)	1.00-10.00	--	--	--
Any university	8.30	(2.15)	1.00-10.00	--	--	--
Transfer outcomes						
Expected years to transfer	2.49	(0.78)	1.00-5.00	--	--	--
Actual years to transfer	3.52	(1.87)	1.00-16.00	--	--	--
# of universities accepted to	--	--	--	2.76	(1.73)	0.00-7.00
Motivation						
Goal engagement	4.30	(0.52)	2.50-5.00	--	--	--
CSC	2.71	(0.84)	1.00-5.00	--	--	--
Well-being						
Satisfaction with						
Life overall	5.30	(1.40)	1.00-7.00	5.71	(1.25)	1.00-7.00
Progress ed. goals	5.40	(1.37)	1.00-7.00	5.64	(1.52)	1.00-7.00
CC grades	5.09	(1.53)	1.00-7.00	5.35	(1.54)	1.00-7.00
CC experience	5.33	(1.54)	1.00-7.00	5.71	(1.37)	1.00-7.00
Depressive symptoms	11.81	(6.32)	0.00-28.00	9.26	(4.74)	0.00-19.00
Perceived stress	10.30	(3.26)	4.00-19.00	9.66	(2.51)	4.00-14.00

Note. CSC = Compensatory secondary control. CC = Community college. Ed. = Educational.

Motivation. Mean scores for goal engagement and compensatory secondary control are reported in Table 11. On average, participants reported agreeing or strongly agreeing with goal

engagement items. For compensatory secondary control, the average participant fell between disagreeing with items and neither agreeing nor disagreeing with items. Goal engagement and compensatory secondary control scores were not statistically related.

In addition to Pearson-product moment correlations, independent sample *t*-tests and one-way ANOVAs were used to assess demographic differences in goal engagement and compensatory secondary control. Older participants had higher levels of goal engagement than younger participants ($r = .19, p = .022$) and women reported higher levels of goal engagement than men ($r = .17, p = .038$). Participants who reported higher levels of goal engagement were also more likely to have parents with lower levels of educational attainment ($r = -.21, p = .010$).

Two ANOVAs tested ethnic group differences in goal engagement and compensatory secondary control. African American, Native American, multi-ethnic, and “other” participants were excluded from these analyses due to low numbers. For goal engagement, the results showed significant group differences between European American, Asian American, and Latino students, $Welch(2, 60.78) = 5.65, p = .005$ (see Figure 3). In particular, using Games-Howell post-hoc comparisons, Latino students ($M = 4.46, SD = 0.40$) had significantly higher goal engagement scores than Asian American students ($M = 4.16, SD = 0.62$) and marginally higher scores than European American students ($M = 4.25, SD = 0.50$).

An ANOVA also revealed significant ethnic group differences for compensatory secondary control, $F(2, 144) = 5.42, p = .005$ (see Figure 4). Using Tukey’s HSD post-hoc test, Asian American students ($M = 2.95, SD = 0.83$) reported higher levels of compensatory secondary control than Latino students ($M = 2.49, SD = 0.74$). The mean difference in compensatory secondary control between Asian American and European American ($M = 2.54, SD = 0.78$) students approached statistical significance.

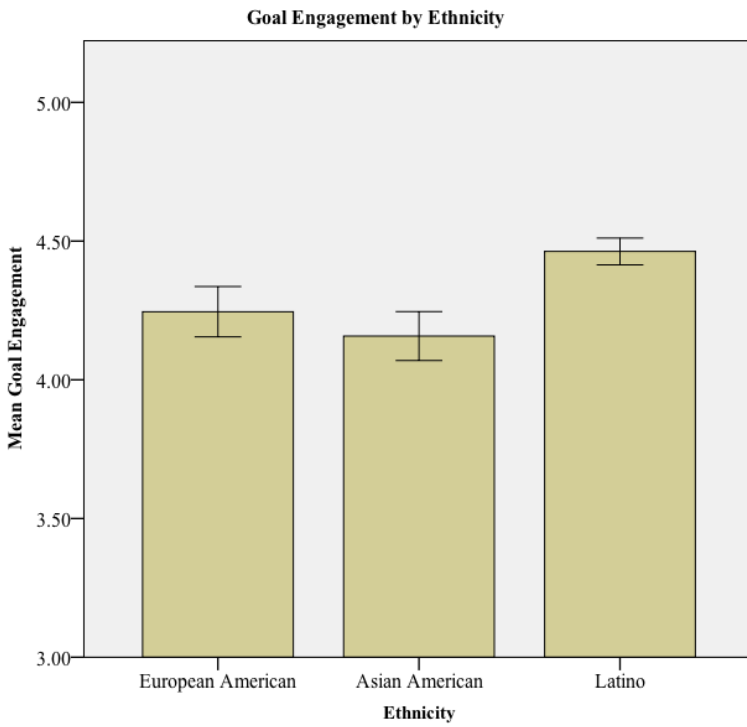


Figure 3. Study 1 ethnic differences in goal engagement using a one-way ANOVA.

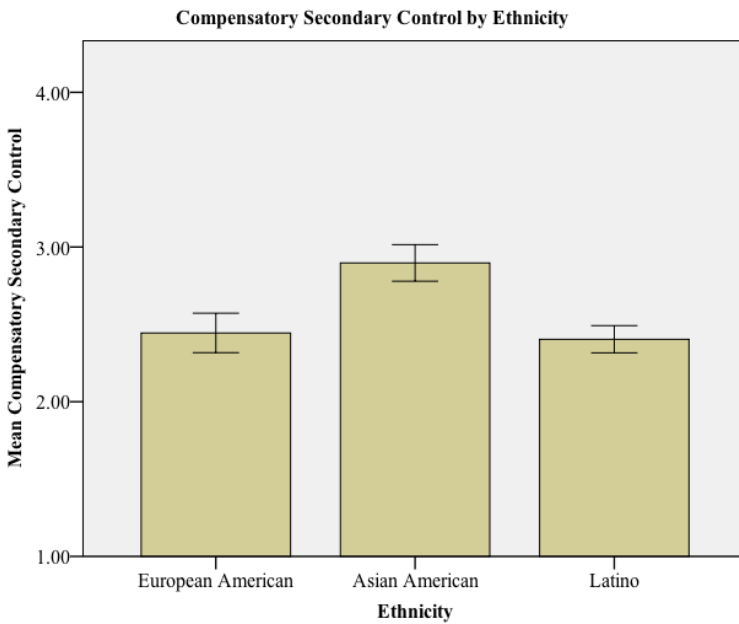


Figure 4. Study 1 ethnic differences in compensatory secondary control using a one-way ANOVA.

Hypothesis Testing.

Hypothesis 1. Pearson product-moment correlations described the relationship between goal engagement, compensatory secondary control, academic behaviors, transfer-related behaviors, and satisfaction and well-being variables at Time 1.

Hypothesis 1a: Academic behaviors. Students who reported higher goal engagement levels at Time 1 were significantly more likely to spend more hours per week studying, reading, and writing papers or doing assignments outside of classes than students who reported lower goal engagement levels ($r = .22, p = .006$). However, there were no differences for the amount of time spent in classes. Students with higher levels of goal engagement took marginally fewer units each semester than students who reported lower levels of goal engagement ($r = -.14, p = .077$). Upon closer inspection of these findings, a post-hoc independent samples t -test revealed that students who were less than full-time status (i.e., took less than 12 units per semester; $M = 4.49, SD = 0.40$) reported significantly greater goal engagement levels than students who took a full-time course load of 12 or more units per semester ($M = 4.26, SD = 0.53$), $t(83.45) = 2.96, p = .004$. This was an unexpected finding that will be further discussed in the discussion section. Students with higher levels of goal engagement also accumulated more units overall ($r = .21, p = .010$) while student with higher levels of compensatory secondary control accumulated fewer total units ($r = -.21, p = .010$). Although goal engagement scores were not associated with attending lectures or labs, higher scores on the compensatory primary control subscale were marginally associated with attending lectures or labs less frequently ($r = -.15, p = .064$).

Students who reported higher goal engagement were more likely to rate school ($r = .64, p < .001$) and family ($r = .40, p < .001$), but not current job, as more important than students

who reported lower levels of engagement. Students who reported higher levels of compensatory secondary control rated school ($r = -.22, p = .006$), but not family, as less important than students with lower levels of compensatory secondary control. Career was rated marginally more important for students with higher levels of compensatory secondary control than students with lower levels of compensatory secondary control ($r = .14, p = .088$).

GPA was not related to goal engagement, compensatory secondary control, or any of their subscales.

Hypothesis 1b: Transfer-related behaviors. Students who reported high levels of goal engagement at Time 1 were more likely to participate in programs that help students transfer to a university ($r = .19, p = .014$), but not the Transfer Admission Guarantee (TAG) program. Higher levels of goal engagement were marginally associated with meeting more frequently with a counselor to discuss transfer ($r = .14, p = .076$), and in particular, the compensatory primary control subscale was positively associated with meeting with a counselor to discuss transfer ($r = .21, p = .007$). Compensatory secondary control was not significantly correlated with any of the above transfer behaviors.

Participants with high levels of goal engagement were not more likely to apply to universities, but among those who did apply, highly engaged students were more likely to apply to a greater number of total universities ($r = .33, p < .001$), and in particular a greater number of CSUs ($r = .35, p < .001$), than less engaged students. Highly engaged students were marginally more likely to apply to a greater number of UCs ($r = .15, p = .095$). These students also reported greater confidence they would be admitted to one of their top three universities ($r = .30, p < .002$) or any university they applied to ($r = .33, p < .001$).

Students who reported greater compensatory secondary control were less likely to apply to universities ($r = -.20, p = .012$) than students with lower levels of compensatory secondary control. Students with higher levels of compensatory secondary control applied to a similar total number of universities, but marginally fewer CSUs than students who had lower levels of compensatory secondary control ($r = -.17, p = .060$). In addition, these students were less confident they would be admitted to any of the universities they applied to than students with lower levels of compensatory secondary control ($r = -.16, p = .044$).

Hypothesis 1c: Well-being and satisfaction with life. Goal engagement was negatively associated with depressive symptoms ($r = -.30, p < .001$) and perceived stress ($r = -.35, p < .001$) at Time 1. Highly goal engaged students reported higher scores on satisfaction variables than less engaged students, including satisfaction with life overall ($r = .30, p < .001$), progress toward educational goals ($r = .29, p < .001$), community college grades ($r = .23, p = .003$), and community college experience ($r = .29, p < .001$).

Compensatory secondary control was positively associated with depressive symptoms ($r = .27, p = .001$) and perceived stress ($r = .24, p = .003$) at Time 1. Students who reported higher levels of compensatory secondary control also reported lower satisfaction with life ($r = -.20, p = .012$) and satisfaction with progress toward educational goals ($r = -.17, p = .039$) than students who reported lower levels of compensatory secondary control.

Hypothesis 2. Multiple linear and logistic regression models determined the association between goal engagement and compensatory secondary control at Time 1 and transfer behaviors, transfer outcomes, well-being, and satisfaction variables at Time 1 or 2, respectively.

Hypothesis 2a. Hypothesis 2a assessed the following transfer behaviors and outcomes using multiple linear regression models: total years to transfer, number of universities applied to, number of universities accepted to, the ratio of universities accepted to vs. applied to, and the quality of the university assessed by nationwide rankings. Logistic regression models were used to assess the following dichotomous transfer variables: whether or not participants applied to a university and whether or not they were accepted to their first-choice university.

The following variables were entered into all regression models: goal engagement, compensatory secondary control, the interaction between compensatory secondary control and selective primary control, TAG participation, other transfer program participation, community college GPA, age, eligibility for fee waivers, and parental education or community college district. Separate regression models were run with parental education or community college district as a covariate as the models often produced different results. In addition, the number of universities applied to was used as a predictor variable when assessing the following transfer outcomes: number of universities accepted to, the ratio of universities accepted to vs. applied to, and whether or not participants were accepted to their first-choice university.

Total years to transfer. Using parental education in the model, the only significant predictor variable of the total number of years to transfer to a university was participants' age ($\beta = .40, p < .001$), Adjusted $R^2 = .18, F(9,120) = 4.16, p < .001$. Older participants took a greater number of years to transfer to a university. This model accounted for 18.1% of the variation in predicting the total years to transfer to a university.

The model using community college district as a predictor variable was also statistically significant, Adjusted $R^2 = .20, F(9,124) = 4.59, p < .001$, with participants' age as the only significant predictor variable ($\beta = .41, p < .001$). Students who participated in transfer

programs other than TAG also took marginally fewer total years to transfer to a university ($\beta = -.15, p = .076$). This model explained 19.5% of the variance in the total number of years to transfer to a four-year university.

Upon further inspection with post-hoc correlations, older students were more likely to take fewer than 12 units per semester ($r = -.51, p < .001$) and to be considered part-time ($r = -.41, p < .001$) than younger students. Older student were not more likely than younger students to work, but if they did work, they were more likely to work full-time than part-time ($r = .21, p = .021$).

Number of universities applied to. A second regression model predicted the number of universities participants applied to. The model using parental highest education as a predictor was statistically significant, Adjusted $R^2 = .16, F(9,95) = 3.17, p = .002$. Students with higher levels of goal engagement applied to significantly more transfer universities than students with lower levels of goal engagement ($\beta = .42, p < .001$). Younger students applied to a greater number of transfer universities than older students ($\beta = -.20, p = .041$). Students who qualified for fee waivers and students with parents who had higher levels of education applied to a marginally greater number of transfer universities than students who did not qualify for fee waivers and students with parents with lower levels of education ($\beta = .19, p = .067$ and $\beta = .21, p = .054$, respectively). This model explained 15.8% of the variance in the number of universities participants applied to.

Similar results were found with the model including community college district as a predictor variable (see Table 12). Participants who reported higher levels of goal engagement, younger students, and students who qualified for fee waivers were more likely to apply to a greater number of universities than students with lower levels of goal engagement, older

students, or students who did not qualify for fee waivers, respectively. Participants who attended IVC or Saddleback College applied to more universities than students attending SAC or SCC. This model explained 18.3% of the variance in the number of universities participants applied to.

Table 12

Study 1: Predictors of Number of Universities Applied To (N = 109)

	<i>B</i>	<i>SE(b)</i>	β
Goal engagement	2.10***	0.46	0.46
Compensatory secondary control	-0.15	0.30	-0.05
CSC x SPC	-0.61	0.57	-0.11
Participation in TAG ^a	-0.03	0.48	-0.01
Participation in transfer programs ^b	0.64	0.46	0.13
Community college GPA	-0.20	0.55	-0.03
Community college district ^c	-1.39*	0.54	-0.28
Eligibility for fee waiver ^d	1.11*	0.49	0.23
Age	-0.11*	0.05	-0.20
Intercept	7.00**	2.31	--
<i>F(df,df)</i>		3.68(9,99)**	
<i>R</i> ² _{adjusted}		0.18	

Note. ^a Participation in TAG program = 1. ^b Participation in transfer programs other than TAG = 1. ^c SAC and SCC = 1. ^d Eligible for a fee waiver = 1. CSC = compensatory secondary control. SPC = selective primary control.

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Number of universities accepted to. In the model using parental education, the number of universities students applied to was the strongest predictor of the number of universities students were accepted to ($\beta = .61, p < .001$), Adjusted $R^2 = .41, F(10,41) = 4.53, p < .001$. Students with parents with lower levels of education were accepted to a greater number of universities than students with parents with higher levels of education ($\beta = -.34, p = .035$). In addition, students with higher GPAs were accepted to a marginally greater number of

universities than students with lower GPAs ($\beta = .24, p = .075$). The model explained 40.9% of the variance in the total number of universities students were accepted to.

The model using community college district was also statistically significant, Adjusted $R^2 = .37, F(10,42) = 4.09, p = .001$. Students who applied to more universities were accepted to a greater number of universities than students who applied to fewer universities ($\beta = .57, p < .001$). The model explained 37.3% of the variance in the total number of universities students were accepted to.

Ratio of universities accepted to vs. applied to. The model predicting the ratio of universities accepted to vs. applied to using parental education as a predictor variable was not statistically significant. The model using community college district as a predictor variable approached statistical significance, Adjusted $R^2 = .14, F(10,42) = 1.87, p = .078$. Participants who applied to fewer universities had a higher ratio of universities accepted to vs. applied to ($\beta = -.31, p = .032$). Students with higher GPAs ($\beta = .44, p = .011$) and who attended SAC or SCC ($\beta = .47, p = .050$) had a higher ratio of universities accepted to vs. applied to than students with lower GPAs and students attending IVC or Saddleback College, respectively. The model explained 14.3% of the variance in the ratio of universities accepted to vs. applied to.

Quality of transfer university. Two linear regression models assessed the quality of transfer universities students are attending. The first linear regression used U.S. News & World Report Best Colleges Rankings while the second linear regression used Forbes' American's Top Colleges List. Both models were statistically significant.

The model predicting U.S. News & World Report rankings using parental education was statistically significant, Adjusted $R^2 = .25, F(9,61) = 3.60, p = .001$. Students who

participated in the TAG program and students with parents with higher levels of education were more likely to attend a higher quality transfer university than students who did not participate in the TAG program and students who had parents with lower levels of education ($\beta = -.27, p = .022$ and $\beta = -.37, p = .010$, respectively). Younger students were marginally more likely to attend a higher quality transfer university than older students ($\beta = -.21, p = .072$). The model explained 25.0% of the variance in U.S. News & World Report rankings.

The model using community college district as a predictor variable was also statistically significant, Adjusted $R^2 = .28, F(9,63) = 4.10, p < .001$. Students who participated in the TAG program were more likely to be attending a higher quality transfer university ($\beta = -.33, p = .002$). In addition, participants attending IVC or Saddleback College were more likely to attend a higher quality transfer university than participants attending SAC or SCC ($\beta = .38, p = .006$). The model explained 28.0% of the variance in U.S. News & World Report rankings.

The model using parental education to predict Forbes' list of Top American Colleges was statistically significant, Adjusted $R^2 = .32, F(9,62) = 4.67, p < .001$. Students with higher GPAs, younger students, and students who participated in the TAG program were more likely to be attending a higher quality transfer university than students with lower GPAs, older students, and students who did not participate in the TAG program ($\beta = -.28, p = .012, \beta = .24, p = .029$, and $\beta = -.28, p = .011$, respectively). Students with parents with higher levels of education and students who participated in transfer programs other than TAG were marginally more likely to be attending a higher quality transfer university than students with parents with lower levels of education and students who did not participate in competitive transfer programs ($\beta = -.27, p = .051$ and $\beta = -.18, p = .092$, respectively). This model accounted for 31.7% of the variance in transfer university rankings using Forbes' List.

The model predicting Forbes' list of Top American Colleges with community college district as a predictor variable was also statistically significant (see Table 13). Students who participated in the TAG program were more likely to be attending a higher quality transfer university than students who did not participate in the TAG program. Students attending IVC or Saddleback College and who participated in a transfer program other than TAG were marginally more likely to attend a higher quality transfer university than students attending SAC or SCC or students who did not participate in other transfer programs. In addition, participants who had higher community college GPAs and younger students were more likely to be attending a higher quality transfer university. The interaction between compensatory secondary control and selective primary control approached statistical significance. Participants with low levels of both compensatory secondary control and selective primary control attended the lowest quality transfer universities (see Figure 5). Participants with high levels of selective primary control and low levels of compensatory secondary control attended the highest quality transfer universities. This model accounted for 34.2% of the variance in transfer university rankings using Forbes' List.

Applying to a transfer university. The logistic regression model using parental highest education to predict the likelihood of participants applying to a transfer university this year was statistically significant, $LR\chi^2(9) = 24.69, p = .003$. Students who participated in transfer programs other than TAG, students who qualified for fee waivers, and students with parents with higher levels of education were more likely to apply to a transfer university this year than students who did not participate in other transfer programs, $OR = 4.13, Wald(1) = 5.14, p = .023$, did not qualify for fee waivers, $OR = 3.33, Wald(1) = 4.63, p = .032$, or had parents with lower levels of education, $OR = 1.37, Wald(1) = 5.31, p = .021$. Students with higher levels of

compensatory secondary control were marginally less likely to apply to transfer universities than students with lower levels of compensatory secondary control, $OR = .60$, $Wald(1) = 2.88$, $p = .089$.

Table 13

Study 1: Predictors of Quality of Transfer Universities by Rank^a (N = 74)

	<i>B</i>	<i>SE(b)</i>	<i>β</i>
Goal engagement	-24.80	36.16	-0.07
Compensatory secondary control	-18.66	22.50	-0.11
CSC x SPC	88.05 [†]	48.32	0.24
Participation in TAG ^b	-96.28**	27.92	-0.34
Participation in other transfer programs ^c	-50.76 [†]	26.87	-0.19
Community college GPA	-96.52*	38.83	-0.26
Community college district ^d	62.56 [†]	33.82	0.23
Eligibility for fee waiver ^e	-23.23	30.32	-0.09
Age	5.74 [†]	3.04	0.20
Intercept	418.57**	145.12	--
<i>F(df,df)</i>		5.22(9,64)***	
<i>R²_{adjusted}</i>		0.34	

Note. ^a Using Forbes' America's Top Colleges List. Lower ranks represent higher quality universities. ^b Participation in TAG program = 1. ^c Participation in transfer programs other than TAG = 1. ^d SAC and SCC = 1. ^e Eligible for a fee waiver = 1. CSC = compensatory secondary control. SPC = selective primary control.

[†] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

The model using community college district as a predictor variable was also statistically significant (see Table 14). Participation in transfer programs other than TAG significantly increased the likelihood of applying to transfer universities. Students who had higher levels of compensatory secondary control were significantly less likely to apply to transfer universities. In addition, being eligible for a fee waiver marginally increased the likelihood of applying to transfer universities.

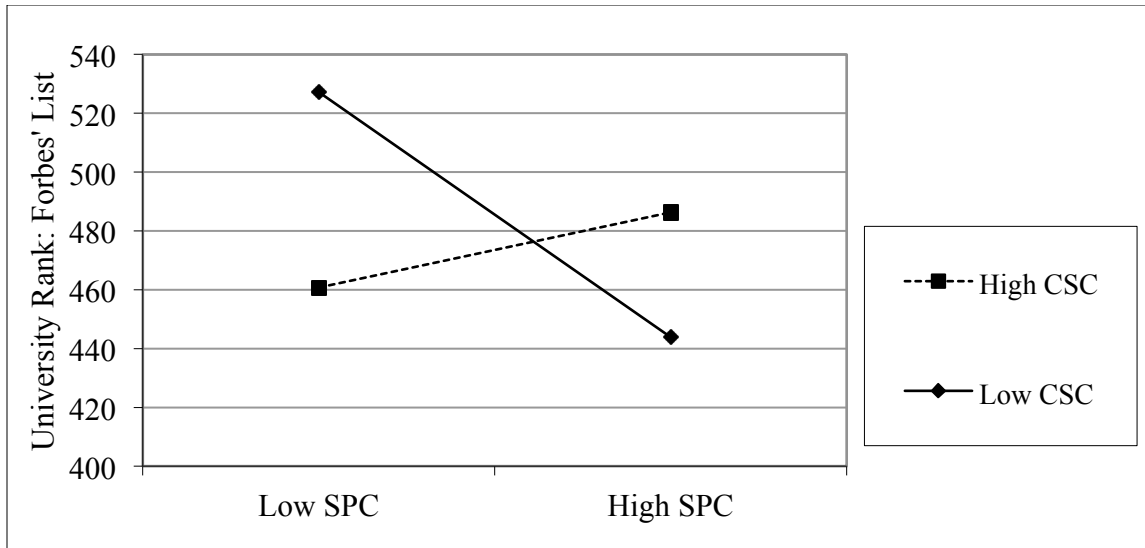


Figure 5. Study 1 interaction between compensatory secondary control and selective primary control predicting university rank using Forbes' List at Time 2.

*Note: CSC = compensatory secondary control. SPC = selective primary control.

Accepted to first-choice university. The logistic regression model predicting the likelihood of being accepted to students' first-choice university using parental education as a predictor variable was statistically significant, $LR\chi^2(10) = 26.10, p = .004$. Students with higher levels of goal engagement and students who applied to fewer universities were more likely to be accepted to their first-choice university than students with lower levels of goal engagement, $OR = 14.72, Wald(1) = 4.81, p = .028$, and students who applied to a greater number of universities, $OR = .53, Wald(1) = 8.72, p = .003$. Students with parents with higher levels of education and students who participated in transfer programs other than TAG were marginally more likely to be accepted to their first-choice university than students with parents with lower levels of education, $OR = 1.48, Wald(1) = 3.51, p = .061$, and students who did not participate in competitive transfer programs, $OR = 4.02, Wald(1) = 3.61, p = .057$.

Table 14

Study 1: Logistic Regression Odds Ratios of Applying to a University^a (N = 135)

Variables	OR	95% CI for OR
Goal engagement	1.23	0.42-3.63
Compensatory secondary control	0.56*	0.31-1.00
CSC x SPC	0.91	0.27-3.05
Participation in TAG program ^b	2.34	0.67-8.11
Participation in transfer programs ^c	4.24*	1.26-14.24
Community college GPA	0.79	0.28-2.24
Community college district ^d	0.39	0.11-1.31
Eligible for fee waiver ^e	3.12 [†]	0.97-9.96
Age	0.94	0.87-1.02
Intercept	19.31	--
-2Log Likelihood ^f		110.13
$LR\chi^2$		22.16**
<i>Df</i>		9

Note. ^a Applying to a university = 1. ^b Participation in TAG program = 1. ^c Participation in transfer programs other than TAG = 1. ^d SAC and SCC = 1. ^e Eligible for a fee waiver = 1. ^f -2Log Likelihood is equal to the Deviance, a goodness-of-fit statistic. CI = confidence interval. CSC = compensatory secondary control. SPC = selective primary control. [†] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

The model using community college district as a predictor variable was also statistically significant, $LR\chi^2(10) = 21.27, p = .019$. Participants who applied to fewer universities were more likely to be accepted to their first-choice university, $OR = .65, Wald(1) = 6.21, p = .013$. Students who were eligible for a fee waiver were marginally less likely to be accepted to their first-choice university, $OR = .30, Wald(1) = 3.05, p = .081$.

Hypothesis 2b. Linear regression models assessed the relationship between goal engagement and compensatory secondary control on the one hand and well-being and

satisfaction with life variables on the other hand. The following variables were entered into the regression models: baseline scores, goal engagement, compensatory secondary control, the interaction between compensatory secondary control and selective primary control, age (substituted with gender for depressive symptoms), ethnicity, and eligibility for fee waiver.

Depressive symptoms. The linear regression model predicting depressive symptoms at Time 2 was statistically significant (see Table 15). In addition to baseline depressive scores, belonging to a traditionally underrepresented group in academia was a significant predictor of greater depressive symptoms at Time 2. Students who did not qualify for fee waivers reported greater depressive symptoms than students who qualified for fee waivers. The overall model accounted for 21.2% of the variance in depressive symptoms at Time 2.

Table 15

Study 1: Predictors of Depressive Symptoms at Time 2 (N = 52)

	<i>B</i>	<i>SE(b)</i>	β
CES-D Time 1	0.25 [†]	0.12	0.27
Goal engagement	-0.16	1.72	-0.01
Compensatory secondary control	1.17	1.07	0.19
CSC x SPC	1.05	2.29	0.08
Gender ^a	-1.07	1.39	-0.11
Ethnicity ^b	4.97**	1.55	0.47
Eligible for fee waiver ^c	-3.62**	1.32	-0.38
Intercept	5.70**	1.67	--
<i>F(df,df)</i>		2.96(7,44)**	
<i>R</i> _{adjusted} ²		0.21	

Note. ^a Women = 1. ^b The group coded 1 = traditionally underrepresented in academia (Latino, African American, Native American); 0 = all other ethnicities (European American, Asian American, multiethnic, and other). ^c Eligible for a fee waiver = 1. CSC = compensatory secondary control. SPC = selective primary control.

[†]*p* < .10. **p* < .05. ***p* < .01. ****p* < .001.

Perceived stress. A second regression model assessing perceived stress at Time 2 was statistically significant, Adjusted $R^2 = .16$, $F(7,44) = 2.36$, $p = .039$. The only significant predictor variable in the model was perceived stress at Time 1 ($\beta = .46$, $p = .001$). The overall model accounted for 15.7% of the variance in perceived stress at Time 2.

Satisfaction variables. The four satisfaction with life variables were assessed with separate linear regression models. Table 16 displays the results for the regression analysis predicting satisfaction with life overall. Above and beyond satisfaction with life scores at Time 1, goal engagement and the interaction between compensatory secondary control and selective primary control were significant predictors of satisfaction with life at Time 2. Participants who were high in compensatory secondary control but low in selective primary control reported the lowest levels of satisfaction with life at Time 2 (see Figure 6). Compensatory secondary control was a marginally significant negative predictor of satisfaction with life at Time 2. This model accounted for 24.9% of the variance in satisfaction with life at Time 2.

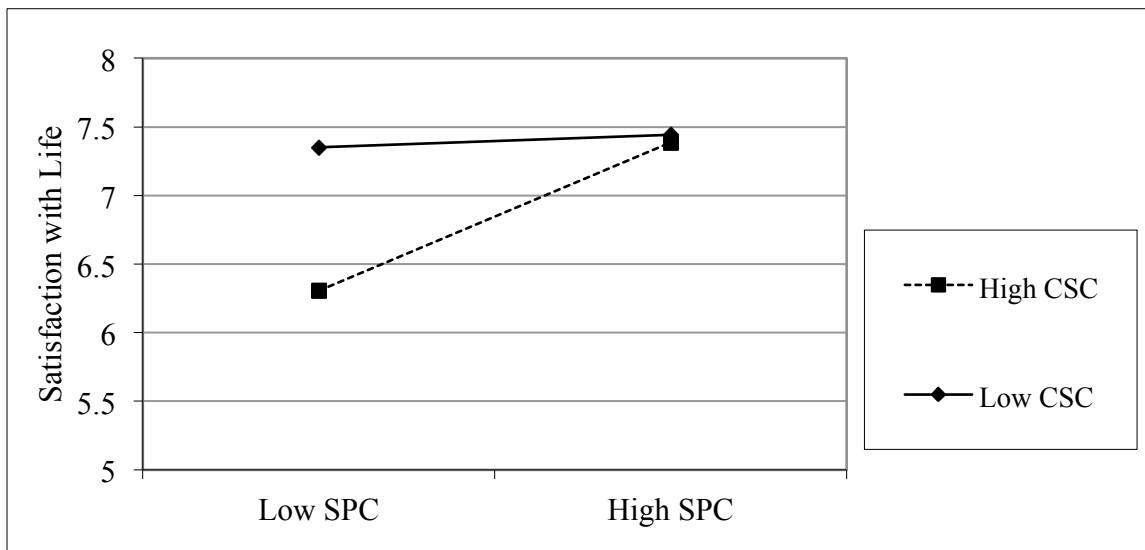


Figure 6. Study 1 interaction between compensatory secondary control and selective primary control predicting satisfaction with life at Time 2.

*Note: CSC = compensatory secondary control. SPC = selective primary control.

Table 16

Study 1: Predictors of Satisfaction with Life at Time 2 (N = 52)

	<i>B</i>	<i>SE(b)</i>	β
Satisfaction with life Time 1	0.31*	0.12	0.34
Goal engagement	1.00*	0.43	0.30
Compensatory secondary control	-0.54 [†]	0.28	-0.33
CSC x SPC	1.19*	0.58	0.34
Age	0.01	0.03	0.06
Ethnicity ^a	0.38	0.37	0.14
Eligible for fee waiver ^b	-0.53	0.34	-0.21
Intercept	3.53**	1.14	--
<i>F(df,df)</i>		3.41(7,44)*	
<i>R</i> _{adjusted} ²		0.25	

Note. ^a The group coded 1 = traditionally underrepresented in academia (Latino, African American, Native Americans); 0 = all other ethnicities (European American, Asian American, multiethnic, and other). ^b Eligible for a fee waiver = 1. CSC = compensatory secondary control. SPC = selective primary control.

[†] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

The model for satisfaction with educational progress at Time 2 was significant, Adjusted $R^2 = .25$, $F(7,43) = 3.35$, $p = .006$. Satisfaction with educational progress at Time 1 ($\beta = .39$, $p = .007$) predicted satisfaction with educational progress at Time 2. Participants with higher levels of compensatory secondary control were less satisfied with educational progress at Time 2 ($\beta = -.37$, $p = .040$). The interaction between compensatory secondary control and selective primary control was significant ($\beta = .44$, $p = .012$). Participants with high levels of compensatory secondary control and low levels of selective primary control were the least satisfied with educational progress at Time 2 (see Figure 7). Participants with higher levels of goal engagement were marginally more satisfied with educational progress at Time 2 ($\beta = .26$, $p = .062$). This model explained 24.6% of the variance in satisfaction with educational progress at Time 2.

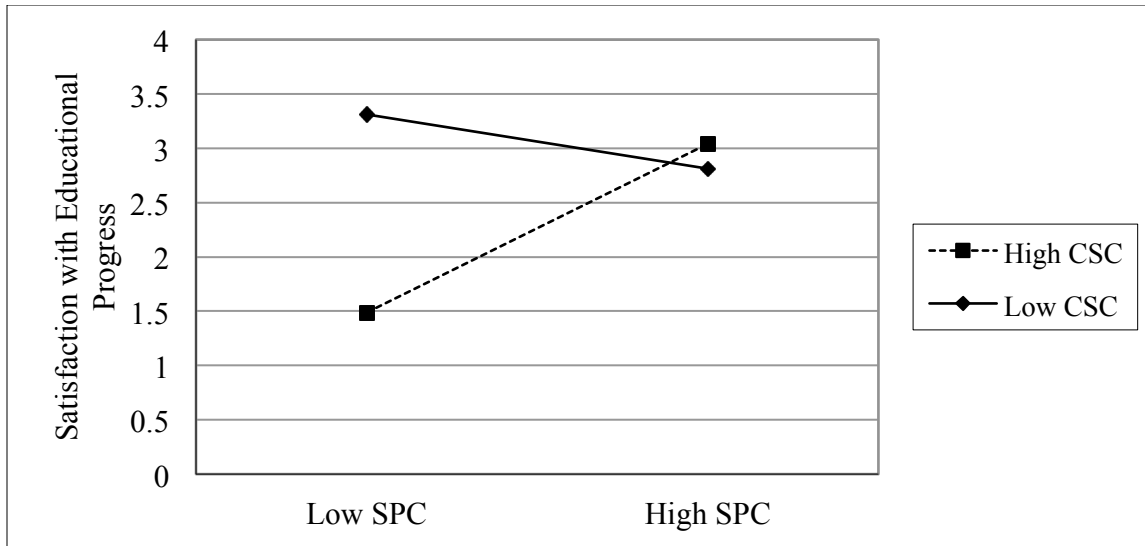


Figure 7. Study 1 interaction between compensatory secondary control and selective primary control predicting satisfaction with educational progress at Time 2.

*Note: CSC = compensatory secondary control. SPC = selective primary control.

The model for satisfaction with community college grades at Time 2 was significant, Adjusted $R^2 = .16$, $F(7,43) = 2.31$, $p = .043$; however, the only significant predictor variable was satisfaction with grades at Time 1 ($\beta = .46$, $p = .002$). This model explained 15.5% of the variance in satisfaction with community college grades at Time 2. In a separate model with motivation subscales and no interaction term, selective primary control became a significant predictor of satisfaction with grades at Time 2 ($\beta = .47$, $p = .007$). The overall variance explained in the subscale model was 22.9%, Adjusted $R^2 = .23$, $F(9,41) = 2.65$, $p = .016$.

Last, the only significant predictor in the regression model assessing satisfaction with community college experience at Time 2 was satisfaction with community college experience at Time 1 ($\beta = .56$, $p < .001$), Adjusted $R^2 = .32$, $F(7,43) = 4.28$, $p = .001$. This model explained 31.0% of the variance in satisfaction with community college experience at Time 2. When including motivation subscales and no interaction term, selective primary control became a significant positive predictor of satisfaction with community college experience at

Time 2 ($\beta = .41, p = .013$) and selective secondary control approached significance as a negative predictor of community college experience at Time 2 ($\beta = -.27, p = .082$). That is, students who scored higher on selective secondary control reported less satisfaction with the community college experience than students who scored lower on selective secondary control. The overall variance explained in the subscale model was 35.6%, Adjusted $R^2 = .36, F(9,41) = 4.07, p = .001$.

Study 1 Discussion

The purpose of Study 1 was to obtain preliminary empirical support that goal engagement and compensatory secondary control strategies were significantly related to academic behavior, transfer-related behavior, transfer outcomes and satisfaction and well-being variables in late-stage community college students. Overall, the results suggest that goal engagement and compensatory secondary control are useful in predicting transfer-related behaviors that eventually assist students in transferring to four-year universities.

Overall, there is good preliminary evidence that goal engagement and compensatory secondary control (composed of goal adjustment and self-protection) are separate and valid predictors of community college students' transfer-related behavior and transfer outcomes above and beyond academic performance variables. Goal engagement but not GPA significantly predicted the number of universities participants applied to. Compensatory secondary control but not GPA negatively predicted whether or not participants applied to a university. GPA but not goal engagement or compensatory secondary control significantly predicted the number of universities participants were accepted to, the ratio of universities accepted to vs. applied to, and the ranking of participants' transfer university.

In terms of well-being and satisfaction variables, goal engagement was a significant or marginally significant positive predictor of satisfaction with life and satisfaction with educational progress. In addition, the selective primary control subscale of goal engagement (i.e., investing time, energy, effort, and persistence into attaining educational goals) was a significant predictor of satisfaction with community college grades and community college experience at Time 2. Compensatory secondary control was a significant or marginally significant negative predictor of satisfaction with life and satisfaction with educational progress at Time 2. The interaction between compensatory secondary control and selective primary control predicted satisfaction with life and educational progress at Time 2 such that students with high levels of compensatory secondary control and low levels of selective primary control were the least satisfied. That is, after challenges to goal pursuit, students who used secondary control strategies (e.g., blaming others and comparing themselves to others who are worse off) without combining these strategies with additional effort fared the worse.

Typically in the literature, goal engagement and its subscales are significantly positively associated with college grades. This was not true for the current sample of community college students. Further, post-hoc correlations examining the relationship between goal engagement and GPA by the three most prominent ethnic groups revealed no significant associations. One possible explanation is that participants in the study were a positive selection of all community college students. Students in Study 1 were eligible to participate if they were within one year of transferring to a university. In other words, these students already completed most required courses to transfer. The average GPA in Study 1 was 3.30, which is expected to be higher than all community college students. It is possible that the variation in GPA was too low to find significant effects.

Another potential explanation is that the relationship between grades and goal engagement is different for community college students than for university students. Perhaps at the university, the most motivated students perform academically at the highest level, but at the community college, perhaps goal engagement is more closely related to persisting despite multiple obstacles to long-term goal pursuit. Instead of a high GPA, higher levels of goal engagement in community college students may lead to finishing all required courses and applying to a transfer university. Future research will study the relationship between goal engagement and GPA among transfer students at the university to test this hypothesis in a more structured and supportive environment.

Despite receiving similar grades, participants high in goal engagement reported investing more effort in their classes, such as spending more hours studying and completing assignments outside of class. It is interesting to note that the same students did not spend more time in classes or attend a higher number of class meetings. It was students who reported higher levels of compensatory secondary control who were less likely to attend labs or lectures. An unexpected finding was that participants who scored higher in goal engagement averaged fewer units per semester than students with lower levels of goal engagement. A related variable, whether participants attended community college part-time or full-time, was not associated with goal engagement. The finding can be further understood by examining the total number of units community college students averaged per semester. Some community college students take a very high number of units per semester, exceeding 18 units. Taking fewer units in this context would be beneficial.

However, upon closer inspection, it was students who were taking less than a full-time course load (i.e., fewer than 12 units, according to units per semester) who had the highest

levels of goal engagement. In the literature, taking less than a full-time course load is typically associated with negative outcomes. In Study 1, post-hoc correlations revealed that taking less than a full-time course load each semester was associated with a lower GPA at Time 1 and Time 2 ($r = .17, p = .036$; $r = .31, p = .018$, respectively) and a greater number of years to transfer to a university ($r = -.43, p < .001$). In addition, students who took less than a full-time course load and who worked were more likely to work full-time, equating to more hours worked per week ($r = -.21, p = .017$). Perhaps the relationship between taking fewer than 12 units per semester and having higher levels of goal engagement can be explained by the finding that older students take both fewer than 12 units per semester and are more goal engaged than younger students ($r = .20, p = .023$). Additional research is needed.

In addition to academic behaviors, students in Study 1 who were higher in goal engagement were more likely to apply to and be accepted into at least one competitive transfer program, such as U-Link, Transfer Mentor Program, Transfer Alliance Program, Adelante, Puente, Mathematics Engineering Science Achievement Program, Summer Scholars Transfer Institute, and Honors to Honors Program. A post-hoc Chi-squared test assessing community college district and participation in competitive transfer programs revealed that participants from SAC and SCC were much more likely to participate in one of these transfer programs than students from IVC or Saddleback College, $\chi^2(1) = 15.01, p < .001$. Indeed, several of these programs are only offered at SAC and SCC.

This was an unexpected finding because SAC and SCC cater to a primarily low-income and underrepresented student population. Typically, school resources mirror the resources in the surrounding community, leaving fewer resources for students in need. However, SAC and SCC had significantly more programs and resources to help students transfer to a university.

By contrast, more students from IVC and Saddleback College participated in the TAG program, a guaranteed admission program open to all community college students, $\chi^2(1) = 4.21, p = .040$. Both participation in the TAG program and other transfer programs were associated with positive transfer behavior and outcomes, including attending a higher quality transfer university. In particular, participation in transfer programs other than TAG was significantly associated with applying to a university, being accepted to their first-choice university, and taking fewer years to transfer to a university. This finding demonstrates the importance of compensatory programs in community college districts with disadvantaged student populations.

One subscale of goal engagement related to help-seeking behavior (compensatory primary control) was significantly associated with meeting more frequently with a counselor to discuss transfer. It is sometimes mistakenly assumed that struggling students are more likely to meet with a counselor and subsequently, to apply to a greater number of universities because they are not as competitive or confident about their acceptances. The results of the current study suggest the opposite: students who are highly engaged are likely to be proactive about transferring by frequently visiting a college counselor and applying to a greater number of transfer universities. In post-hoc correlations, students who applied to more universities met with a college counselor more frequently to discuss transfer ($r = .23, p = .013$), were accepted to a greater number of universities ($r = .64, p < .001$), and were attending a higher quality transfer university according to U.S. News & World Report rankings ($r = -.24, p = .040$).

In addition to the main hypotheses regarding goal engagement, students' demographic variables, such as financial need, parents' levels of education, ethnicity, and age, also played an important role in predicting academic behaviors, transfer-related behaviors, and transfer

outcomes. In the literature, students with lower socioeconomic status typically report lower academic performance levels and lower degree attainment. Study 1 used eligibility for a university fee waiver as an indicator of low-income or financial need. However, because of the programs and incentives available to low-income and underrepresented students at the community college, low socioeconomic status was associated with more positive than negative outcomes. Students in Study 1 who were low-income (i.e., eligible for a fee waiver) were more likely to apply to a university and applied to a greater number of total universities than students who were not eligible for a fee waiver. In addition, students who were eligible for a fee waiver reported fewer depressive symptoms at Time 2. It may seem counterintuitive that lower income students were more likely to apply to a university and applied to more universities, but students eligible for a fee waiver could apply to up to eight California transfer universities (four CSUs and four UCs) with no cost to them.

Being eligible for a fee waiver was an incentive to apply to transfer universities, but a post-hoc Chi-squared test sheds more light. Participants who were eligible for a fee waiver were much more likely to participate in a transfer program other than TAG. Competitive transfer programs typically cater to low-income, first-generation, and/or underrepresented students and are designed to help students by offering various types of support. The support offered by these programs includes easy access to fee waivers, encouraging students to apply to universities this year rather than next year or not at all.

In a post-hoc correlation, students who were eligible for a fee waiver applied to significantly more CSUs than students who did not apply for a fee waiver ($r = .28, p = .002$). In terms of the different types of universities (i.e., private, out-of-state, and UCs), CSUs are significantly less expensive. In addition, CSUs are greater in number than UCs, making their

campuses closer to students' homes. Many low-income students are concerned about the cost of living on campus or away from home and choose to commute to a university close to home to save money.

In the literature, students with parents with lower levels of education, many of them first-generation college students, face many of the same challenges low-income students face. In Study 1, participants with lower parental education levels were less likely to apply to a university, applied to fewer universities, were attending a lower quality transfer university, and were marginally less likely to be accepted to their first-choice university than students with higher parental levels of education. However, students with lower levels of parental education were accepted to a greater number of universities and had a marginally higher ratio of universities accepted to vs. applied to compared to students with higher levels of parental education.

Although students with lower levels of parental education were less likely to apply to transfer universities, when they did they were selective about the types of universities they applied to and were likely to be admitted to many universities, just not their first-choice or highly ranked universities. In post-hoc correlations, students with parents with lower levels of education applied to more CSUs ($r = -.26, p = .004$) and fewer universities that were private or out-of-state ($r = .18, p = .048$) than students with parents with higher levels of education. From the literature, we know that students with parents with lower education levels, similar to low-income and underrepresented students, are more likely to choose universities close to their families and universities with lower tuitions.

Study 1 found support for institutional differences between community colleges. IVC and Saddleback College have much higher transfer rates than SAC or SCC. This advantage led

to several positive outcomes being associated with attendance at IVC and Saddleback College. In Study 1, students from SAC and SCC applied to fewer transfer universities and were attending a lower quality transfer university than IVC and Saddleback College students. Post-hoc correlations are consistent with institutional reports that IVC and Saddleback College students apply to more UCs ($r = -.16, p = .073$) and private or out-of-state universities ($r = -.24, p = .007$), and fewer CSUs ($r = .38, p < .001$) than SAC or SCC students. Thus, although a greater number of transfer programs at SAC and SCC help low-income, first-generation, and underrepresented students transfer to a university, attending a highly regarded community college like IVC, in addition to demographic advantages, confers additional benefits to students.

Another demographic variable that was related to transfer behaviors and outcomes was participants' age. Older students at the community college took a greater number of years to transfer to a university. Older students were also less likely to apply to many universities, perhaps as a function of geographical limitation or having a specific transfer university in mind. In a post-hoc correlation, older students applied to fewer UCs than younger students ($r = -.21, p = .028$), marginally more CSUs ($r = .16, p = .085$), and marginally fewer private or out-of-state universities ($r = -.16, p = .088$). As a result, older students attend less prestigious transfer universities than younger students. In another post-hoc correlation, older students reported higher levels of goal engagement than younger students ($r = .20, p = .023$). This is consistent with the notion that older students, many of them returning students, have made a deliberate decision to further their education and report more motivation to attain their educational goals than traditional-aged college students. Traditional-aged students are less

certain of their major and attend college for a variety of reasons (e.g., their parents want them to attend college), leading to more years to transfer or lower academic motivation.

Ethnic differences in goal engagement and compensatory secondary control in Study 1 are consistent with recent findings by the research group. Using different datasets, it is clear that Latino students consistently score higher than other ethnic groups in goal engagement (findings not published). In Study 1, Latino students had significantly higher goal engagement scores than Asian American students. On the other hand, compared to Latino and European American students, Asian American students reported the lowest levels of goal engagement and the highest levels of compensatory secondary control. Although we included European American students in the analysis on goal engagement, their numbers were too few ($n = 26$) to be confident about the findings. A minimum of 30 cases per group is recommended when running an ANOVA. More participants are needed to make valid conclusions regarding this group, although the preliminary results are in the expected direction with European American participants' goal engagement scores falling in between Latino and Asian American students.

The finding that Latino students report high academic motivation is consistent with the fact that they report high levels of shared agency with parents (Kriegbaum, Villarreal, Wu, & Heckhausen, 2016). Shared agency describes the extent to which parents and children share similar academic goals and jointly engage in obtaining these goals (Chang, Heckhausen, Greenberger, & Chen, 2010). Latino students score especially high on the accommodation subscale of the shared agency scale. Out of the three subscales that make up shared agency, parental accommodation represents the least amount of parental influence on the child. This is consistent with the notion that Latino parents are supportive and encouraging of their children's educational goals, yet many do not have the resources to help their children navigate

higher education (e.g., the majority of Latino students are first-generation college students, meaning their mother or father did not attain a bachelor's degree; Goldrick-Rab, 2010). Thus, Latino students may have internalized high academic motivation from their parents and/or feel a strong sense of family obligation to excel in education. In Kriegbaum et al.'s study (2016), Asian American students reported the lowest levels of shared agency with parents and simultaneously, the highest levels of parental directing (i.e., parents being overinvolved and domineering in the child's educational goals).

As noted earlier, in the goal engagement literature, high levels of goal engagement and academic motivation are typically associated with higher levels of academic performance. For example, in Kriegbaum et al. (2016), academic motivation served as a mediator between shared agency with parents and higher academic performance among European American students in a university setting. However, this mediational relationship did not hold for Latino or Asian American students. Thus, the relationship between parental involvement, academic motivation, and academic performance differs by ethnic group.

In Study 1, we found support that goal engagement and motivation have an unexpected relationship with academic performance for non-traditional college students (i.e., underrepresented, first-generation, and/or low-income students). Despite high levels of goal engagement in education and high levels of shared agency with parents, Latino students do not have high levels of academic performance. In a post-hoc ANOVA, Latino students had significantly lower GPAs ($M = 3.16$, $SD = .43$) than Asian American ($M = 3.46$, $SD = .33$) and European American ($M = 3.45$, $SD = .44$) students, $F(2,142) = 10.20$, $p < .001$, a finding that is also echoed in the literature. Asian American students, despite reporting lower levels of goal engagement and using more compensatory secondary control strategies than other groups,

received similarly high grades as European American students and significantly higher grades than Latino students.

Even in high school, Asian American students' grades were significantly higher than other prominent ethnic groups. In a post-hoc ANOVA, Study 1 found significant group differences in high school GPA among European American, Latino, and Asian American students, $F(2, 128) = 6.86, p = .001$. Using Tukey's HSD post-hoc tests, Asian American community college students in Study 1 reported significantly higher high school GPAs ($M = 3.55, SD = .54$) than Latino students ($M = 3.17, SD = .52$), but not significantly higher GPAs than European American students ($M = 3.37, SD = .47$). The Least Square Difference (LSD) post-hoc tests, which are less conservative, found a marginally significant difference between European American and Latino students indicating that this result may become statistically significant with a greater number of European American participants.

With high grades in high school and community college relative to other ethnic groups, Asian American students may be attending community colleges for qualitatively different reasons than Latino or European American students. However, a post-hoc Chi-squared test revealed no significant differences in the three ethnic groups for the most frequent reason for attending community college (less expensive than university). Thus, the primary reason any student in Study 1, regardless of ethnic group, attended a community college was affordability.

Although cost is an important factor for all ethnic groups, perhaps Asian American students strategically attend community college to transfer into the most prestigious universities. This is in line with Asian American students reporting higher levels of parental directing of educational goals (Kriegbaum et al., 2016). A 3.5 high school GPA for Asian American students, while good enough for a CSU, is not typically high enough to be accepted

into the most prestigious universities. In post-hoc ANOVAs, although the three ethnic groups did not differ in their educational aspirations or how many universities they applied to, they differed in the types of universities they applied to and the quality of the transfer university they are attending. Asian American students applied to the most ambitious universities. Post-hoc ANOVAs revealed significant ethnic group differences in the number of CSUs participants applied to, $F(2,144) = 3.29, p = .040$, and marginally significant differences in the number of UCs, $Welch(2,80.18) = 2.84, p = .064$, and “other” universities applied to, $Welch(2,56.40) = 3.12, p = .052$. For CSUs, a Tukey’s HSD post-hoc test indicated a significant contrast between the number of universities that Asian American ($M = 1.45, SD = 1.68$) and Latino ($M = 2.18, SD = 1.64$) students applied to. Games-Howell post-hoc tests revealed marginally significant differences between Asian American ($M = 2.08, SD = 2.25$) and European American ($M = 1.13, SD = 1.46$) students in the number of UCs applied to and between European American ($M = 0.40, SD = 0.81$) and Latino ($M = 0.06, SD = 0.29$) students in the number of “other” universities applied to. Thus, out of the three ethnic groups, Asian American students applied to the greatest number of UCs and the fewest CSUs, targeting the most ambitious universities.

There were significant ethnic group differences in transfer universities based on both U.S. News & World Report rankings, $F(2,68) = 4.39, p = .016$, and Forbes’ America’s Top Colleges List, $F(2,70) = 3.68, p = .030$. According to Tukey’s HSD post-hoc tests, Asian American students are attending significantly higher ranked universities ($M = 87.48, SD = 93.17$ for U.S. News & World Report; $M = 189.13, SD = 135.29$ for Forbes) than Latino students ($M = 165.18, SD = 106.42$ and $M = 281.06, SD = 122.70$, respectively) but not

European American students ($M = 101.43$, $SD = 113.51$ and $M = 214.00$, $SD = 152.40$, respectively).

Despite their ambitiousness, as previously noted, Asian American students reported the lowest levels of goal engagement and the highest levels of compensatory secondary control in Study 1. One possible explanation is that despite high grades and attending a highly ranked transfer university, some Asian American students may not feel personally engaged with their educational goals. They may be pursuing these goals because it is expected of them, or because their parents want them to attain these goals. Alternatively, their high levels of compensatory secondary control (comprised of goal adjustment and self-protection strategies) may serve as a buffer against the negative impact of low goal engagement on academic performance and goal pursuit. In this case, Asian American students may be taking advantage of these adaptive strategies to produce positive outcomes, more so than other ethnic groups. In a post-hoc correlation, Asian American students with higher levels of compensatory secondary control spent marginally more hours in classes and labs ($r = .27$, $p = .067$), while Latino students with higher levels of compensatory secondary control spent fewer hours studying or completing assignments outside of classes ($r = -.25$, $p = .045$). Additionally, European American students with higher levels of compensatory secondary control reported lower GPAs at Time 2 than students with lower levels of compensatory secondary control ($r = -.60$, $p = .041$), suggesting this group, along with Latino students, may not be taking advantage of the adaptiveness of compensatory secondary control strategies. Further research is needed to test these hypotheses.

It is also possible that although Asian American students have the lowest levels of goal engagement comparatively, their absolute levels of goal engagement are still high. That is, all

students may have high levels of goal engagement, but Latino students may have an exceptionally high level of goal engagement. Additional goal engagement may be needed to pursue educational goals despite various obstacles (i.e., first-generation status, role responsibilities, financial challenges, etc.). Support for this explanation comes from post-hoc correlations that reveal Latino students' goal engagement levels, although high, are rooted in actual behaviors, not just intentions. That is, Latino students' goal engagement levels are positively associated with academic behavior, such as marginally more hours spent in classes or labs ($r = .21, p = .092$), more hours spent on assignments and studying outside of classes ($r = .37, p = .002$), and a marginally greater frequency of attending classes or labs ($r = .22, p = .068$). Out of the three most prominent ethnic groups, the only other positive association between goal engagement and academic behavior was that Asian American students with higher levels of goal engagement also spent more hours on assignments and studying outside of classes ($r = .34, p = .020$). Thus, Latino students had the strongest relationship between goal engagement and academic behaviors of the three ethnic groups. More research is needed to explore the relationship between goal engagement, academic performance, and transfer to a four-year university among different ethnic groups.

Last, although specific hypotheses were not tested, several findings regarding the importance of school, family, and job are of interest. As would be expected, students who reported high levels of goal engagement had higher ratings of the importance of school, yet these same students also rated family as more important than students who were less goal engaged. Thus, these students were highly invested in both the school and family domains. This finding may be specific to community college students, or more specifically underrepresented, first-generation, and/or low-income students. Community colleges are more

likely to be comprised of ethnic groups that feel a strong sense of family cohesion and obligation (Fulgini, 2007; Juang & Syed, 2010). Compared to four-year universities, many students are heavily involved in financially supporting or assisting family members.

This finding is especially intriguing when considering the optimization heuristic of the MTD (Heckhausen, 1999; Heckhausen & Schulz, 1993). The third tenant of the heuristic specifies that individuals should maintain a minimum diversity of goals. That is, for long-term success, individuals should avoid investing too heavily in any one life domain. Highly goal engaged community college students are a good example of investing in both the educational and family domains. However, a concern is that investing heavily in both domains in emerging adulthood may harm the pursuit of educational goals, which are traditionally pursued before family goals. The majority of community college students, although slightly older than the typical university population, are still young adults. An area for future research is to investigate the impact of heavy (vs. moderate or low) investment in multiple life domains as a possible contributor to high drop-out rates in community colleges.

Of importance, although the majority of community college students work, highly engaged students did not rate their job as more important than students who were less engaged with educational goals. For all students, regardless of goal engagement levels, job/career was rated as less important than school or family. Participants with higher levels of compensatory secondary control rated school, but not family or job, as significantly less important than participants with lower levels of compensatory secondary control. Another optimization heuristic of the MTD specifies that individuals should consider the consequences of pursuing one goal over another goal for overall functioning and long-term goal attainment (Heckhausen, 1999; Heckhausen & Schulz, 1993). In this respect, pursuing one goal should not negatively

impact the likelihood of attaining another important life goal. It may be the case that for students with high levels of compensatory secondary control, goals related to family or career may have negatively impacted the pursuit of education-related goals.

Once they become disengaged with school, unless students find a way to re-engage with their educational goals, it may be most adaptive for them to stop attending community college and engage with alternative goals, such as optimizing their career. Vuolo et al. (2012) use the term “educational floundering” to describe the tendency of some students to remain in higher education for a number of years without earning a degree. Shulock and Moore (2005) outline many of the consequences of prolonged attendance at the community college without transferring or attaining a degree. One such result is wasted time and income while the individual could have been fully employed in the workforce and working toward a career.

Study 1 obtained detailed data from participants including open-ended questions about academic progress and transfer plans. This rich data allows additional insights in interpreting the results and is consistent with the difficulties and unique challenges of students attending community colleges. As expected based on the literature, a majority of participants in Study 1 initially expected to take two years or less to transfer to a university, but only 18.6% were able to meet these goals. Consistent with the literature, many students identified two broad categories of challenges that led to a delay in transferring: institutional-level factors and individual/societal-level factors. In an open-response question of why they were not transferring in the amount of time they initially planned, students cited problems related to the community college, such as impacted and unavailable classes and courses filling up quickly. One student summed up the low-structure nature of the community college by saying, “The atmosphere of [the community college] made me want to slack off.” Another reported, “I did

not get enough information to get my classes on time.” Several students reported not taking the “right” classes or having to repeat classes. Meeting transfer requirements often involved more math and science courses or prerequisites than students anticipated, thus adding additional time to transfer. Students reported being “disoriented” at the beginning of community college or “not aware” of what courses they needed to take. One student said, “I took classes in the beginning that were ‘fun’ classes.” This phenomenon of delaying transfer due to courses not being available or taking “extra classes that I did not need” is supported in the literature (Shulock & Moore, 2005).

Students also identified financial and family responsibilities, such as working full-time, having children, financially helping family members (e.g., helping to pay rent), having to take many remedial classes due to resource-poor high schools, or family or health difficulties (e.g., parent being ill). For some, these non-school-related roles and responsibilities led to a “lack of focus” that contributed to poor course performance. Consistent with the literature (Hagedorn et al., 2008) is the fact that the vast majority (81.9%) of participants in Study 1 were working either part-time or full-time while attending community college. One student said, “It is difficult to maintain good grades and work at the same time.” Students also mentioned the difficulties of being a first-generation college student as seen in the following response: “I did not have enough information about how the college system works.” One student summarized her unfamiliarity with higher education by saying, “At the beginning of my educational career I didn’t know the importance of getting good grades.”

Students also noted interactions between institutional-level and individual-level challenges. For example, one student discussed the combination of resources not being readily available and not knowing what to ask as a first-generation college student:

It has taken me a long time to transfer since I was not familiar with assist.org and the courses I needed to transfer when I first started community college. My lack of knowledge of the university and of community college is primarily due to the fact that I am the first person in my family to go to college. I eventually learned what assist.org was and what I needed to do to transfer.

Other factors not related to institutional or individual challenges further explained the discrepancy. Several students reported not transferring in the amount of time they specified due to choosing majors with a high number of required units to transfer, such as engineering. Other factors that are not unique to community college students were also reported such as changing majors or being uncertain of what to major in. One student recognized his lack of self-regulation and motivation citing “poor planning and a lack of discipline.” Another student gave a complex analysis that included many factors, such as unfamiliarity with the college process, uncertainty about major, and lack of motivation:

Upon getting to college I found myself overwhelmed by the different processes (applying for classes, financial aid, etc.). Also, I had trouble figuring out my major, so I jumped around to many different classes in hopes of finding something I liked and luckily I did. I think the ‘two year’ plan should have emphasized that it is for people who know what they want to do and are very motivated and serious about college. I just was not mature enough and in a way fooled around too much to get out of community college within two years.

It is likely that the vast majority of youth entering higher education are immature and lack strong self-regulation skills at 17 or 18 years of age. However, students entering a university immediately after high school experience a structured environment that may help

them effectively navigate higher education. Overall, students' open-ended responses reflect the complex intersections of many disadvantages on community college students' motivation and likelihood of transfer to a four-year university.

Limitations. Study 1's primary limitations were its small sample size and the selectivity of the sample. Several factors contributed to the low sample size. Although many students signed up to take the assessment during classroom presentations, they did not necessarily complete the study, even after several emails and phone call reminders. For this reason, the original timeline of the study was extended and students completed the first assessment between February and April of 2014. The sample size at Time 2 was further limited for two reasons. First, not all students agreed to be contacted again for the second assessment. Second, 23.9% of the original sample that initially indicated they would transfer to a university within one year did not apply to a university. This limited the sample of Time 2 to a possible 113 participants.

Attrition at Time 2 was high. The second assessment took place in June and July of 2014, after many students had completed their final semester at the community college. This time point ensured that participants had their spring semester GPA and knew what university they would be transferring to, if applicable. In order to encourage participation, the follow-up study was very brief and took 5-10 minutes to complete. Participants were still compensated with a \$5 online gift card. Approximately 63 of the eligible participants (55.8% of those eligible for Time 2; 38.6% of the original sample) responded by completing all or a good portion of the follow-up study. These students represented a select sample of participants. A positive selection bias occurred, as is common in longitudinal studies, such that students who participated at Time 1 and Time 2 had higher grades, were more goal engaged, had lower

levels of compensatory secondary control, and experienced greater well-being and satisfaction with life than students who participated at Time 1 only.

Additional efforts were made to encourage participation after the follow-up study deadline passed and it was clear no additional students would complete the study. At this time, an email was sent to students who did not respond but who had applied to universities. These students were asked to respond via email to a one-question follow-up that would take 30 seconds to respond to. Participants were asked, “Did you transfer? If so, where?” Using this method, the researcher received a response from an additional 23 students.

The small sample size limited the number of covariates and variables of interest that could be included in the linear and logistic regression models. Several of the reported findings approached statistical significance and should be interpreted with caution. Effect size measures for linear regression models ranged from explaining 14.3% of the variation in outcome variables (ratio of universities accepted to vs. applied to) to 41.9% of variation in outcome variables (number of universities accepted to). Several models explained between 15.0% and 20.0% of the variation in the outcome variable, which is rather low. This suggests there are many other explanatory variables not included in the models. Future studies with larger sample sizes can include more predictor variables and covariates in the regression models.

In addition to small sample size, the participants in Study 1 may not be representative of all community college students. This was a select group of students who were close to transferring to a four-year university. These students may have higher levels of goal engagement and lower levels of compensatory secondary control, or be more adept at using motivational and self-regulatory strategies than students whose goals are more distant. The

limitations of Study 1 will be addressed by Study 2, including a larger sample size, greater retention of the sample, and a longer study time span.

Although Study 1 was designed to be a short-term longitudinal study, much of the primary analysis of Study 1 was cross-sectional at Time 1 to preserve the larger sample size and enhance confidence in the results. Thus, Time 2 in Study 1 served as validation of the findings from Time 1. Out of the original variables of interest, one variable (whether or not participants were accepted to a university) could not be used due to its low variability.

Virtually all participants who applied to transfer were accepted to a university. Therefore, a much more critical variable became whether or not participants applied to universities in the first place, which was assessed at Time 1. However, this variable also had limited variability as over 90% of the sample applied to a university. Therefore, findings should be interpreted with caution.

Predictive models in Study 1 were limited by either the cross-sectional nature of using variables from Time 1 or the small sample size of Time 2. For the cross-sectional regression models, it is possible that students' transfer-related behaviors and outcomes influenced their current levels of goal engagement and compensatory secondary control. In fact, taking steps toward attaining goals should enhance goal engagement according to the MTD. Although the researcher cannot claim causality, the literature on goal engagement suggests that it is fairly stable over time and can be considered trait-like in nature.

One limitation that is evident in both Study 1 and Study 2 is the inability to differentiate between different ethnic subgroups. For example, although Asian American students are typically high performing in education, there are important subgroup differences. Wong, Lai, Nagasawa, & Lin (1998) found significant differences in the academic

performance of East Asian American students (i.e., Chinese and Japanese students) on the one hand and lower-socioeconomic status Southeast Asian and Pacific Islander students on the other hand. Southeast Asian and Pacific Islander subgroups (e.g., Hmong and Cambodian students) are underrepresented in higher education and have lower incomes and higher poverty rates than other Asian American subgroups (Suzuki, 2002). At the same time, they report poorer grades than their peers, lower emotional support from their parents, have less confidence, and experience a strong pressure to bring honor to their families (Strage, 2000). With this knowledge, we expect Southeast Asian American students to report lower levels of goal engagement in education than East Asian American students. Unfortunately, Study 1 and Study 2 did not differentiate between Asian American subgroups (and neither do institutional statistics from IVC or SAC). Because community colleges cater to low-income and first-generation college students, it is likely that our sample of Asian American students contained a good number of Southeast Asian American students. Future studies should investigate differences in goal engagement and compensatory secondary control, transfer-related behavior, and well-being among East Asian American and Southeast Asian American community college students.

Study 2 Results

Descriptive Statistics. Means, standard deviations, and frequencies were calculated for Study 2 demographic variables, predictor variables, and outcome variables.

Academic performance. Cumulative grade point averages (GPAs) were measured at Time 2, Time 3, and Time 4. GPAs were not available at Time 1 as the assessment took place before students' grades for their first semester were recorded. Mean GPAs across the three time points were stable and correspond to an approximately B average (see Table 17). Paired

samples *t*-tests determined that GPAs at Time 2 and Time 3 and GPAs at Time 3 and Time 4 were not statistically different from one another, respectively.

Transfer-related behaviors. While at the community college, approximately one-fourth of the sample participated in the Transfer Admission Guarantee (TAG) program and one-third participated in other programs that help students transfer, namely competitive transfer programs mentioned in Study 1 (see Table 18). Taken together, just over half of participants participated in some kind of program to aid in the transfer process.

Students were recruited for Study 2 if they indicated an interest in transferring to a university. Over the course of the study, the vast majority of participants still planned to transfer to a university: 98.8% at Time 2, 97.1% at Time 3, and 94.9% at Time 4. If students planned to transfer to a university in two years, they would need to apply to universities around Time 3. At Time 3, 41.1% of participants indicated they would be applying to universities. For students who indicated they would be applying at Time 3, 56.5% of them had already started working on transfer applications.

At Time 4, the total number of participants who applied to transfer was just under 40% (see Table 18). Close to half of participants (45.6%) did not meet their goal of transferring to a university within two years. However, on the other hand, 15.7% of students who indicated they wanted to transfer in more than two years applied to universities within two years. Thus, some students exceeded their transfer goals.

Compared to Study 1, participants in Study 2 applied to a greater number of universities (close to 5) and more UCs than CSUs (see Table 18). Of students who applied, a substantial number applied to four UCs (31.4%) and four CSUs (20.0%), which is the

maximum number of universities students can apply to with a fee waiver. Close to half of students qualified for fee waivers, demonstrating financial need.

Table 17

Study 2: Descriptive Statistics Across All Time Points

Variables	Time 1 (N = 124)		Time 2 (N = 163)		Time 3 (N = 136)		Time 4 (N = 137)	
	<i>M</i> (<i>SD</i>)	Range	<i>M</i> (<i>SD</i>)	Range	<i>M</i> (<i>SD</i>)	Range	<i>M</i> (<i>SD</i>)	Range
Academic behavior								
GPA	--	--	3.20 (0.61)	1.5-4.0	3.20 (0.55)	1.6-4.0	3.19 (0.55)	1.3-4.0
Motivation								
Goal engagement	4.22 (0.56)	2.7-5.0	4.16 (0.68)	1.3-5.0	4.17 (0.66)	1.5-5.0	4.24 (0.62)	1.7-5.0
CSC	3.01 (0.77)	1.4-5.0	2.84 (0.82)	1.0-5.0	2.85 (0.81)	1.0-5.0	2.93 (0.75)	1.1-5.0
Well-being								
Satisfaction with:								
Life overall	4.97 (1.58)	1.0-7.0	4.93 (1.61)	1.0-7.0	5.06 (1.52)	1.0-7.0	5.13 (1.45)	1.0-7.0
Progress ed. goals	--	--	4.81 (1.43)	1.0-7.0	5.04 (1.56)	1.0-7.0	5.08 (1.62)	1.0-7.0
CC grades	--	--	4.81 (1.71)	1.0-7.0	5.02 (1.59)	1.0-7.0	4.80 (1.70)	1.0-7.0
CC experience	--	--	4.60 (1.69)	1.0-7.0	4.99 (1.64)	1.0-7.0	4.99 (1.56)	1.0-7.0
Depressive symptoms	13.25 (6.07)	0.0-25.0	12.28 (6.43)	0.0-28.0	13.68 (6.75)	1.0-28.0	13.31 (6.68)	0.0-30.0
Perceived stress	11.14 (2.86)	4.0-18.0	10.99 (3.29)	4.0-19.0	11.29 (3.26)	4.0-20.0	10.95 (3.39)	4.0-20.0
Physical symptoms	67.04 (25.28)	33.0-148.0	64.15 (24.02)	33.0-145.0	65.69 (24.11)	33.0-154.0	66.01 (23.51)	33.0-139.0

*Note: CC = Community college. CSC = Compensatory secondary control. Ed. = Educational.

Transfer outcomes. At Time 4, students were asked to think back to when they first started community college and remember how many years they expected to take to transfer to a university. Approximately three-fourths of the sample (73%) reported expecting it to take two years to transfer with the mean a little over 2 years (see Table 18). At Time 2 and Time 3, the mean time to transfer increased slightly but stayed under two-and-a-half years. A little more than half of participants at Time 2 and Time 3 (56.3% and 53.5%, respectively) thought it would take two years or less to transfer. When asked at Time 4 how many years it would actually take them to transfer, the mean time reported was closer to three years than two years (see Table 18). In addition, the range had increased. A little more than one-third of the sample transferred to a university in two years or less with 3 years being the median time to transfer. It is important to note that the years to transfer to a university is likely to increase for students who did not transfer by Time 4.

Similar to Study 1, virtually all participants who applied to a university (98%) were attending a university in the fall. Among participants who were accepted, the number of universities accepted to was between one and seven universities (see Table 18). The vast majority of students were accepted to their first-choice university.

Well-being and satisfaction. Absolute mean scores for depressive symptoms, perceived stress, physical symptoms, and satisfaction with life variables are reported in Table 17. For depressive symptoms, on the original scale of 0 to 3, the average scores were 1.33 ($SD = 0.60$; range: 0.00-2.50) for Time 1, 1.25 ($SD = 0.65$; range: 0.00-2.80) for Time 2, 1.40 ($SD = 0.67$; range: 0.10-2.80) for Time 3, and 1.32 ($SD = 0.66$; range: 0.00-3.00) for Time 4, respectively. Paired samples t -test determined that depressive symptoms at Time 1 and Time 2 and Time 3 and Time 4 were not statistically different from one another, respectively.

However, there was a statistically significance difference between depressive symptoms at Time 2 and Time 3, $t(108) = -2.10, p < .038$. Depressive symptoms at Time 2 ($M = 12.22, SD = 6.39$) were statistically lower than depressive symptoms at Time 3 ($M = 13.39, SD = 6.62$).

Table 18

Study 2: Descriptive Statistics for Transfer Variables

Variable	<i>M</i>	<i>(SD)</i>	Range	Percentage
Transfer-related behavior				
Participated in TAG	--	--	--	26.4%
Participated in other transfer programs	--	--	--	34.4%
Applied to transfer (entire sample)	--	--	--	38.0%
Applied to transfer (expected two years)	--	--	--	54.4%
# of universities applied to	4.86	(2.64)	1.00-13.00	--
UCs	2.63	(2.22)	0.00-9.00	--
CSUs	1.72	(1.70)	0.00-5.00	--
Private schools	0.43	(0.81)	0.00-3.00	--
Qualify for fee waivers	--	--	--	48.0%
# of fee waivers used	4.04	(2.27)	1.00-8.00	--
Transfer outcomes				
Expected years to transfer	2.26	(0.49)	2.00-4.50	--
Expected years to transfer at Time 2	2.38	(0.79)	1.00-6.00	--
Expected years to transfer at Time 3	2.43	(0.81)	0.75-5.00	--
Total years to transfer	2.87	(0.81)	1.50-6.00	--
Accepted to university (entire sample)	--	--	--	36.2%
# of universities accepted to	3.49	(1.89)	1.00-7.00	--
UCs	0.66	(1.38)	0.00-6.00	--
CSUs	0.49	(1.05)	0.00-4.00	--
Private schools	1.25	(0.46)	0.00-2.00	--
Accepted to first-choice university	--	--	--	81.3%

**Note.* Unless otherwise noted, all transfer variables were measured at Time 4. TAG = Transfer Admission Guarantee Program.

For the perceived stress scale, calculated on the original scale of 1 to 5, the average scores for each of the time points were 2.77 ($SD = 0.73$; range: 1.00-4.50) for Time 1, 2.75 ($SD = 0.82$; range: 1.00-4.75) for Time 2, 2.83 ($SD = 0.81$; range: 1.00-5.00) for Time 3, and 2.75 ($SD = 0.85$; range: 1.00-5.00) for Time 4, respectively. Paired samples t -tests determined that perceived stress scores at Time 1 and Time 2, Time 2 and Time 3, and Time 3 and Time 4 were not statistically different from one another, respectively.

For physical symptoms, on the original scale of 0 to 4, the average scores were 1.04 ($SD = 0.75$; range: 0.00-3.48) for Time 1, 0.93 ($SD = 0.71$; range: 0.00-3.39) for Time 2, 1.00 ($SD = 0.72$; range: 0.00-3.67) for Time 3, and 0.99 ($SD = 0.69$; range: 0.00-3.21) for Time 4, respectively. Paired samples t -tests determined that physical symptoms at Time 1 and Time 2, Time 2 and Time 3, and Time 3 and Time 4 were not statistically different from one another, respectively.

Time 1 assessed overall satisfaction with life while Times 2, 3, and 4 additionally assessed satisfaction with educational progress, satisfaction with community college grades, and satisfaction with community college experience (see Table 17). Participants at Time 1 were on average *somewhat satisfied* with life. At Time 2, participants were *somewhat satisfied* with life overall and between *neither unsatisfied nor satisfied* and *somewhat satisfied* with progress toward educational goals, community college grades, and community college experience. At Time 3, approximately all satisfaction variables averaged *somewhat satisfied*. Although there was slightly more variation for Time 4, responses averaged *somewhat satisfied* for all satisfaction variables. Paired samples t -tests determined that satisfaction with life at Time 1 and Time 2, Time 2 and Time 3, and Time 3 and Time 4 were not statistically different from one another, respectively. Similarly, participants' scores on satisfaction with educational

progress, community college grades, and community college experience were not statistically different at Time 2 and Time 3 and Time 3 and Time 4.

Motivation. Mean scores for goal engagement and compensatory secondary control are reported in Table 17. On average across the four time points, participants reported agreeing with goal engagement items and neither agreeing nor disagreeing with compensatory secondary control items. Similar to Study 1, goal engagement and compensatory secondary control scales were not correlated at Times 1, 2, or 3. However, at Time 4 there was a positive correlation between goal engagement and compensatory secondary control ($r = .19, p = .031$). Paired samples *t*-tests determined that goal engagement scores were not significantly different from one another at Time 2 and Time 3 and Time 3 and Time 4, respectively. However, goal engagement at Time 1 ($M = 4.21, SD = .54$) was significantly higher than goal engagement at Time 2 ($M = 4.08, SD = .68$), $t(92) = 2.51, p = .014$. Participants' scores on compensatory secondary control were not statistically different at Time 1 and Time 2, Time 2 and Time 3, and Time 3 and Time 4.

Two sets of ANOVAs tested ethnic group differences in goal engagement and compensatory secondary control. African American, Native American, multi-ethnic, and “other” participants were excluded from this analysis due to low numbers. At Time 1 and Time 3, there were no significant ethnic group differences in goal engagement or compensatory secondary control strategies. However, at Time 2 when additional participants were added to the study, significant ethnic differences emerged in goal engagement, $Welch(2,57.62) = 4.89, p = .011$, but not compensatory secondary control. In particular, using Games-Howell post-hoc tests, Latino students ($M = 4.34, SD = .56$) had significantly higher goal engagement scores than European American students ($M = 3.81, SD = .87$) but not Asian

American students ($M = 4.13$, $SD = .67$). At Time 4, ethnic differences were similar to Time 2 for goal engagement, $F(2,120) = 4.09$, $p = .019$ (see Figure 8). According to Tukey's HSD post-hoc tests, Latino students ($M = 4.35$, $SD = .61$) had significantly higher goal engagement scores than European American students ($M = 3.89$, $SD = .70$) but not Asian American students ($M = 4.23$, $SD = .63$).

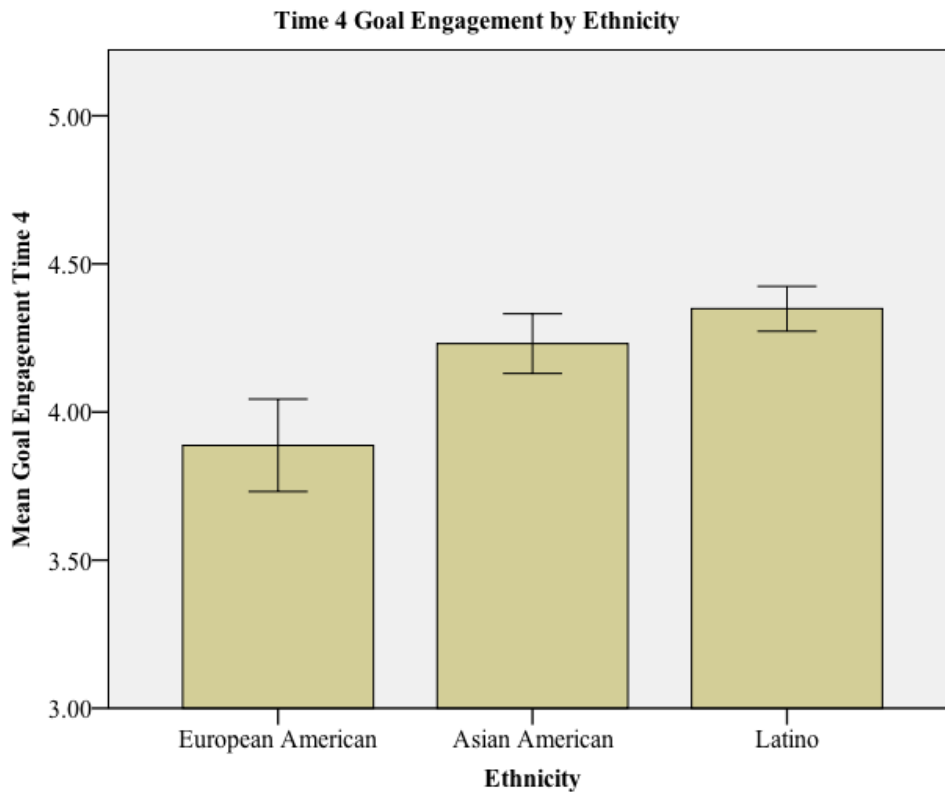


Figure 8. Ethnic differences in goal engagement at Time 4 using a one-way ANOVA.

Pearson product-moment correlations investigated the relationship between goal engagement and compensatory secondary control, respectively, and the importance of different life domains. At Time 1, students who were highly goal engaged also rated education ($r = .65$, $p < .001$), family ($r = .35$, $p < .001$), and career ($r = .34$, $p < .001$) as significantly more important than students who were less goal engaged. Students with higher levels of

compensatory secondary control rated career as marginally more important than students with lower levels of compensatory secondary control ($r = .17, p = .062$). The findings were similar at Time 2 such that students with higher levels of goal engagement reported education ($r = .72, p < .001$), family ($r = .38, p < .001$), and career ($r = .28, p < .001$) as more important than students with lower levels of goal engagement. At Time 3, highly goal engaged students rated education as significantly more important ($r = .43, p < .001$) and family as marginally more important ($r = .16, p = .083$) than less engaged students. Students with higher levels of compensatory secondary control rated education as marginally less important ($r = -.15, p = .091$) and career as marginally more important ($r = .15, p = .092$) than students with lower levels of compensatory secondary control. Last, at Time 4, students who were highly engaged rated education ($r = .63, p < .001$) and family ($r = .44, p < .001$) but not career as more important than students who were less engaged.

Hypothesis Testing.

Hypothesis 1. Multiple linear and logistic regression models determined the association between goal engagement and compensatory secondary control at Time 2, respectively, and academic behavior at Time 3. Above and beyond the influence of covariates, goal engagement was expected to be a positive predictor of academic behavior, while compensatory secondary control was expected to be a negative predictor of academic behavior.

GPA. The model predicting GPA at Time 3 was significant, Adjusted $R^2 = .64$, $F(10,81) = 17.35, p < .001$. In addition to GPA at Time 2 ($\beta = .68, p < .001$), traditionally underrepresented students had significantly lower GPAs than non-underrepresented students ($\beta = -.26, p = .012$). The model accounted for 64.2% of the variation in community college GPA at Time 3.

Full-time status. A logistic regression model predicted whether students were part-time or full-time status at the community college at Time 3. The model was significant, $LR\chi^2(10) = 33.34, p < .001$. In addition to full-time status at Time 2, $OR = 21.61, Wald(1) = 14.78, p < .001$, being a significant predictor of full-time status at Time 3, younger students were more likely to be full-time than older students, $OR = .71, Wald(1) = 3.85, p = .050$. Students who qualified for financial aid were more likely to be part-time than full-time status than students who did not qualify for financial aid, $OR = .05, Wald(1) = 4.52, p = .033$.

Accumulated units. The model predicting accumulated units at Time 3 was significant, Adjusted $R^2 = .53, F(10,45) = 7.11, p < .001$. In addition to accumulated units at Time 2 ($\beta = .50, p < .001$), traditionally underrepresented students had significantly fewer accumulated units than non-underrepresented students ($\beta = -.31, p = .030$). Students who reported higher levels of compensatory secondary control reported significantly fewer accumulated units than students with lower levels of compensatory secondary control ($\beta = -.22, p = .042$). The model accounted for 52.6% of the variation in accumulated community college units at Time 3.

Units per semester. The model predicting units taken during Time 3 was significant, Adjusted $R^2 = .19, F(10,91) = 3.42, p = .001$. In addition to units taken during Time 2 ($\beta = .39, p < .001$), traditionally underrepresented students took significantly fewer units at Time 3 than non-underrepresented students ($\beta = -.31, p = .029$). The model accounted for 19.3% of the variation in students' units per semester at Time 3.

Hours spent in classes each semester. The model predicting average hours spent in classes at Time 3 was significant, Adjusted $R^2 = .09, F(10,89) = 1.95, p = .048$. However, the only significant predictor was hours spent in classes at Time 2 ($\beta = .38, p < .001$). The model accounted for 8.8% of the variation in students' units per semester at Time 3.

Hours spent on studying and homework outside of class. The model predicting average hours spent outside of the classroom at Time 3 was significant, Adjusted $R^2 = .29$, $F(10,85) = 4.82$, $p < .001$. In addition to hours spent outside the classroom at Time 2 ($\beta = .36$, $p = .001$), the interaction between compensatory secondary control and selective primary control was statistically significant ($\beta = .22$, $p = .029$). Students who were high in compensatory secondary control and selective primary control, as well as student who were low in compensatory secondary control and selective primary control spent the greatest hours outside of classes on assignments and studying (see Figure 9). Students who were low in selective primary control but high in compensatory secondary control spent the fewest hours outside of classes on assignments and studying. The model accounted for 28.7% of the variance in hours spent on studying and homework outside of class.

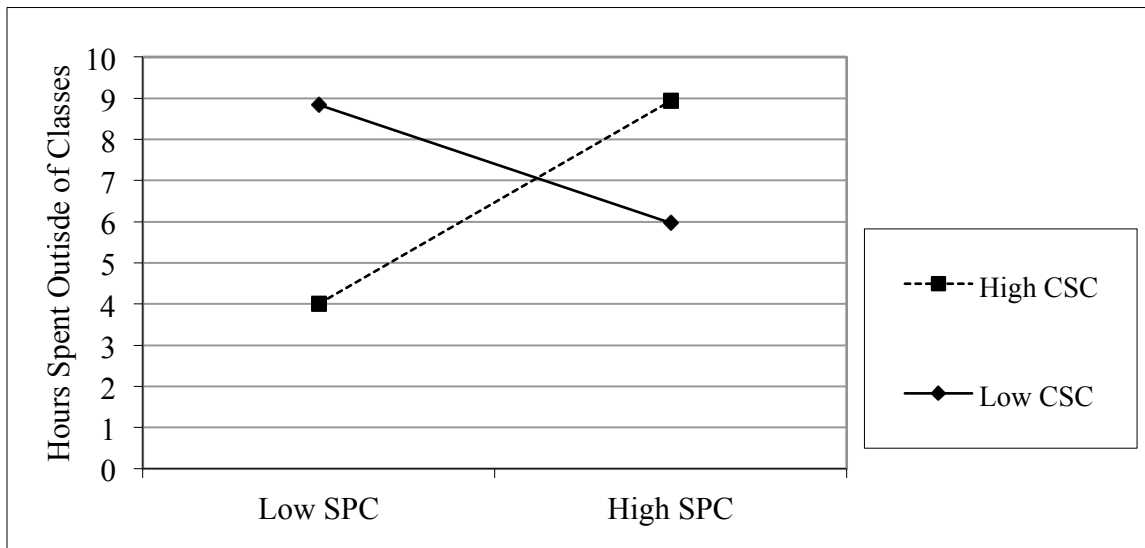


Figure 9. Study 2 interaction between compensatory secondary control and selective primary control at Time 3 predicting hours spent outside of classes on assignments and studying at Time 4.

**Note:* CSC = compensatory secondary control. SPC = selective primary control.

Frequency of attending lectures each semester. The model predicting the frequency of participants attending lecture at Time 3 was significant, Adjusted $R^2 = .13$, $F(10,93) = 2.50$, $p = .010$. However, the only significant predictor variable was the frequency of attending lectures at Time 2 ($\beta = .42$, $p < .001$). The model accounted for 12.7% of the variation in the frequency of attending lecture at Time 3. It is possible that there was not enough variation in this variable as 74.4% of the sample reported attending lecture or lab more than 95% of the time (Median = 7.0 on a 7-point scale).

Hypothesis 2. Multiple linear and logistic regression models explored the relationship between goal engagement and compensatory secondary control at Time 2, respectively, and transfer-related behavior at Time 3. Additional analyses explored the relationship between goal engagement and compensatory secondary control at Time 3, respectively, and transfer-related behavior at Time 4. Above and beyond the influence of covariates, goal engagement was expected to be a positive predictor of transfer-related behavior, while compensatory secondary control was expected to be a negative predictor of transfer-related behavior.

Total years to transfer. The model predicting Time 3 years to transfer using Time 2 variables was significant, Adjusted $R^2 = .26$, $F(10,86) = 4.43$, $p < .001$. However, the only significant predictor variable was total years to transfer at Time 2 ($\beta = .52$, $p < .001$). This model explained 26.3% of the variation in total years to transfer at Time 3.

The model predicting total years to transfer at Time 4 using Time 3 variables was significant, Adjusted $R^2 = .27$, $F(10,67) = 3.82$, $p < .001$. In addition to total years to transfer at Time 3 ($\beta = .46$, $p < .001$), students who qualified for financial aid took a greater number of years to transfer to a university than students who did not qualify for financial aid ($\beta = .24$, $p = .038$). Traditionally underrepresented students were marginally more likely to take a greater

number of years to transfer to a university than students who were not traditionally underrepresented ($\beta = .27, p = .087$). This model explained 26.8% of the variation in total years to transfer at Time 4.

Frequency of meeting with a college counselor. The model predicting the frequency of meeting with a counselor at Time 3 using Time 2 variables was significant, Adjusted $R^2 = .28$, $F(12,73) = 3.79, p < .001$. In addition to frequency of meeting with a counselor at Time 2 ($\beta = .53, p < .001$), traditionally underrepresented students ($\beta = -.37, p = .014$) and students who participated in the TAG program ($\beta = -.21, p = .042$) were less likely to meet with a counselor to discuss transfer than non-underrepresented students and younger students, respectively. Students who participated in transfer programs other than TAG were marginally more likely to meet with a counselor than students who did not participate in other transfer programs ($\beta = .18, p = .087$). Last, students with parents with higher levels of education were marginally less likely to meet with a counselor than students with lower levels of education ($\beta = -.25, p = .086$). This model explained 28.2% of the variation in frequency of meeting with a counselor at Time 3.

The model predicting the frequency of meeting with a counselor at Time 4 using Time 3 variables was significant, Adjusted $R^2 = .45$, $F(12,69) = 6.50, p < .001$. However, the only significant predictor variable was frequency of meeting with a counselor at Time 3 ($\beta = .65, p < .001$). The interaction between compensatory secondary control and selective primary control at Time 3 approached statistical significance ($\beta = .21, p = .071$). The students who most frequently met with a counselor were students with high levels of both compensatory secondary control and selective primary control followed by students who were low in both compensatory secondary control and selective primary control (see Figure 10). Students who

were high in selective primary control and low in compensatory secondary control, as well as students who were low in selective primary control and high in compensatory secondary control were the least likely to meet with a counselor. This model explained 44.9% of the variation in frequency of meeting with a counselor at Time 4.

Applying to universities. The logistic regression model predicting whether students planned to apply to universities at Time 3 was significant, $LR\chi^2(11) = 25.87, p = .007$. Traditionally underrepresented students were less likely than non-underrepresented students to plan to transfer to a university at Time 3, $OR = .10, Wald(1) = 5.91, p = .015$. Students who participated in transfer programs other than TAG, such as competitive transfer programs, were more likely to be applying at Time 3 than students who did not participate in these programs, $OR = 6.97, Wald(1) = 8.81, p = .003$. Last, students with parents with lower levels of education and students who were attending IVC or Saddleback College were marginally more likely to report applying to universities at Time 3 than students with parents with higher levels of education, $OR = .69, Wald(1) = 3.46, p = .063$, and students attending SAC or SCC, $OR = .22, Wald(1) = 3.33, p = .068$.

Started working on transfer applications. The model predicting getting an early start on transfer applications for those who were transferring this year was significant, $LR\chi^2(11) = 20.78, p = .036$. Traditionally underrepresented students were less likely to be working on their transfer application at Time 3, $OR = .01, Wald(1) = 5.36, p = .021$. Students who participated in transfer programs other than TAG were marginally more likely to be working on transfer applications at Time 3, $OR = 53.29, Wald(1) = 3.42, p = .065$. Last, the interaction between compensatory secondary control and selective primary control approached statistical significance, $OR = .05, Wald(1) = 2.84, p = .092$, although an interpretation is premature given

the p -value is near .10. Time 3 corresponded to the months of September and October while transfer application are typically due in late November.

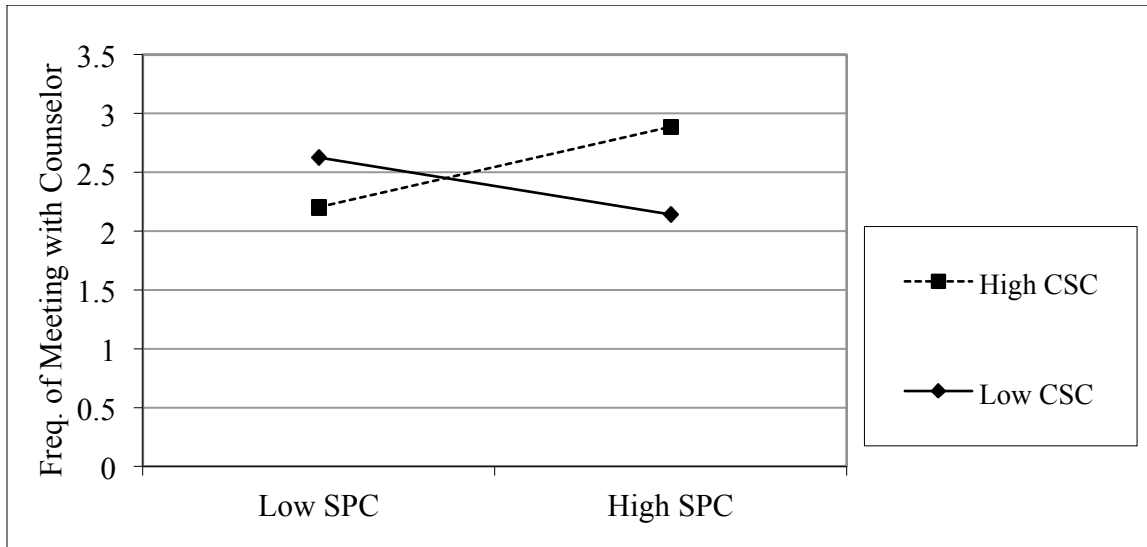


Figure 10. Study 2 interaction between compensatory secondary control and selective primary control at Time 3 predicting frequency of meeting with a counselor at Time 4.

*Note: CSC = compensatory secondary control. SPC = selective primary control. Freq. = Frequency.

Participation in the TAG program. The logistic regression model predicting participation in the TAG program at Time 4 was significant (see Table 19). Several predictor variables were statistically significant, including gender, traditionally underrepresented status, and goal engagement at Time 3. Women and students with higher levels of goal engagement were significantly more likely to participate in the TAG program than men and students with lower levels of goal engagement, respectively. Traditionally underrepresented students were less likely to participate in the TAG program. Community college district was a marginally significant predictor such that participants attending IVC or Saddleback College were more likely to participate to the TAG program than participants attending SAC or SCC.

Table 19

Study 2: Logistic Regression Odds Ratios of Participation in the TAG Program^a (N = 84)

Variables	OR	95% CI
Goal engagement	4.61*	1.10-19.23
Compensatory secondary control	0.71	0.25-2.06
CSC x SPC	0.43	0.06-3.04
Age	0.57	0.25-1.30
Gender ^b	9.06*	1.38-59.60
Traditionally underrepresented ^c	0.12*	0.02-0.87
Community college district ^d	0.23 [†]	0.04-1.32
Parental education	0.77	0.50-1.18
Eligibility for financial aid ^e	0.29	0.06-1.42
Intercept	14147.14	--
-2Log Likelihood ^f		66.23
<i>LR</i> χ ²		32.39***
<i>Df</i>		9

Note. ^a Participation in the TAG program = 1. ^b Women = 1. ^c The group coded 1 = traditionally underrepresented in academia (Latino, African American, Native American); 0 = all other ethnicities (European American, Asian American, multiethnic, and “other”). ^d SAC and SCC = 1. ^e Eligible to receive financial aid = 1. ^f -2Log Likelihood is equal to the Deviance, a goodness-of-fit statistic. CSC = compensatory secondary control. SPC = selective primary control. CI = confidence interval
[†] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Participation in transfer programs other than TAG. The model predicting participation in transfer programs other than TAG, such as competitive transfer programs, was significant, $LR\chi^2(9) = 23.38, p = .005$. However, the only significant predictor variable was goal engagement, $OR = 6.37, Wald(1) = 5.80, p = .016$. Participants with higher levels of goal engagement at Time 3 were significantly more likely to participate in a transfer program other than TAG at Time 4.

Hypothesis 3. Multiple linear and logistic regression models determined the relationship between goal engagement and compensatory secondary control at Time 3, respectively, and transfer outcomes at Time 4. Above and beyond the influence of covariates, goal engagement was expected to be a positive predictor of transfer outcomes, while compensatory secondary control was expected to be a negative predictor of transfer outcomes.

It should be noted that all analyses, except for educational aspirations and whether or not participants applied to transfer universities, were limited by the small number of participants who applied to transfer universities after two years. These results should be interpreted with caution.

Educational aspirations. The model predicting participants' educational aspirations at Time 4 approached significance, Adjusted $R^2 = .09$, $F(9,74) = 1.86$, $p = .071$. Participants with higher levels of goal engagement at Time 3 reported higher educational aspirations at Time 4 ($\beta = .23$, $p = .040$). Participants who had parents with higher levels of education were marginally more likely to have higher educational aspirations than participants with parents with lower levels of education ($\beta = .28$, $p = .072$). The model explained 8.6% of the variation in educational aspirations at Time 4. Unfortunately, educational aspirations were not assessed at an earlier time point and the baseline level could not be included in the model. This would have significantly increased the amount of variation explained by the model and likely pushed the model into statistical significance.

Applied to a university. The logistic regression model at Time 4 predicting whether participants applied to a transfer university was statistically significant, $LR\chi^2(11) = 26.81$, $p = .005$. Students who participated in transfer programs other than TAG, such as competitive transfer programs, were more likely to apply to transfer universities at Time 4 than students

who did not participate in these programs, $OR = 5.02$, $Wald(1) = 4.95$, $p = .026$. Traditionally underrepresented students were significantly less likely than non-underrepresented students to apply to a transfer university at Time 4, $OR = .16$, $Wald(1) = 4.63$, $p = .031$. Last, women were marginally more likely to apply to transfer universities than men, $OR = 3.37$, $Wald(1) = 2.92$, $p = .087$.

Number of universities applied to. The model predicting the total number of transfer universities students applied to at Time 4 was significant, Adjusted $R^2 = .24$, $F(11,23) = 2.29$, $p = .045$. However, the results should be interpreted with caution as there were only 35 participants in the model. Students who participated in the TAG program and students who qualified for financial aid (i.e., they were likely eligible for a fee waiver) applied to a greater number of universities than students who did not participate in the TAG program ($\beta = .51$, $p = .010$) and students who did not qualify for financial aid ($\beta = .51$, $p = .020$). Students with parents with higher levels of education applied to more universities than students with parents with lower levels of education ($\beta = .68$, $p = .025$). Last, compensatory secondary control ($\beta = .56$, $p = .059$) and the interaction between compensatory secondary control and selective primary control ($\beta = -.59$, $p = .062$) approached statistical significance as predictors in the model. Curiously, students higher in compensatory secondary control applied to a greater number of universities than students lower in compensatory secondary control. Similarly, for the interaction, students with high compensatory secondary control and low selective primary control applied to the greatest number of transfer universities (see Figure 11). Students high in selective primary control with either high or low compensatory secondary control applied to a similar number of universities. Last, students low in selective primary control and selective secondary control applied to the

fewest number of universities. The model accounted for 29.5% of the variation in the number of universities participants applied to at Time 4.

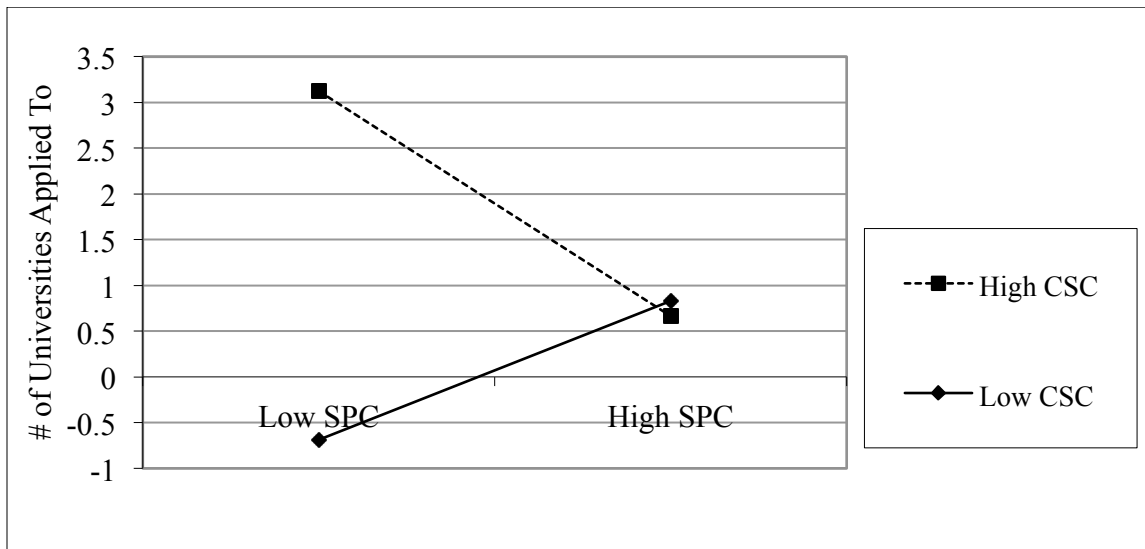


Figure 11. Study 2 interaction between compensatory secondary control and selective primary control at Time 3 predicting number of universities applied to at Time 4.

*Note: CSC = compensatory secondary control. SPC = selective primary control. # = number.

Number of universities accepted to. The model predicting the total number of universities participants were accepted to was significant, Adjusted $R^2 = .60$, $F(12,21) = 5.20$, $p = .001$. However, the only significant predictor variable in the model was the number of universities participants applied to ($\beta = .67$, $p < .001$). Similar to the last model, there were too few participants in this model ($n = 34$) to be confident about the results. The model accounted for 60.4% of the variation in the number of universities participants were accepted to at Time 4.

Ratio of universities accepted to vs. applied to. Despite a low sample size ($n = 34$), the model predicting the ratio of total universities accepted to vs. applied to was significant, Adjusted $R^2 = .36$, $F(12,21) = 2.56$, $p = .029$. Similar to the results in Study 1, older participants had a higher ratio of universities accepted to vs. applied to than younger participants ($\beta = .69$, $p =$

.006). The model accounted for 36.1% of the variation in the ratio of universities accepted to vs. applied to.

Quality of transfer university. Two linear regression models assessed the quality of transfer universities students are attending. The first linear regression model used U.S. News & World Report Best Colleges Rankings while the second linear regression used Forbes' American's Top Colleges List. As a caveat, each model contained 29 participants and the results should be interpreted with caution. The model predicting U.S. News & World Report rankings was not statistically significant. The model predicting Forbes' list of Top American Colleges was significant, Adjusted $R^2 = .36$, $F(11,17) = 2.83$, $p = .026$, however, none of the predictor variables were statistically significant. This model accounted for 41.9% of the variation in the quality of the transfer university. In a separate model predicting Forbes' list and removing participation in TAG and transfer programs other than TAG, age became a significant predictor variable such that older students were attending lower quality transfer universities ($\beta = .49$, $p = .040$), Adjusted $R^2 = .44$, $F(9,20) = 3.49$, $p = .010$. This model accounted for 43.6% of the variation in the quality of the transfer university.

Accepted to first-choice university. The logistic regression model at Time 4 predicting whether participants were accepted to their first-choice university approached statistical significance, $LR\chi^2(11) = 19.32$, $p = .056$, although no predictor variables were statistically significant. The results should be interpreted with caution as only 35 participants were included in the model.

Hypothesis 4. Linear regression models assessed the relationship between goal engagement and compensatory secondary control at Time 4, respectively, and well-being and satisfaction variables at Time 4. Above and beyond the influence of covariates, goal

engagement was expected to be a positive predictor of well-being and satisfaction variables, while compensatory secondary control was expected to be a negative predictor of well-being and satisfaction variables. In addition to the previous covariates, one additional covariate was added: whether or not participants applied to a transfer university at Time 4.

Depressive symptoms. The model predicting depressive symptoms at Time 4 was significant, Adjusted $R^2 = .50$, $F(11,63) = 7.66$, $p < .001$. Depressive symptoms at Time 3 was a significant predictor of depressive symptoms at Time 4 ($\beta = .72$, $p < .001$). Women reported marginally greater depressive symptoms than men at Time 4 ($\beta = .15$, $p = .095$). Last, students who attended SAC or SCC reported marginally greater depressive symptoms at Time 4 than students attending IVC or Saddleback College ($\beta = .23$, $p = .070$). The model accounted for 49.7% of the variation in depressive symptoms at Time 4.

Perceived stress. The model predicting perceived stress at Time 4 was significant (see Table 20). Perceived stress at Time 3, traditionally underrepresented status, and whether or not students applied to a transfer university at Time 4 were statistically significant predictors of perceived stress at Time 4. Traditionally underrepresented students had lower levels of perceived stress than non-underrepresented students. Student who applied to transfer universities at Time 4 had lower levels of perceived stress than student who did not apply to transfer universities. Community college district approached significance as predictor variable; students who attended IVC or Saddleback College had marginally lower levels of perceived stress than students who attended SAC or SCC. The model accounted for 34.7% of the variation in perceived stress at Time 4.

Table 20

Study 2: Predictors of Perceived Stress at Time 4 (N = 81)

Variables	<i>B</i>	<i>SE(b)</i>	β
Perceived stress ^a	0.47***	0.11	0.45
Goal engagement	-1.27	0.77	-0.21
Compensatory secondary control	0.30	0.51	0.07
CSC x SPC	-0.13	0.59	-0.03
Age	-0.07	0.26	-0.03
Gender ^b	1.11	0.84	0.13
Traditionally underrepresented ^c	-2.26*	1.08	-0.31
Community college district ^d	1.70 [†]	1.01	0.22
Parental education	-0.02	0.22	-0.01
Eligibility for financial aid ^e	-0.01	0.89	-0.01
Applied to universities ^f	-2.03*	0.78	-0.28
Intercept	9.07	5.68	--
<i>F(df,df)</i>		4.86(11,69)***	
<i>R</i> ² _{adjusted}		.35	

Note. ^a Measured at Time 3. ^b Women = 1. ^c The group coded 1 = traditionally underrepresented in academia (Latino, African American, Native American); 0 = all other ethnicities (European American, Asian American, multiethnic, and “other”). ^d SAC and SCC = 1. ^e Eligible to receive financial aid = 1. ^f Applied to transfer universities this year = 1. CSC = compensatory secondary control. SPC = selective primary control.
[†] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Physical symptoms. The model predicting physical symptoms at Time 4 was significant, Adjusted $R^2 = .50$, $F(11,63) = 7.68$, $p < .001$. In addition to physical symptoms at Time 3 ($\beta = .68$, $p < .001$), age, traditionally underrepresented status, and community college district were significant predictors of physical symptoms at Time 4. Older students reported fewer physical symptoms than younger students ($\beta = -.24$, $p = .013$). Traditionally

underrepresented students reported fewer physical symptoms than non-underrepresented students ($\beta = -.38, p = .007$). Last, students from IVC or Saddleback College reported fewer physical symptoms than students from SAC or SCC ($\beta = .29, p = .021$). The model accounted for 49.8% of the variation in physical symptoms at Time 4.

Satisfaction variables. The four satisfaction variables were assessed with separate linear regression models using the same covariates outlined above, including whether or not participants applied to transfer universities at Time 4. The model for satisfaction with life overall at Time 4 was significant, Adjusted $R^2 = .41, F(11,71) = 6.26, p < .001$. In addition to satisfaction with life at Time 3 ($\beta = .56, p < .001$), students with higher levels of goal engagement at Time 4 ($\beta = .24, p = .032$) and students who applied to universities at Time 4 ($\beta = .21, p = .039$) reported being more satisfied with their lives than students with lower levels of goal engagement or students who did not apply to universities, respectively. The model accounted for 41.4% of the variation in satisfaction with life at Time 4.

The model for satisfaction with educational progress at Time 4 was significant, Adjusted $R^2 = .39, F(11,70) = 5.73, p < .001$. In addition to satisfaction with educational progress at Time 3 ($\beta = .40, p < .001$), students with higher levels of goal engagement at Time 4 ($\beta = .33, p = .005$) and students who applied to universities at Time 4 ($\beta = .29, p = .009$) reported being more satisfied with their educational progress than students with lower levels of goal engagement or students who did not apply to universities, respectively. The interaction between compensatory secondary control and selective primary control approached significance ($\beta = .18, p = .087$). Students with high selective primary control reported the greatest satisfaction with educational progress, regardless of if they had high or low selective secondary control scores (see Figure 12). Students with low selective primary control reported

lower satisfaction with educational progress relative to students with high selective primary control, although the combination of low selective primary control and high compensatory secondary control was especially debilitating to satisfaction with educational progress. The model accounted for 39.1% of the variation in satisfaction with educational progress at Time 4.

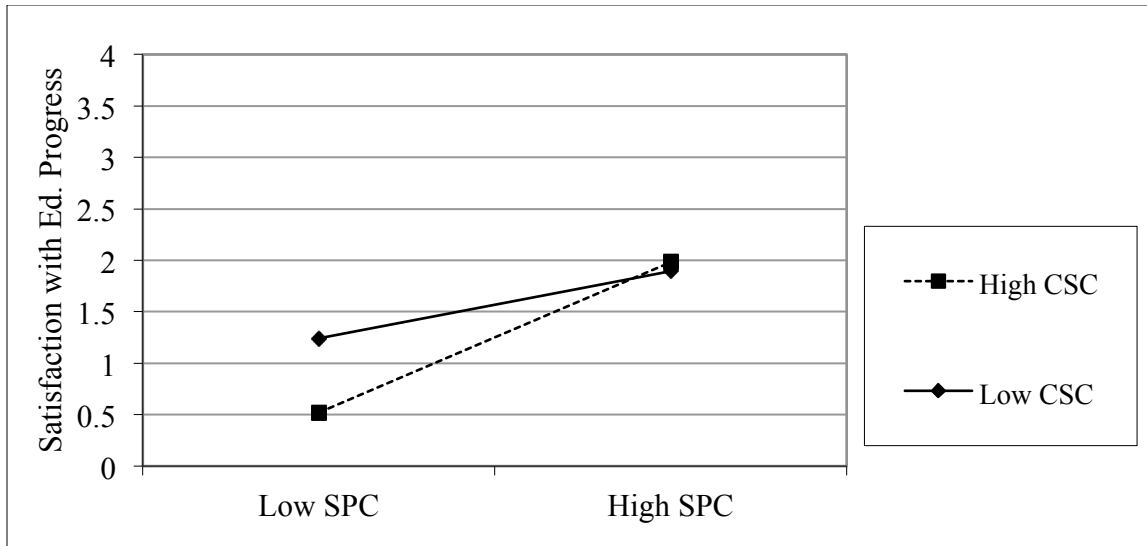


Figure 12. Study 2 interaction between compensatory secondary control and selective primary control at Time 4 predicting satisfaction with educational progress at Time 4.

*Note: CSC = compensatory secondary control. SPC = selective primary control. Ed. = Educational.

The model for satisfaction with community college grades at Time 4 was significant, Adjusted $R^2 = .42$, $F(11,70) = 5.73$, $p < .001$. In addition to satisfaction with community college grades at Time 3 ($\beta = .49$, $p < .001$), students with higher levels of goal engagement at Time 4 reported being more satisfied with community college grades than students with lower levels of goal engagement ($\beta = .29$, $p = .010$). Students with lower levels of compensatory secondary control were marginally more satisfied with community college grades than students with higher levels of compensatory secondary control ($\beta = -.17$, $p = .089$). Last,

students who applied to universities at Time 4 were marginally more satisfied with community college grades than students who did not apply to universities at Time 4 ($\beta = .20, p = .060$). The model accounted for 42.4% of the variation in satisfaction with community college grades at Time 4.

The model for satisfaction with community college experience at Time 4 was significant, Adjusted $R^2 = .45, F(11,71) = 7.19, p < .001$. In addition to satisfaction with community college experience at Time 3 ($\beta = .50, p < .001$), students with higher levels of goal engagement at Time 4 ($\beta = .34, p = .002$) and students who applied to universities at Time 4 ($\beta = .20, p = .046$) reported being more satisfied with their community college experience than students with lower levels of goal engagement or students who did not apply to universities, respectively. The interaction between compensatory secondary control and selective primary control was significant ($\beta = .21, p = .039$). Students with high selective primary control reported the greatest satisfaction with community college experience, regardless of if they had high or low selective secondary control scores (see Figure 13). Students with low selective primary control reported lower satisfaction with community college experience relative to students with high selective primary control, although the combination of low selective primary control and high compensatory secondary control was especially debilitating to satisfaction with community college experience. The model accounted for 45.1% of the variation in satisfaction with community college experience at Time 4.

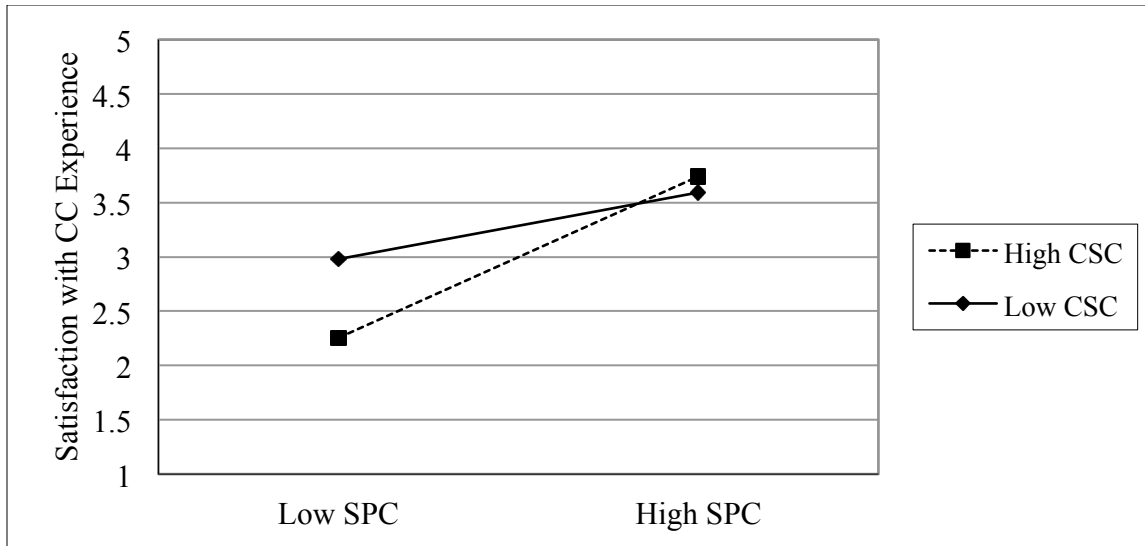


Figure 13. Study 2 interaction between compensatory secondary control and selective primary control at Time 4 predicting satisfaction with community college experience at Time 4.

*Note: CSC = compensatory secondary control. SPC = selective primary control. CC = community college.

Study 2 Discussion

The purpose of Study 2 was to further explore the relationship between motivational and self-regulatory strategies (goal engagement, compensatory secondary control, and the interaction between compensatory secondary control and selective primary control) and academic behaviors, transfer-related behaviors, transfer outcomes, well-being, and satisfaction variables in first-year community college students. Study 2 examined the difficult feat of transferring to a university within two years, an accomplishment that requires motivation, commitment, perseverance, and the ability to effectively use primary and secondary control strategies when obstacles to goal pursuit arise. As a result, many fewer participants in Study 2 successfully transferred to a four-year university than in Study 1.

Overall, Study 2 found evidence that goal engagement, compensatory secondary control, and the interaction between compensatory secondary control and selective primary

control are associated with select academic behaviors, transfer-related behaviors, and satisfaction variables above and beyond covariates. However, in many models, demographic variables and transfer programs were among the strongest and most consistent predictors of academic behavior, transfer-related behavior, and transfer outcomes.

As mentioned previously, demographic variables and facilitative transfer programs have been the focus of much research on community college student success. One of the purposes of this dissertation was to investigate if motivational and self-regulatory strategies have an additional effect on transfer-related behaviors and outcomes above and beyond demographic variables and transfer programs. In Study 2, goal engagement was a positive predictor of participation in the TAG program and transfer programs other than TAG. Although Study 2 could not test mediational pathways due to low sample size, it is possible that participation in the TAG program or transfer programs other than TAG mediates the relationship between goal engagement and positive transfer outcomes.

Consistent with the literature, Study 2 found positive outcomes of participation in the TAG program and other transfer programs. In particular, participation in the TAG program was related to applying to a greater number of transfer universities. Mentioned previously, virtually all students who applied to transfer universities were accepted to at least one university. As a function of the unique nature of the program, participation in the TAG program was associated with less frequent visits with a college counselor to discuss transfer. The TAG program allows students who complete 60 transferrable units, including major prerequisites, and who have a GPA of 3.2 or higher to be guaranteed admission to a CSU or UC. Thus, any student who takes required courses and performs well in these courses can participate in this program. In this case, it is unnecessary for students to frequently meet with a

college counselor to discuss transfer. It is interesting that even though this program is available to all students, there is still an effect of goal engagement such that students who are highly goal engaged are the most likely to participate in this program.

Participation in transfer programs other than TAG (e.g., U-Link, Transfer Mentor Program, Transfer Alliance Program, Adelante, Puente, Mathematics Engineering Science Achievement Program, Summer Scholars Transfer Institute, and Honors to Honors Program) led to students being more likely to apply to transfer universities at Time 4 as well as marginally more likely to begin working on transfer applications early at Time 3. Transfer programs other than TAG typically cater to low-income, underrepresented, and first-generation college students, and provide these students with the resources and support needed to apply to transfer universities. Although these programs cater to certain populations, students must still apply to them, and they are often competitive. Thus, students with higher levels of goal engagement are more likely to be accepted to these programs than students with lower levels of goal engagement. Students who participated in transfer programs other than TAG were also marginally more likely to meet with a counselor to discuss transfer than students who did not participate in such programs. Many of the students who are eligible for these programs often need additional support, guidance, and information to apply to a transfer university, and rely more frequently on others to fulfill this function.

In addition to being a predictor of participation in the TAG program and other transfer programs, goal engagement was also a positive predictor of higher levels of satisfaction with: life overall, educational progress, community college grades, and community college experience. Taken together, goal engagement was associated with transfer-related behavior that led to positive transfer outcomes as well as more satisfaction with educational and

personal aspects of students' lives. This is consistent with goal engagement literature that reports well-being benefits for individuals who remain engaged with their long-term goals despite obstacles or challenges along the way (Heckhausen, 2001; Wrosch, Schulz & Heckhausen, 2002).

Similar to Study 1, compensatory secondary control in Study 2 was associated with fewer outcomes than goal engagement. However, when compensatory secondary control was a significant predictor, it was typically associated with negative outcomes, such as accumulating fewer total units at the community college and being marginally less satisfied with community college grades. In a curious finding, higher levels of compensatory secondary control were marginally related to applying to a greater number of transfer universities. This finding reinforces an earlier point made about the nature of compensatory secondary control. Even though we expected compensatory secondary control to be negatively related to positive outcome variables due to the nature and demographics of community colleges and their students, compensatory secondary control is not, in itself, necessarily related to negative outcomes. According to the MTD, selective secondary control strategies are adaptive (Heckhausen, 1999; Heckhausen, Wrosch, & Schulz, 2010).

Compensatory secondary control is used when individuals experience a failure, obstacle, or setback and need to adjust or rethink their goals. Individuals use self-protection strategies to deal with the setback, such as blaming others or comparing oneself to someone who is worse off. The use of compensatory secondary control strategies is associated with two outcomes for individuals, both signaling difficulties in goal pursuit, but only one leading to further decline and potential disengagement from the goal. An example will outline the two outcomes for students. In the first scenario, a first-year community college student finds

himself struggling with his classes, which are significantly more difficult than his high school classes. He receives a failing grades on one of his midterms. Furthermore, his instructor does not give him reminders about when to complete assignments and he has difficulty remembering to complete assignments for all his classes. Using selective secondary control strategies, he re-evaluates the number of years needed to complete his transfer goals, considering he may have to take retake courses (goal adjustment). Subsequently, he figures he is still better off than his friends who are not in college and believes the instructor is mostly to blame for his missing assignments and poor performance (self-protection). Next semester, he will use Rate My Professor to select easier instructors. Without any further action, it is likely that this student's poor performance and time management deficits will continue, making it difficult for him to succeed.

In the second scenario, a first-year student experiences the same setbacks: poor performance on a midterm exam and missing assignments due to lack of planning. She also adjusts her transfer plan, engages in downward social comparison, and blames her parents for her lack of knowledge about how to succeed in higher education. However, in addition, this student also attends a time management workshop on campus and develops new strategies for organization, such as keeping an academic planner. Because her study strategies for the midterm were ineffective, she visits her professor's office hours and learns about research-based study strategies. She also learns she must invest much more time in studying than she has in the past. The difference in this scenario is that this student combines selective secondary control strategies with goal engagement strategies, the strongest of which is selective primary control (i.e., the investment of additional time, effort, and energy, and learning new strategies). In this case, positive academic and transfer outcomes are more likely to occur.

In Study 2, we found that students with high levels of both compensatory secondary control and selective primary control (measured by an interaction term) reported positive academic and transfer behaviors, such as greater hours spent outside of classes on studying and assignments and more frequently meeting with a counselor to discuss transfer. Low levels of both selective primary control and compensatory secondary control were not as detrimental to students as the combination of low selective primary control and high compensatory secondary control. That is, students who use compensatory secondary control strategies, such as blaming others and comparing themselves to others, without investing effort into reaching their goals fared the worse. Regarding satisfaction with educational progress and community college experience, students high in selective primary control regardless of compensatory secondary control reported the highest levels of satisfaction on these two variables. In these analyses, students with high compensatory secondary control but low selective primary control also fared the worse. Last, contrary to our expectations, students with the most negative combination of control strategies in the analyses above reported applying to the greatest number of universities. In this case, students with both low compensatory secondary control and selective primary control fared the worse. In contrast to what we found in Study 1, perhaps applying to a greater number of universities is not an indicator of successful transfer behavior. In a post-hoc correlation, students in Study 2 who applied to a greater number of transfer universities has lower GPAs at Time 4 than students who applied to fewer transfer universities ($r = -.31, p = .040$).

In addition to the main variables of interest, several demographic variables were strong predictors of academic behavior, transfer-related behavior, and transfer outcomes at various time points. Perhaps one of the most consistently significant covariates in Study 2 was

traditionally underrepresented status. Consistent with the literature, being from a traditionally underrepresented group in academia was almost exclusively related to negative outcomes for community college students. In terms of academic behavior, traditionally underrepresented students had lower GPAs, accumulated fewer total units, and took fewer units per semester than non-underrepresented students. Regarding transfer behaviors, these students were less likely to: meet with a college counselor to discuss transfer, participate in the TAG program, and start their transfer applications early at Time 3 (among students who were applying to transfer) than non-underrepresented students. Traditionally underrepresented students were also less likely to apply to transfer universities at Time 4 and took a marginally greater number of years to transfer to a university than non-underrepresented students.

Despite less progress than non-underrepresented students, traditionally underrepresented students reported lower levels of perceived stress and fewer physical symptoms. One possible explanation for this finding is that traditionally underrepresented students, in particular Latino students, may not feel as much pressure to excel as Asian American and European American students. The majority of Latino students are first-generation college students (Goldrick-Rab, 2010). Attending community college is already a big accomplishment for many of these students and their families. Transferring to a university, any university, is a difficult feat to be proud of for Latino students and their families. Thus, although traditionally underrepresented students have lower academic performance and may take longer to transfer to a university, they may be satisfied with the progress they are making. This is especially true if Latino students compare themselves to their parents, other family members, or peers, all of whom are likely to have achieved lower levels of education. For these students, the important thing may be that they eventually transfer to a university, rather

than transferring in the shortest amount of time, transferring with the highest GPA, or transferring to the highest quality university.

Additional demographic variables were related to academic behavior, transfer-related behavior, and transfer outcomes. In Study 2, women, in addition to having higher levels of goal engagement, were more likely to apply to transfer universities than men. This is consistent with the fact that university enrollment is a majority women, while gender ratios at the community college are more equal (California Community Colleges Chancellor's Office, 2011). Women also reported greater depressive symptoms than men, a finding that is well documented in the literature.

Similar to Study 1, older students reported higher levels of goal engagement and were less likely to be attending community college full-time than younger students. Older students are expected to be more motivated to attain their transfer goals, but may also be more strategic in attaining their goals. For example, although older students are not more likely to work than younger students and do not work more hours, they may choose to take fewer courses each semester to better balance their school, work, and family life. Perhaps this is a reflection of a more developed prefrontal cortex and mature self-regulatory strategies. In Study 2, older students even reported fewer physical symptoms than younger students. Similar to Study 1, older students had a higher ratio of universities accepted to vs. applied to and were attending a lower quality transfer university. That is, older students may have been more selective about which transfer universities they applied to, possibly due to geographical limitations and family obligations.

In Study 2, parental levels of education once again influenced academic behavior, transfer-related behavior, and transfer outcomes. Having parents with higher levels of

education was associated with positive outcomes, such as applying to more transfer universities and having higher educational aspirations (regression model approached statistical significance). Perhaps because they could go to their parents for academic information, advice, and support, students with higher parental levels of education were less likely to meet with a counselor to discuss transfer than students with lower levels of parental education. Yet, despite the negative outcomes for students with parents with lower levels of education, similar to underrepresented students, these students reported greater levels of goal engagement than students with parents with higher levels of education. It is possible that, due to accumulated disadvantages, students with less parental education need higher levels of goal engagement to achieve their long-term educational goals.

Low-income status was associated with mostly negative outcomes in Study 2. Students who were considered low-income (i.e., they qualified for financial aid at the community college) were more likely to be attending community college part-time and took a greater number of years to transfer to a university than students who did not qualify for financial aid. Thus, financial need delayed transfer to a four-year university for these students. Positive outcomes for low-income students were related to being eligible for fee waivers, which allowed students to apply to a greater number of transfer universities than students who did not qualify for financial aid. Yet, despite applying to a greater number of universities, low-income students were not accepted to a greater number of universities and were not attending a higher quality transfer university. Overall, low-income status negatively affected students' successful transfer to a university.

Last, community college district was a significant predictor variable in several regression models. Again, we see advantages of attending IVC, which has the second highest

transfer rate in California (Irvine Valley College, 2014). Students who attended IVC or Saddleback College reported being marginally more likely to participate in the TAG program and were marginally more likely to be applying to a transfer university at Time 3 (but not Time 4) than students attending SAC or SCC. In terms of well-being, students attending IVC or Saddleback College reported marginally lower levels of perceived stress, depressive symptoms, and physical symptoms than students attending SAC or SCC. A number of institutional factors associated with IVC and Saddleback College could be driving these findings (e.g., higher quality advisors or instructors), but additional factors are also expected to play a role (e.g., greater access to health care).

In terms of the effect sizes of regression models in Study 2, several of the linear regression models included baseline measures of outcome variables, which greatly increased the percentage of variance explained compared to Study 1. The percentage of variance explained in Study 2 ranged from 8.6% (educational aspirations) to 54.2% (GPA). Although several models hovered around explaining 20.0% - 30.0% of the variation in outcome variables, a good number of models explained 40.0% - 50.0% of the variation in outcome variables.

The ethnic differences in goal engagement in Study 1 were partially replicated in Study 2. That is, out of the three most populous ethnic groups, Latino students had the highest levels of goal engagement in both studies. However, in Study 2, European Americans had the lowest levels of goal engagement, not Asian Americans. For all ANOVAs investigating ethnic group differences in Study 2, it is important to use caution when interpreting the results because the European American group had fewer than the recommended 30 cases per group at all four time

points. There were no significant ethnic group differences in compensatory secondary control in Study 2.

According to the goal engagement literature, given that Latino students had high amounts of goal engagement in Study 1 and Study 2, we would expect them to also have high academic performance. However, this was not the case. Similar to Study 1, post-hoc ANOVAs revealed significant ethnic group differences in community college GPA at Time 2, $F(2,126) = 13.88, p < .001$, Time 3, $F(2,111) = 16.21, p < .001$, and Time 4, $F(2,117) = 14.47, p < .001$. At all three time points, Tukey's HSD post-hoc tests (numbers reported for Time 4) revealed that Latino students had significantly lower GPAs ($M = 2.98, SD = .46$) than Asian American students ($M = 3.48, SD = .50$) and European American students ($M = 3.29, SD = .46$). The difference in GPA between Asian American students and European American students was not significant. It is also interesting to note that across different ethnic groups, GPAs in Study 1 were higher than GPAs in Study 2. This may be a function of the different types of students recruited in each study. In Study 1, students were within one year of transferring to a university and were a positive selection of community college students.

Similar to the results in Study 1, Latino students' high levels of goal engagement are not translating to similarly high levels of academic performance at the community college. Post-hoc correlations provided additional insights (see Table 21). When investigating the association between GPA and goal engagement by ethnic group, there were no significant correlations for Latino students at any time point. However, correlations between GPA and goal engagement for Asian American students were statistically significant at almost every time point. European American students fell in the middle, with about half of correlations being statistically significant. Thus, the expected relationship reported in the literature between

goal engagement and academic performance was present for Asian American students and potentially for European American students in Study 2. This finding makes it unlikely that the relationship between GPA and academic performance at the community college differs from the university, as was speculated in Study 1.

Table 21

Study 2: Associations Between GPA and Goal Engagement by Ethnicity

Ethnicity		Goal engagement		
		Time 2	Time 3	Time 4
European American	GPA Time 2	0.23	0.74**	0.59*
	GPA Time 3	0.50 [†]	0.31	0.41
	GPA Time 4	0.58*	0.40	0.38
Asian American	GPA Time 2	0.35*	0.41*	0.35*
	GPA Time 3	0.30 [†]	0.48*	0.34 [†]
	GPA Time 4	0.46**	0.30	0.42**
Latino	GPA Time 2	0.06	0.15	-0.04
	GPA Time 3	0.08	0.08	0.11
	GPA Time 4	0.04	-0.07	-0.09

One explanation for Latino students' high levels of goal engagement not translating to greater academic performance is that Latino students may have artificially high goal engagement intentions that are not supported by actual behaviors. This hypothesis was not supported in Study 1, but has greater support in Study 2. Similar to other groups, Latino students in Study 2 had positive associations between GPA and academic behavior, specifically hours spent outside of classes on assignment and studying (e.g., $r = .27, p = .034$ at Time 4). However, there were also negative relationships between GPA and academic behavior in Study 2 for Latino students. Time 3 GPA negatively predicted Time 3 units per semester ($r = -.26, p = .063$) and Time 4 hours spent in classes or labs ($r = -.32, p = .026$) such that Latino students with higher levels of goal engagement take fewer units per semester and spend fewer hours in classes or labs than Latino students with lower levels of goal

engagement. Additionally, Time 3 GPA negatively predicted Time 3 hours spent outside classes on assignment or studying for Latino students ($r = -.26, p = .056$). Taken together, it is unclear if Latino students' intentions (measured through the goal engagement scale) correspond to academic behaviors at the community college. What is clear is that in Study 2, Asian American students had a greater number of significant positive associations between GPA and academic behavior than Latino students and European American students.

Also interesting to note was that Latino students reported negative associations between GPA and compensatory secondary control (e.g., $r = -.27, p = .040$ between Time 3 GPA and Time 3 compensatory secondary control), but no significant associations were found for other ethnic groups. This gives additional insight into the possible outcomes related to compensatory secondary control strategies. As suggested in Study 1, Latino students may not take advantage of using compensatory secondary control strategies to promote positive outcomes.

In addition to lower academic performance, Latino students fall behind other ethnic groups in transfer outcomes. Post-hoc ANOVAs revealed significant ethnic group differences in total years to transfer to a university, $F(2,113) = 4.88, p = .009$. According to Tukey's post-hoc tests, Latino students took significantly more years to transfer to a university ($M = 3.09, SD = .85$) than Asian American students ($M = 2.54, SD = .66$), but not European American students ($M = 2.83, SD = 1.15$).

Similar to Study 1, there were no significant ethnic differences in educational aspirations, the number of universities applied to or accepted to, or the number of UC or private universities applied to. There were significant ethnic differences in the number of CSUs applied to, $F(2,43) = 7.11, p = .002$. According to Tukey's HSD post-hoc tests, Latino

students ($M = 3.17$, $SD = 1.47$) applied to significantly more CSUs than Asian American students ($M = 1.19$, $SD = 1.33$) and marginally more CSUs than European American students ($M = 1.63$, $SD = 2.07$). With the lowest community college GPA among the three ethnic groups, Latino students may be calibrating their transfer aspirations to their academic performances. However, CSUs may also be attractive to this group because of their lower tuitions and proximity to family members.

Although specific hypotheses were not tested, it is interesting to discuss the associations between goal engagement and compensatory secondary control, respectively, and the perceived importance of different life domains. During the first two time points, students who were highly goal engaged also rated school, family, and career as more important than students who were less goal engaged. There is evidence for this motivational profile (i.e., an individual who is highly engaged in all areas of life) in the goal engagement literature. At Time 3 and Time 4, however, the correlation between goal engagement and importance of career was no longer significant, similar to the finding in Study 1. More research is needed into whether or not perceiving career as an important life domain while in community college is beneficial or detrimental to goal engagement in education. The findings in Study 1 and Study 2 are in line with the third tenant of the optimization heuristic of the MTD that suggests optimal development should involve investment in more than one life domain (Heckhausen, 1999; Heckhausen & Schulz, 1993).

Compensatory secondary control may be negatively related to the perceived importance of education and positively related to the perceived importance of career, although correlations at Time 2 and Time 4 only approached statistical significance. This finding is consistent with findings from Study 1. Together, they support the second tenant of the

optimization heuristic of the MTD that suggests heavy investment in one domain, such as career, may decrease motivation for another domain, such as education (Heckhausen, 1999; Heckhausen & Schulz, 1993).

The fact that 38.0% of participants in Study 2 transferred to a university in two years is quite impressive given that the nationwide percentage of students who transfer to a university is approximately 25.0% and the average time to transfer is 5 years (CPEC, 2007). At least three major factors may have influenced the transfer rate in Study 2. First, one of the community colleges in our sample, IVC, has the second highest transfer rate in California, which may have inflated the number of participants transferring to a university (Irvine Valley College, 2014). Second, a lower percentage of students in Study 2 were working while attending college (approximately one-half of students). Additionally, if students were working, they were likely to be working part-time. It is hypothesized that working fewer hours or not working at all can prioritize goal engagement in education and facilitate the efficient attainment of transfer goals. Third, participants in the study, especially students who participated in the study over two years, may be a positive selection of community college students. That is, compared to students who did not participate in the study, participants in Study 2 might have been higher achieving, planned to transfer to a university in a shorter period of time, or were more effective at using motivational and self-regulatory strategies. Unfortunately, it is not possible to test this hypothesis.

Future research. One area of future research is to investigate the impact of working while attending community college on academic behaviors, transfer-related behaviors, transfer outcomes, and well-being and satisfaction variables. Especially in Study 1, a majority of the sample reported working while attending community college; many students were working

full-time. Although Study 2 had fewer students working than Study 1, about half of all students worked while attending community college in Study 2. Future studies with larger samples should include whether or not students worked and the amount of hours worked as predictor variables in regression models. It is hypothesized that students who work, especially those who work full-time, will take fewer units per semester, visit a counselor to discuss transfer less often, spend fewer hours on studying and homework outside of classes, and take a greater number of total years to transfer to a university. However, it is unclear whether these students would be less satisfied with their lives or educational progress than students who were not working while attending community college.

An additional point of future research was previously mentioned, but deserves additional attention here. Traditional thinking assumes that two years is the ideal time to transfer to a university. Taking more than two years may cost individuals financially by not being gainfully employed in one's desired career. However, many students at the community college, as evidenced in Study 1, Study 2, and the literature, report taking additional time at the community college to determine their major and the type of career they would like to pursue. This extends the years spent at the community college but may give students a clearer sense of their future, which will benefit them at the university. Financially, it would make more sense to explore options at the community college where classes are more affordable than the university. There is, of course, a point where exploring for too many years at the community college becomes detrimental in terms of time and wages lost.

It should be kept in mind that the most important outcome variable for many community college students is not GPA, or years to transfer, or university rank, but whether or not they successfully transfer to a university. It is a well-documented finding that higher levels

of education, in general, lead to greater financial and occupational success, physical health, and emotional well-being (Blossfeld, Klijzing, Mills, & Kurz, 2005; Garg, Kauppi, Lewko, & Urajnik, 2002; Ross & Reskin, 1992). Attaining a bachelor's degree confers more benefits than attaining an associate's degree, which confers more benefits than graduating with a high school degree.

At the same time, for students who desire to attain a bachelor's degree, having a higher community college GPA will lead to attending a higher quality transfer university, which in turn can lead to more opportunities for internships, networking, or experiences that make students more competitive for graduate school. After graduation, these experiences likely lead to full-time employment or a higher-paying career, with benefits accumulating over one's lifetime. In sum, future research needs to examine whether variables we currently consider important are indeed indicators of success, such as total years to transfer to a university and the number of transfer universities applied to.

A similar controversy is apparent with transfer students at the university level. The recommended time for transfer students to graduate from a university is two years, although many students take three years to graduate. From an institutional perspective and even from a students' financial perspective (if they run out of financial aid), taking more years to graduate from a four-year university can have negative outcomes. However, in some cases, taking an extra year may give students additional resources and opportunities that make them more competitive for graduate school or the workforce. More research is needed at both the community college and the university level on this important topic.

Limitations. Although Study 2 started with a larger sample than Study 1 with 193 students at Time 2 and retained more participants over time, the percentage of students who

transferred to a four-year university in Study 2 (38.0%) was much lower than Study 1 (93.0%). Thus, a continued limitation of Study 2 was a small sample size when investigating transfer behavior and transfer outcomes for students who applied to four-year universities. In future studies, community college students should be followed for more than two years, ideally five to six years. This longer time frame will require additional compensation and efforts to reduce attrition.

Additionally, it was not ideal that participant recruitment continued into Time 2. At Time 2, participants were already in their second semester of community college. By this time, students received their grades from their first semester and might have had more realistic expectations or decreased motivation. Because participants were recruited into Time 2, Time 1 goal engagement and compensatory secondary control variables could not be used in analyses. The fact that at Time 2, participants from Time 1 had already seen the goal engagement and compensatory secondary control scales may have influenced motivation scores at Time 2. It is important to keep these limitations in mind when interpreting the results of Study 2.

CHAPTER 5: SUMMARY AND CONCLUSIONS

Study 1 Summary

Study 1 provided preliminary support that goal engagement and compensatory secondary control (composed of goal adjustment and self-protection) can be used to assess the motivational and self-regulatory strategies used by community college students to transfer to a four-year university. Goal engagement strategies had numerous statistically significant relationships with variables of interest. In particular, goal engagement was associated with positive academic behaviors, transfer-related behaviors, transfer outcomes, and satisfaction variables. Compensatory secondary control strategies had fewer significant relationships with variables of interest but relationships were in the predicted direction. Consistent with previous findings, significant ethnic group differences emerged in goal engagement with Latino students reporting higher levels of goal engagement than Asian American or European American students. In addition, Asian American students reported the highest levels of compensatory secondary control. As a large pilot study, the results from Study 1 informed data collection methods and assessment for Study 2.

Study 2 Summary

Altogether, many of the findings in Study 1 were replicated in Study 2. In addition to goal engagement and compensatory secondary control (composed of goal adjustment and self-protection) having significant relationships with academic behaviors, transfer-related behaviors, transfer outcomes, well-being and satisfaction variables, the interaction of compensatory secondary control and selective primary control was a positive motivational and self-regulatory strategy in attaining transfer goals, especially after failure or setbacks. Perhaps one of the most important findings of Study 2 was that high goal engagement contributes to participation in the

TAG program and transfer programs other than TAG. These programs serve as a catalyst for successfully applying to transfer universities and attaining long-term educational goals. Ethnic group differences in Study 1 were replicated such that Latino students consistently reported high levels of goal engagement despite poorer academic performance and taking more years to transfer to a university. Additional research is needed to investigate why high levels of goal engagement among Latino community college students do not translate to greater academic performance and more efficient transfer to a four-year university.

Conclusions

In 2010, the federal government passed legislation to disseminate two billion dollars into community colleges with the goal of the U.S. becoming the greatest producer of college graduates in the world by 2020 (Superville et al., 2010). Based on enrollment numbers, the community college has the potential to grant large amounts of associate's degrees and transfer students to the four-year university. Community college is an attractive alternative to the university for many young people. However, the social, economic, and educational disadvantages that plague many community college students make it difficult for them to succeed in this low structure, low support environment. As a result, the community college consistently reports high drop-out rates and low rates of completion of an associate's degree or transfer to four-year universities (CPEC, 2007).

Study 1 and Study 2 investigated the psychological and motivational resources that help or hinder the attainment of community college students' educational goals. In this type of environment, personal agency and motivation are expected to be more instrumental for success than environments that offer more structure and support, such as the university. Based on the MTD (Heckhausen et al., 2010), community college students in Study 1 and Study 2 who were

better able to regulate their academic and transfer behaviors through the use of specific motivational strategies were more likely to attain their educational goals or make significant progress toward those goals. In particular, strategies associated with goal engagement, such as persisting when encountering obstacles, avoiding distractions, and seeking outside support when needed, were associated with greater use of transfer-related behaviors and likelihood of transfer.

The results of this study can be used to inform cost-effective, short-term, and long-lasting interventions at the community college. One of the biggest obstacles facing higher education institutions today is a significant reduction of government funding (Shulock & Moore, 2005). By maximizing students' own motivational resources, such as increasing goal-directedness and self-regulation, we can increase the likelihood that they will stay engaged with their goals and transfer to a university in a timely manner. Cost-effective, short-term interventions that increase academic control already exist and have been validated among college students (Perry, Hall, & Ruthig, 2007). The specific data gathered from these studies can be used to develop more comprehensive interventions that are tailored to the unique disadvantages facing community colleges and their students. The proposed intervention is expected to be particularly beneficial to first-generation, low-income, and traditionally underrepresented students who have little guidance from their families and often come from neighborhoods with fewer resources and less resourceful schools (Martinez, Sher, & Krull, 2009; Richardson & Skinner, 1992).

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