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Research • Planning • Professional Development
for California Community Colleges

Academy of College Excellence:

A Mixed-Methods Analysis of the Long-Term Academic and Career Outcomes for ACE Students

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We would also like to recognize the support provided by Berkeley City College, Cabrillo College, Hartnell College, the California Community Colleges Chancellor's Office, and the California Employment Development Department to gather and obtain the data and information needed to conduct this study.

Finally, we express our gratitude to the Joyce Foundation for their generous financial support to pursue this research.

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Executive Summary

Introduction

In 2015, the Research and Planning Group for California Community Colleges (RP Group) was contracted by the Joyce/Cabrillo Foundation to assess the long-term impact of the Academy for College Excellence (ACE) on students who had participated in the program between fall 2003 and spring 2014 at three California Community Colleges: Berkeley City, Cabrillo, and Hartnell Colleges. To accomplish this goal, the RP Group designed and implemented a mixed-methods research study, gathering both qualitative and quantitative data to analyze the effect of participating in ACE in both students' personal and professional lives.

This report summarizes the key qualitative and quantitative research findings highlighting the ways in which the Academy for College Excellence (ACE) helped build the capacity of individuals facing numerous obstacles to success thrive as students, participants in the workforce, and members of the community.[1]

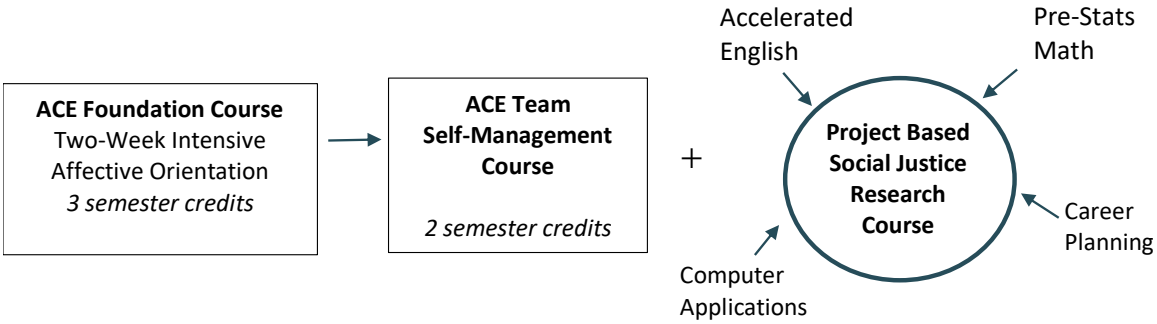
Overview of the Academy of College Excellence

The main goal of ACE is to prepare students to navigate and succeed in college, work, and life. In particular, ACE is designed to help individuals who have historically faced a wide range of challenges to academic and career success—such as underrepresented groups, foster youth, veterans—achieve their educational and employment goals. The program is designed to foster intrinsic engagement and motivation among community college students, providing support through curriculum and instruction that holistically addresses students' needs (Navarro, 2017; Navarro & Hayward, 2014).

ACE offers a flexible model that can be scaled, sustained, and replicated to serve different types of learners, such as basic skills students, career/technical education (CTE) students, as well as college-ready students. Many colleges have adapted the ACE model to meet the particular needs of their student populations, as well as align with the resources available at the institution. Figure 1 on the following page illustrates the components of the fully implemented ACE model. An individual college's ACE program may contain some or all of these components, with the exception of the mandatory Foundations of Leadership Course. Prior to beginning their academic coursework, all ACE students complete this intensive two-week college-level course, which prepares students for academic engagement and professional careers by focusing on the development of professional skills targeting affective mindsets and behaviors associated with student success in both career and school (Asera & Navarro, 2013).

[1] ACE has been the subject of several longitudinal research studies: http://academyforcollegeexcellence.org/reports-on-ace/

Figure 1. The ACE Model



Source: Karandjeff and Cooper (2013)

Evaluation Methodology

Qualitative data for this evaluation was collected via telephone surveys with 435 individuals who had completed ACE at some point between 2003 and 2014 at one of three colleges that host the ACE program: Cabrillo College, Berkeley City College, and Hartnell College. The telephone survey was a 30-question instrument designed to capture former students' impressions of the ACE program, with an emphasis on how specific program components may have impacted students' academic, career, and personal outcomes. In particular, the survey explored how the ACE personal success skills (see Table 1) have affected participants' employability, competitiveness in the workplace, emotional well-being, community ties, and capacity to develop and realize academic and professional goals.

Table 1. ACE Personal Success Skills

Personal Success Skill	Examples
1. Purpose and direction	• Realizing one's own influence over life and personal success • Considering the consequences of one's actions
2. Self-awareness and self-discipline	• Understanding bioreactions, such as fight, flight, freeze, or appease
3. Communicating with others	• Identifying, grasping, and aligning needs/concerns of individuals with the goals of a project team or organization practiced by leaders
4. Working styles	• Understanding one's own and others' working styles
5. Social justice research	• Cultivating critical thinking through the use of research methods

Quantitative research complemented the telephone survey with an in-depth analysis of ACE participants' educational and employment outcomes and comparison of those outcomes to a demographically similar group of students who did not enroll in ACE. Looking at just under 3,000 former ACE students from Cabrillo, Berkeley City, and Hartnell Colleges, the researchers compared key academic outcomes to a similar group of non-ACE participants as well as whether median annual wage differences existed over time between ACE and non-ACE

participants. Student-level information from each college, as well as data from the California Community Colleges Chancellor's Office Management Information System (MIS) and the California Employment Development Department (EDD) was gathered to answer these research questions.

Key Findings

This section highlights some of the key findings from both the qualitative and quantitative research conducted.

A Population under Significant Strain

As alluded to earlier, ACE students typically face a wide range of barriers to success in educational settings. An examination of a subset of the students tracked for this evaluation revealed almost 20 risk factors—such as child abuse, mental health condition, medical condition, unstable housing, history of being in foster care, currently or previously on probation, homeless, and gang association—in these students' lives, and the majority of students were juggling multiple risk factors (Farr, Rotermund, Radwin, Robles, and Choy, 2014).

These substantial obstacles to success must be taken into consideration when assessing ACE participants' academic and earnings outcomes in comparison to their demographically similar peers. In many cases, simply keeping pace with other community college students who are not facing such an onslaught of barriers is a powerful achievement in and of itself.

ACE Student Characteristics*

GENDER

- ✓ 56% male
- ✓ 44% female

ETHNICITY

- ✓ 63% Hispanic
- ✓ 19% White
- ✓ 7% African-American
- ✓ 11% Other / Unknown

RISK FACTORS

Nearly one-fourth (26%) faced multiple risk factors, most commonly:

- ✓ Government assistance (40%)
- ✓ English as a second language (39%)
- ✓ Unstable home (38%)
- ✓ Previous probation (28%)
- ✓ Jail (2%)
- ✓ Gang association (25%)

**Demographic data reflect community college records and self-reporting from over 2,500 non-CTE ACE students examined during the program evaluation.*

ACE Participants' Academic Outcomes

To assess the academic progress of former ACE participants, the RP Group looked at certain key academic milestones, including successful completion of transfer-level math and English courses, nursing and pre-nursing coursework, achievement of 30 transfer-level units, completion of a certificate or degree, and transfer to a four-year institution. Analysis of ACE participants' achievement of these milestones in comparison to a matched group of similar students revealed the following:

- ✓ The greatest positive academic outcomes were found among students who completed *all* the courses in the ACE program that include accelerated English, especially in those

programs that were most compliant with the full ACE model. Most times, these students were at least twice as likely as students in the control group to earn an award, complete a transfer-level English or math course, and earn 30 units within three years of enrolling in ACE.

- ✓ A greater percentage of ACE nursing students graduated within three and six years than their pre-ACE nursing peers.
- ✓ Looking at all academic outcomes over a six-year period, the researchers found no statistically significant differences between ACE students and their peers in the control group (with the exception of completion of a transfer-level English and transfer to a four-year institution). *Please note: This result does not include students who participated in ACE as part of a CTE nursing program, which incorporated ACE into its existing cohort-based model.*
- ✓ Underrepresented minorities who participated in ACE students completed degrees/certificates and transferred to four-year institutions at similar rates to their matched peers.

While these findings may initially seem modest, given the substantial array of risk factors faced by ACE students, it is remarkable that over the long-term, their academic achievements equaled, or in some cases even exceeded those of other students who began the academic "race" much closer to the finish line.

ACE Participants' Earnings Outcomes

Data from EDD was used to track the wages of ACE participants and the control group of students over time. Key findings from this analysis include the following:

- ✓ Even though the annual mean wages for the control group were higher overall and over time, ACE participants had a much higher wage *gain* (159% to 664%) over time than students in the control group (107%).
- ✓ Both males of color and underrepresented minority students in general who participated in ACE started to catch up to the control group's earnings levels by the sixth year. In fact, underrepresented minority ACE students eventually exceeded the annual median wages of the control group by almost $1,000.
- ✓ ACE nursing students earned significantly higher wages over time compared to their matched control group. The wage differences over time between ACE nursing students and their matched peers were greater than it was for non-ACE nursing students and their peers.

As with ACE students' academic outcomes, these earnings outcomes may at first seem unremarkable. However, when examined in the context of all of the challenges faced by ACE participants, simply being able to match their more-advantaged peers in terms of earnings is a significant accomplishment. Moreover, the fact that some ACE participants achieved wages that exceeded those of their peers is a powerful endorsement of the ACE program.

Impact of Developing Personal Success Skills

As described earlier, the telephone survey asked over 400 former ACE participants how the personal success skills they developed during the ACE program affected their lives going forward. An analysis of survey results revealed the following:

- ✓ The development of purpose and direction had the most positive influence on students' lives, particularly in the area of work.
- ✓ Learning self-awareness and self-discipline enabled ACE students to pause and regain perspective in both job-related and personal interactions.
- ✓ The cultivation of collaborative leadership and communication skills empowered ACE participants to break down communication barriers in personal and professional situations.
- ✓ Understanding their own and others' working styles proved critical to successful job performance and personal relationships.
- ✓ Most respondents "agreed" or "strongly agreed" that personal success skills had a positive influence on their work and personal lives (75% and 92%, respectively).

Conclusion

The findings drawn from this comprehensive quantitative and qualitative evaluation of the impact of the ACE program suggest that ACE has a positive effect on students' academic, career, and personal success. The extensive telephone interviews conducted indicate that ACE supports students' academic and social integration in higher education and delivers psycho-social supports for underserved and underrepresented college students.

Furthermore, for historically underrepresented, first-generation, and "at-risk" students, ACE promotes postsecondary education as a tool for personal and economic success and facilitates participants' effective navigation of and success in the college/professional environment. Finally, findings indicate that participation in ACE builds students' ability to complete transfer-level coursework, achieve educational awards, and increase earnings over time.

Introduction

In 2015, the Research and Planning Group for California Community Colleges (RP Group) was contracted by the Joyce/Cabrillo Foundation to assess the long-term impact of the Academy for College Excellence (ACE) on students who had participated in the program between fall 2003 and spring 2014 at three California Community Colleges: Berkeley City, Cabrillo, and Hartnell Colleges. To accomplish this goal, the RP Group designed and implemented a mixed-methods research study, gathering both qualitative and quantitative data to analyze the effect of participating in ACE in both students' personal and professional lives.

For More Information…

For more information on the RP Group's longitudinal mixed-methods study of the Academy for College Excellence, visit http://rpgroup.org/All-Projects/ArticleType/ArticleView/ArticleID/152 or contact the project directors, Rogéair Purnell-Mack (rpurnell@rpgroup.org) and Alyssa Nguyen (anguyen@rpgroup.org).

For more information on the Academy for College Excellence, visit http://academyforcollegeexcellence.org/.

This report summarizes the key qualitative and quantitative research findings highlighting the ways in which the Academy for College Excellence (ACE) helped build the capacity of individuals facing numerous obstacles to success to thrive as students, participants in the workforce, and members of the community.

In This Report

This report begins with an overview of the ACE program, including its purpose, its core components, and the preparation faculty receive to deliver its unique pedagogy. Next, the research methodology employed in this mixed-methods evaluation is summarized, and a description of ACE participants' demographics and primary challenges is provided. The following section describes key findings from the evaluation, examining ACE participants' academic and earnings outcomes in comparison to a matched group of similar students. Following, the report delves into the impact of the personal success skills taught in the ACE program on participants' personal and professional lives. Finally, a conclusion offers some final thoughts on the overall long-term impact of ACE on participating students, as well as the limitations of this study and potential avenues for future research.

Overview of the Academy for College Excellence

Purpose of the ACE Program

Launched in 2002[1], the main goal of ACE is to prepare students to navigate and succeed in college, work, and life. In particular, ACE is designed to help individuals who have historically

[1] The research in the ACE design and the initial pilots was conducted in 2002. The first cohort was in fall of 2003.

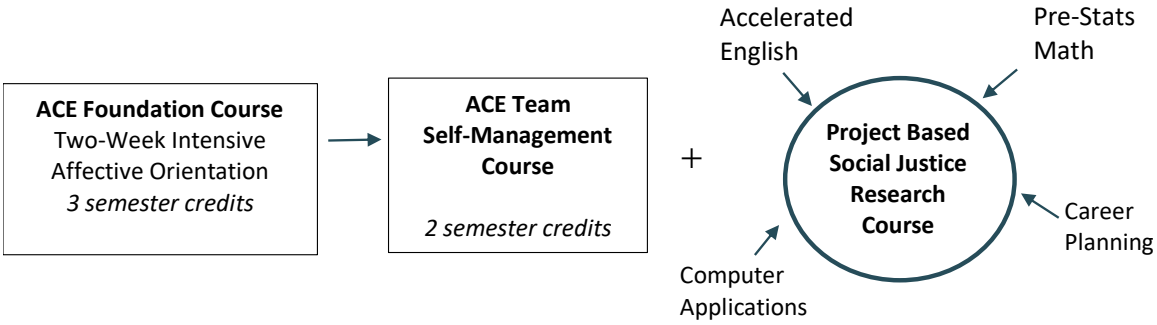
faced a wide range of challenges to academic and career success—such as underrepresented groups, foster youth, veterans, and more—achieve their educational and employment goals. The program is designed to foster intrinsic engagement and motivation among community college students, providing support through curriculum and instruction that holistically addresses students' needs (Navarro, 2017; Navarro & Hayward, 2014).

ACE offers a flexible model that can be scaled, sustained, and replicated to serve different types of learners, such as basic skills students, career/technical education (CTE) students, as well as college-ready students. Many colleges have adapted the ACE model to meet the particular needs of their student populations, as well as align with the resources available at the institution. An individual college's ACE program may contain some or all of these components, with the exception of the mandatory Foundations of Leadership Course (Foundation Course).

The ACE Model

Figure 1 below page illustrates the components of the fully implemented ACE model.

Figure 1. The ACE Model



Source: Karandjeff and Cooper (2013)

Unique ACE Courses

The ACE model includes several unique courses that have been specifically designed to cultivate students' engagement and motivation as well as equip them with the skills and knowledge necessary to succeed in future academic and employment pursuits. Key aspects of the Foundations of Leadership, Social Justice Research, and Team Self-Management courses are described below.

FOUNDATIONS OF LEADERSHIP COURSE

Prior to beginning their academic coursework, all ACE students complete the intensive, two-week, college-level Foundation Course, which focuses on the development of professional skills targeting affective mindsets and behaviors associated with student success in both career and school (Asera & Navarro, 2013). Specifically, the Foundation Course is built around the following three learning objectives:

1. Analyze, synthesize, and apply models and stages of dynamic leadership and principles of team self-management
2. Analyze and critique the industrial model of education and its effects on students' performance in US public schools
3. Analyze, develop, and practice communication skills for leadership in academic, professional, and grassroots contexts

SOCIAL JUSTICE RESEARCH COURSE

ACE's Social Justice Research Course (SJRC) is designed to engage students in primary research to identify ways to address a social or community issue that is of relevance to them. The course allows students to see themselves as change agents who can help unpack and solve issues that may affect them and their communities. Students work in cooperative teams to investigate a compelling social issue, develop research questions, design a survey, collect 150 surveys, analyze collected survey data, and highlight descriptive statistics. Students' findings are then used to develop an action plan to inform and address community needs. ACE students create a PowerPoint slide deck that summarizes their research and action plan and deliver a presentation on their work to an audience of ACE stakeholders, such as community college administrators, students and faculty.

TEAM SELF-MANAGEMENT COURSE

The related Team-Self Management course builds on a learning action plan that students complete in the Foundation Course by having students reflect on their experiences and goals. This class provides opportunities for students to strengthen peer-to-peer networks, increase their understanding of the behaviors necessary for college success through reflection, and improve their ability to plan for and manage challenges that may hinder their educational progress. Course activities inspire students to be more confident as students and professionals, learn how to self-regulate their emotions, focus their attention, and positively and effectively communicate with others (Karandjeff & Cooper, 2013).

Preparing Faculty to Teach in the ACE Program

To effectively deliver the unique and innovative coursework of the ACE program, community college faculty need to employ pedagogical techniques that differ from the traditional methods with which most educators are familiar. To prepare community college faculty for this endeavor, ACE requires that faculty participate in a Five-Day Experiential Learning Institute (FELI) and complete a practicum, teaching students with the guidance and support of a master teacher. The FELI, a practicum, and additional trainings along with curriculum kits prepare newly-minted ACE faculty to offer students an educational experience in which "curriculum and pedagogy are intertwined" and both faculty members' and students' personal lives and perspectives help shape and inform the learning environment (Asera & Navarro, 2013, p. 2).

Evaluation of the ACE Program

Purpose of the Evaluation

This research study builds on and adds to the numerous research and evaluation studies that have found positive academic outcomes for ACE participants, such as completion of a transfer-level English and math (Farr, Rostermund, Radwin, and Robles, 2012; Jenkins, Zeidenberg, Wachen, and Hayward, 2009; RTI, 2014). This investigation, however, seeks to understand the long-term impacts of the ACE model on participating students' academic, personal, and professional outcomes, such as degree/certificate completion, the impact of the personal success skills developed in the ACE program, and wage attainment.

For the purpose of this mixed-methods investigation, ACE participants were operationally defined as students who were enrolled in an ACE Foundation course between fall 2003 through spring 2014 at one of three California Community Colleges: Berkeley City College, Cabrillo College, and Hartnell College.[2]

Research Methodology

In consultation with the Academy for College Excellence, the Joyce Foundation, and workforce development experts, the RP Group led the design and execution of a mixed-methods research study to understand and advance the long-term impacts of the ACE program model. This research included two parts: (1) a telephone survey with former ACE students (qualitative), and (2) a statistical analysis of ACE participation related to educational trajectory and employment outcomes (quantitative). For the purpose of this report, telephone surveys may also be referenced as "interviews."

Qualitative Research Methods

Qualitative data for this evaluation was collected via telephone surveys with 435 individuals who had completed ACE at some point between 2003 and 2014 at one of three colleges that host the ACE program: Cabrillo College, Berkeley City College, and Hartnell College. The telephone survey was a 30-question instrument designed to capture former students' impressions of the ACE program, with an emphasis on how specific program components may have impacted students' academic, career, and personal outcomes. In particular, the survey explored how the personal success skills taught in the ACE program have affected participants' employability, competitiveness in the workplace, emotional well-being, community ties, and capacity to develop and realize academic and professional goals.

[2] Excludes students who were enrolled in new allied health programs that were too small to include in the CTE cohort (Medical Assisting at Cabrillo and Respiratory Health at Hartnell).

Quantitative Research Methods

Looking at just under 3,000 former ACE students from Cabrillo, Berkeley City, and Hartnell Colleges, the researchers compared key academic outcomes to a statistically-equivalent group of non-ACE participants (using a 1:1 propensity score matching analysis),[3] as well as whether median annual wage differences existed over time between ACE and non-ACE participants. Student-level information from each college, as well as data from the California Community Colleges Chancellor's Office Management Information System (MIS) and the California Employment Development Department (EDD) was gathered to answer these research questions.

PROPENSITY SCORE ANALYSES

Students from Cabrillo College, Berkeley City College, and Hartnell College who had participated in ACE were compared to a matched non-participant peer group using a one-to-one match propensity score matching analysis. As students' participation in the ACE program is voluntary and not at random, any results from an analysis of participant outcomes may be influenced by selection bias. That is, ACE participants may not be representative of all college students, and so a comparison of ACE participants with nonparticipants may be influenced, or biased, by some unobservable trait(s) of students in the ACE participation groups. One way of addressing the problem of selection bias is through a quasi-experimental approach that uses propensity scores to form a comparison, or control, group that resembles the ACE model participant, or treatment group (Rosenbaum & Rubin, 1983; Wooldridge, 2012).

For this study, we used a comprehensive list of 22 background variables that could vary between ACE and non-ACE participants. These 22 variables cover demographic characteristics, socioeconomic status, and academic history and goals (see Appendix B, Table B1). However, it is important to note that we could not match ACE peers on risk factors such as prior incarceration, drug and alcohol use, and mental health issues because similar risk factor data are not available for the general student population, even though it is available for the ACE students. Although, the comparison group created through propensity score matching will be identical in many ways (e.g., race, ethnicity, GPA, English/math classes taken), the presence of risk behaviors could still be a differentiating factor between the control group and the ACE students.

The logistic regressions resulted in a propensity score for each student that represents an individual's likelihood, or propensity, of participating in the ACE model based on the identified 22 background variables. After matching, we evaluated how well the models performed by examining the differences in predictor variables after matching and the percent reduction in bias from before matching. Essentially all differences were non-significant after matching (See Appendix B, Figures B1-B5). However, please note that this quasi-experimental approach can only account for the observed differences and does not account for other confounding factors. That is, this adjustment does not entirely eliminate the problem of selection bias, but does

[3] See Appendix B: Analyses, Table B1 for list of variables used in Propensity Score Analyses.

increase the confidence that the results are not entirely due to preexisting differences between the treatment and control groups in regards to the selected variables.

Who Are ACE Students?

Participant Demographics

Table 1 below provides descriptive statistics of basic demographic information for students enrolled in ACE. Based on the data, a slight majority of ACE students were male (545%), while a strong majority were and of Hispanic backgrounds (60%).

Table 1. Descriptive Statistics for ACE Participants in the Quantitative Study

Characteristic	Number of Participants	Percentage of Participants
Gender		
Male	1,595	53.5%
Female	1,387	46.5%
Ethnicity		
Hispanic	1,790	60.0%
White	605	20.3%
African-American/Black	186	6.2%
Unknown	183	6.1%
Other	121	4.1%
Asian	97	3.3%
Total	**2,982**	**100.0%**

A Population Under Significant Strain

Since the ACE program seeks to engage and support students who may face unique challenges and hardships that could hinder their academic journeys, the program's intake form asks students to report on risk factors that inform program design and implementation. As alluded to earlier, ACE students typically face a wide range of barriers to success in educational settings. An examination of a subset of the students tracked for this evaluation revealed almost 20 risk factors—such as child abuse, mental health condition, medical condition, unstable housing, history of being in foster care, currently or previously on probation, homeless, and gang association—in these students' lives, and the majority of students were juggling multiple risk factors (Farr, Rotermund, Radwin, Robles, and Choy, 2014).

In seeking to transform the college experience for underprepared and vulnerable college students, ACE programs intentionally recruit opportunity youth — young adults aged 16-24 years who are neither in school nor working. It is not uncommon for students recruited into an ACE program to be at-risk or exposed to high-risk factors, such as being homeless or facing domestic violence. Using self-reported information collected from the ACE Bridge Survey, Table

2 on the next page provides information about how many of the ACE participants had risk factors that are known to be barriers to success (e.g., history of being arrested, child abuse). The four factors most commonly reported, from highest to lowest, were: receives government assistance, from an unstable home, has been on probation, and were/are associated with gangs. On average, ACE students self-reported four to five risk factors.

Table 2. Percentage of ACE Participants with Various Risk Factors (N = 936)

Risk Factor	ACE Participant Counts	Percent of All Participants
Child abuse (H)	119	12.7%
Parent with dependent children (A)	212	22.7%
Working while in school (A)	205	21.9%
Mental condition (H)	42	4.5%
Medical condition (H)	60	6.4%
Foster care history (H)	76	8.1%
Receives government assistance (A)	379	40.5%
Unstable home (H)	353	37.7%
Has been on probation (H)	258	27.6%
Currently on probation (H)	150	16.0%
Gang association (H)	231	24.7%
Homeless (H)	217	23.2%

Note: A = At-risk factor and H = High risk factor. Numbers and percentages are for non-nursing students only. Student risk characteristics were collected from the ACE Bridge Survey where participant intake forms were merged with the student records obtained for this study. A total of 936 of the 2,982 students (31.4% match rate) were successfully matched with the risk statistics file.

Key Evaluation Findings

This section highlights key quantitative and qualitative findings that emerged from the ACE evaluation. To fully understand the implications of these data, it is essential to keep in mind the substantial obstacles to success faced by ACE participants. From issues such as severe financial difficulties to language barriers, housing instability, legal issues, and gang association, the majority of ACE participants were forced to start the "race" to success already at a significant disadvantage when compared to their peers.

As such, these profound challenges must be taken into consideration when assessing ACE participants' academic and earnings outcomes in comparison to their demographically similar peers. In many cases, simply keeping pace with other community college students who are not facing such an onslaught of barriers is a powerful achievement in and of itself.

ACE Participants' Academic Outcomes

To assess the academic progress of former ACE participants, the RP Group looked at the following six academic milestones:

1. Successful completion of transfer-level math
2. Successful completion of transfer-level English
3. Completion of 30 transfer-level units
4. Completion of a degree or certificate
5. Transfer to a four-year institution
6. Transfer preparedness (earned 60+ transferable units with a 2.0+ GPA)

Overall Academic Achievement of ACE Participants

A logistic regression was run comparing the six academic outcomes for all ACE participants (any student who enrolled in the Foundation Course) and the matched control group (see Appendix C, Table C1 for detailed results). Results from these analyses revealed that a larger percentage of the matched control group achieved the outcomes than the ACE participants. However, the achievement percentages across all outcomes for ACE participants were very close to their matched peers. More importantly, academic outcome comparisons within six years actually found no statistically significant differences between ACE participants and the matched control groups for three out of the six targeted academic outcomes: completion of award, successful completion of transfer-level math, and completion of 30 transferable units.

While these findings may initially seem modest, given the substantial array of risk factors faced by ACE students, it is remarkable that over the long-term, their academic achievements equaled or came close to matching those of other students whose educational pathway was fraught with many fewer obstacles and challenges.

The RP Group also conducted a statistical comparison of the six academic outcomes for under-represented minorities (URM)—specifically, African American/Black, Hispanic, or Asian students who participated in ACE and students with the same ethnic background from the control group. Results from these analyses found trends that were similar to the overall ACE students and their matched control group, where the control group completed outcomes at higher rates within three years, but after six years, ACE students started catching up with their peers. Most notable however for URM ACE students is that after six years, URM ACE students completed degrees/certificates and transferred to four-year institutions at comparable rates to their matched control group (see Appendix C, Table C2).

Academic Outcomes by ACE Program Variation[4]

As described earlier, ACE offers a flexible model that colleges can implement based on availability of resources, student and faculty interest, and numerous other factors. While all

[4] For a complete list of the courses that comprise each of ACE's cohort variations, see the Appendix A.

ACE programs must include the Foundation Course, colleges can choose to offer the full ACE program—including social justice research, accelerated English, team self-management, movement (physical education), and career planning—or only some of those components.

ACADEMIC ACHIEVEMENTS OF NON-CTE ACE STUDENTS

An examination of the academic outcomes of students who participated in different variations of the ACE model reveals the powerful impact of each component of the ACE program. Based on the analyses, it does appear there are differential impacts on students' academic outcomes depending on the ACE program design (see Appendix C, Tables C3-6). In fact, participants in ACE programs that were most compliant with the complete ACE program model[5] had the best outcomes compared to their peers in less comprehensive versions of ACE. Moreover, when these students' academic outcomes were compared to the matched control group, the evaluation showed that they were:

- ✓ 2.1 times more likely than control group students to earn an award within six years;
- ✓ 2.4 times more likely to complete a transfer-level English course within three years;
- ✓ 2.0 times more likely to complete a transfer-level math course within three years; and
- ✓ 2.7 times more likely to earn 30 units within three years.

ACADEMIC OUTCOMES FOR ACE STUDENTS IN CTE PROGRAMS

Furthermore, the ACE program had a particularly strong impact on the academic outcomes of students in one career/technical education (CTE) program (in this study, nursing students).[6] As illustrated in Table 4, a statistically significant larger percentage of nursing students who had begun participation in an ACE model between 2009 and 2014 ("ACE nursing students") completed an award within three- and six-years than those who had not participated in ACE and began the nursing program between 2003 and 2009 ("Pre-ACE nursing students").[7] Proportionally, twice as many ACE nursing students earned a degree/certificate within three years than pre-ACE nursing students.

[5] Cohort variation 7 is most compliant with the ACE model, including the Foundation Course, Team Self-Management, Social Justice Research, Accelerated English, Movement, and Career Development. See the Appendix for a list of all ACE cohort variations.

[6] Only nursing was included because the other two comparable CTE programs that embedded a Foundation course had sample sizes that were too small to include in the CTE cohort (Medical Assisting at Cabrillo and Respiratory Health at Hartnell).

[7] Since fall 2009, Hartnell embedded the ACE Foundation course in the first year for all cohorts in the program.

Table 4. Comparison of Award Attainment for Pre-ACE and ACE Nursing Students

Completion of a Degree or Certificate	Pre-ACE Nursing Students (*N = 236)*	ACE Nursing Students (*N* = 499)	Difference
Timeframe	**Percentage of Students**	**Percentage of Students**	**Percentage Point Difference**
Within 3 years*	27.7%	64.3%	36.6%
Within 6 years*	43.4%	67.6%	24.2%

Notes. p < 0.05. Only students enrolled in academic years where at least three- and six-year rates could be calculated were included in the analysis. The cohort for three-year rates were Pre-ACE nursing students enrolled between fall 2003 and spring 2009 (n = 459) and ACE nursing students enrolled between fall 2009 and spring 2013 (n = 157). The cohort for six-year rates were Pre-ACE nursing students enrolled between fall 2003 and spring 2009 (n = 459) and ACE nursing students enrolled between fall 2009 and spring 2010 (n = 37).

Earnings Outcomes

In order to examine the impact that student participation in ACE may have on future earnings, the annual mean wages of ACE students were compared to the annual mean wages of their matched peers one year before and up to six years after the ACE term of enrollment. Annual mean wage comparisons between groups of individuals who did or did not participate in ACE were made with several t-tests (assuming unequal variances) that compared the annual mean wages of ACE participants to the overall control group. EDD match rates for each of the wage metric produced match rates ranging from 45% to 100% (see Appendix D). In general, match rates appear to increase over time, which is not surprising, assuming that students are becoming gainfully employed after they complete their academic studies, but results should be interpreted with caution as the match rates only suggest that no wages were found, but not why. The inability to match wages may be due to unmatched/invalid social security numbers or individuals being employed by employers who do not report wages into the state system, or unemployment.

Earnings Change by ACE Model Variation

NON-CAREER/TECHNICAL EDUCATION ACE VARIATIONS

Overall, the annual mean wages of ACE students were lower than the annual mean wages of the matched control group, one year before and every year thereafter (see Figure 2). However, a closer examination of the data reveals that the wage gains for ACE students (change in wages from before ACE term vs. six years after) were double the wage gains experienced by the matched control group. ACE students had a 200% wage gain from one year before their ACE enrollment to six years after, while the matched control group only had a 107% wage gain in the same time points.

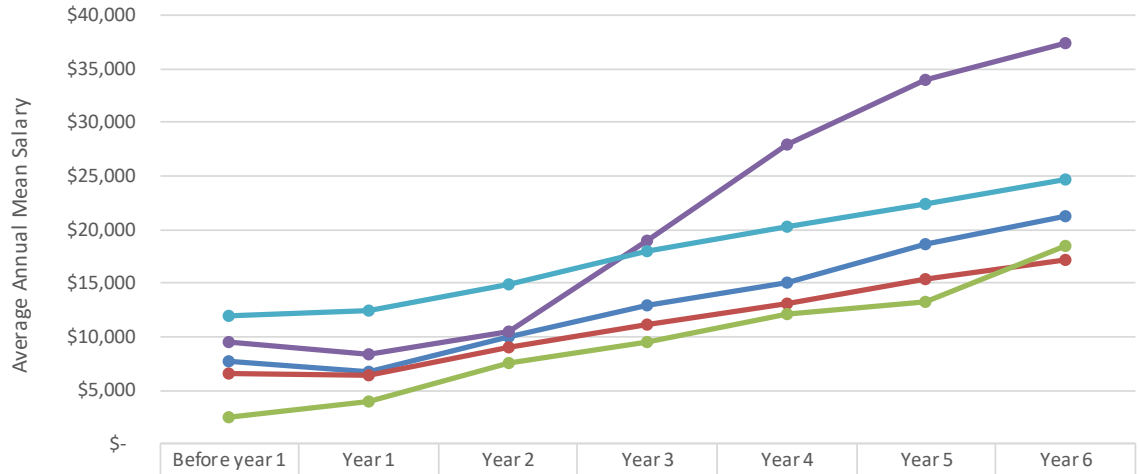
Figure 2. Comparison of Annual Mean Wages Over Time: ACE vs. Control Group

	Before Term	1 year after	2 years after	3 years after	4 years after	5 years after	6 years after
ACE	$6,329	$6,594	$9,703	$11,923	$14,269	$16,447	$18,999
Control Group	$11,942	$12,438	$14,936	$18,035	$20,327	$22,449	$24,665

Note. See Appendix A for size of each group and Appendix D for match rates by year.

To further explore the potential impact of the ACE program variation, wages were pooled for students who completed the various configurations of the ACE model. In order to explore any potential wage differences over time, the major ACE program variations (i.e., meta-levels) were pooled into the following model variations: (1) Accelerated English, (2) Un-Accelerated English, (3) Limited Resources, and (4) Foundation Only, Non-CTE (see Appendix A for model variation descriptions). In all ACE meta-level groups (except Foundation Only Non-CTE), students' wages before ACE were lower than those of the control group and continued to be lower over time (see Figure 3 below). For students who completed a non-CTE Foundation course only, their wages starting three years post-ACE start to exceed the control group. However, these results should be interpreted with caution, as the higher annual mean salaries appear to be driven by outliers pulling the group average upwards (SD = 65,147).

Figure 3. Comparison of Pooled Annual Mean Wages Over Time by ACE Model Variation (Completers)



	Before year 1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Accelerated English	$7,740	$6,737	$9,922	$12,915	$15,126	$18,696	$21,265
Un-Accelerated English	$6,611	$6,413	$9,034	$11,094	$13,095	$15,358	$17,126
Limited Resources	$2,425	$3,970	$7,591	$9,418	$12,032	$13,266	$18,517
Foundation Only - Non CTE	$9,413	$8,372	$10,516	$18,987	$27,939	$33,988	$37,343
Control	$11,942	$12,438	$14,936	$18,035	$20,327	$22,449	$24,665

Note: See Appendix A for size of each group and Appendix D for match rates by year.

However, when the evaluation team explored how ACE participants' earnings changed over time for each ACE meta-level, the data revealed that ACE participants saw significantly more growth in their earnings over a six-year period than did their peers from the control group regardless of ACE program variation (see Table 6). Students in the control group had a wage gain of 107% from pre-ACE comparison term to six years post-ACE comparison term; while ACE students, regardless of program variation, had wage gains that ranged from 163% (Un-accelerated English) to 451% (non-CTE Foundation only). Information from the telephone interviews qualify these findings where it was found that a lower percentage of ACE participants worked in minimum wage occupations after their participation in ACE (22% post-ACE vs. 62% pre-ACE) and a higher percentage were employed after ACE (79% post-ACE vs. 54% pre-ACE).

Table 6. Average Mean Salary Change from One Year Before ACE to Six Years After by ACE Model Variation

ACE Model Variation	Average Salary Change
Accelerated English	202%
Un-Accelerated English	163%
Limited Resources ACE	249%
Foundation Course Only – Non-CTE ACE	451%
Control Group	107%

EARNINGS CHANGE AMONG UNDERREPRESENTED MINORITY GROUPS (NON-CTE)

This growth over time was particularly evident for two historically-disadvantaged student populations: males of color (African American, American Indian, Hispanic, and Pacific Islander) and underrepresented minorities (URM) (African American, American Indian, Asian, Hispanic, and Pacific Islander). The change in these students' annual mean wages before participation in ACE and six years after ACE was much greater than the wage growth experienced by their matched peers. By the sixth year following participation in ACE, the annual median wage change was 305% for URM students as a whole and 435% for males of color (see Figure 4 for Males of Color Comparisons). In comparison, the wage growth for both males of color and URM students in the control group was approximately 200%.

Figure 4. Comparison of Annual Median Wages Over Time for Males of Color: Non-CTE ACE vs. Matched Peers

	Before Term	1 year after	2 years after	3 years after	4 years after	5 years after	6 years after
ACE Males of Color	$3,745	$4,302	$7,818	$11,116	$13,465	$16,434	$20,035
Control Males of Color	$6,318	$7,568	$10,632	$12,799	$16,819	$18,449	$19,843

WAGE OUTCOMES FOR CTE STUDENTS

As with academic outcomes, wage outcomes for CTE (nursing) students were examined separately and revealed a strong positive association with the inclusion of the ACE Foundation Course in the nursing program. Nursing students are unique compared to other students both in terms of motivation and potential labor market outcomes, which can vary considerably during different time periods. Therefore, to conduct the most accurate comparison possible, both Pre-ACE and ACE nursing students were matched with non-nursing students enrolled during the same time period.

Figure 5 on the next page compares annual mean wages differences over time for the Pre-ACE nursing students and their matched peers with the annual mean wage differences for the ACE-nursing students and their matched peers. In general, both Pre-ACE and ACE nursing students started with lower annual mean wages than their matched peers, but over time, their annual mean wages started to exceed those of their peers. The difference in annual mean wages for the nursing students compared to their matched control group over time was significantly greater for ACE nursing students than it was for Pre-ACE nursing students. By the sixth year, ACE nursing students wages were $45,541 higher than their matched peers, while the wage differences for the Pre-ACE nursing students and their matched peers was only $8,875. These results suggest that the addition of the ACE Foundation course, may have had a positive impact on nursing students' employability and wage earnings.[8] However, the increased wages could also be related to the higher percentage of ACE nursing students graduating within three years than the Pre-ACE nursing students.

[8] Although the wage comparisons revealed a statistically-significant difference across all seven years between Pre-ACE and ACE nursing students, it should be noted that increases in annual median salaries and unemployment rates in California over time may be affecting the labor market potential for these students.

Figure 5. Comparison of Difference in Annual Mean Wages for Pre-ACE and ACE Nursing Students versus Matched Peers Over Six Years

	Before Term	1 year after	2 years after	3 years after	4 years after	5 years after	6 years after
Pre-ACE Nursing - Matched Control	$(5,100)	$6,524	$6,918	$7,611	$593	$5,349	$8,875
ACE Nursing - Matched Control	$(9,998)	$(9,832)	$18,183	$6,518	$33,939	$42,625	$42,541

Impact of Developing Personal Success Skills

ACE is comprehensively designed—including curricular content, pedagogy, and faculty training—to educate students who face multiple life setbacks that are likely to impede their academic achievement. In particular, the program focuses on imparting five personal success skills, described in Table 7 on the following page.

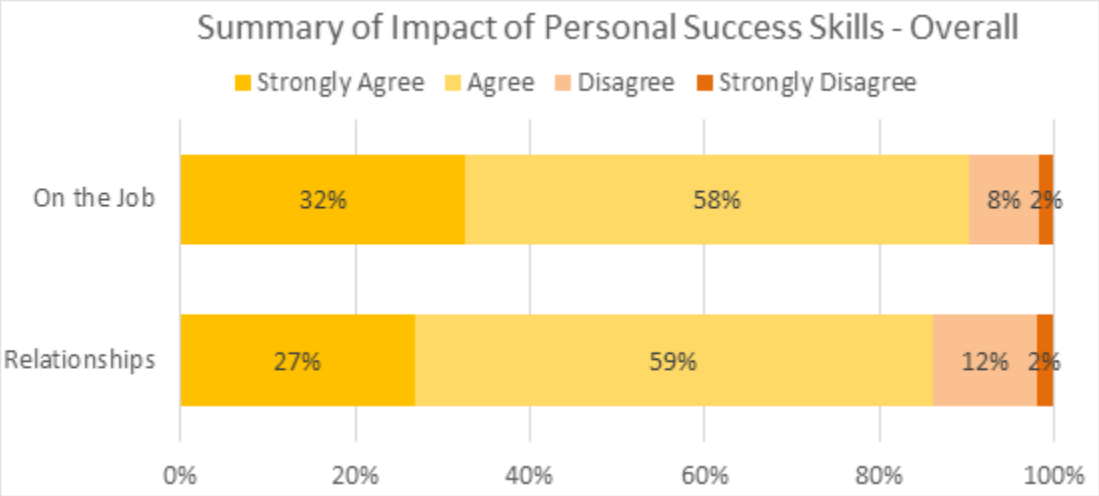
Table 7. ACE Personal Success Skills

Personal Success Skill	Examples
1. Purpose and direction	• Realizing one's own influence over life and personal success • Considering the consequences of one's actions
2. Self-awareness and self-discipline	• Understanding how to work with their bioreactions, such as fight, flight, freeze, or appease
3. Communicating with others	• Identifying, grasping, and aligning needs/concerns of individuals with the goals of a project team or organization practiced by leaders
4. Working styles	• Understanding one's own and others' working styles
5. Social justice research	• Cultivating critical thinking through the use of research methods

These five sets of skills stem from ACE Founder Diego Navarro's extensive academic and professional training stressing that affective or noncognitive skills are critical for today's 21st century professionals. Affective factors are those that engage the emotions and feelings necessary for student success (Navarro, 2012). Decades of research on the affective domain in teaching and learning support the notion that changing mindsets and habits facilitates student achievement. While the first four personal success skills relate to feelings and behaviors, the fifth skill, Social Justice Research, enables students to both pinpoint a societal problem that is relevant and meaningful to their lives and apply the affective skills to address it with a team of students, and to accelerate the acquisition of English, math and critical thinking skills through project-based learning.

As described earlier, the telephone survey asked over 400 former ACE participants how the personal success skills they developed during the ACE program affected their lives going forward. Ninety percent of students interviewed strongly agreed/agreed that the personal success skills influenced their professional lives and 86% strongly agreed/agreed that those skills influenced their personal lives (see Figure 6).

Figure 6. Summary of Students' Assessment of Personal Success Skills Influence on Personal and Professional Lives



Further discussion of the impact of each of the five personal success skills is provided in the sections below.

Skill 1: Purpose and Direction

Following ACE, the skill set of purpose and direction reportedly had the most positive influence on students' lives, particularly in the area of work. This personal success skill focuses on taking responsibility, developing agency, setting priorities, making decisions, and taking action to ensure personal success. One survey respondent, for example, asserted that purpose and direction meant, "I know what I have to do to develop the qualities I'm lacking."

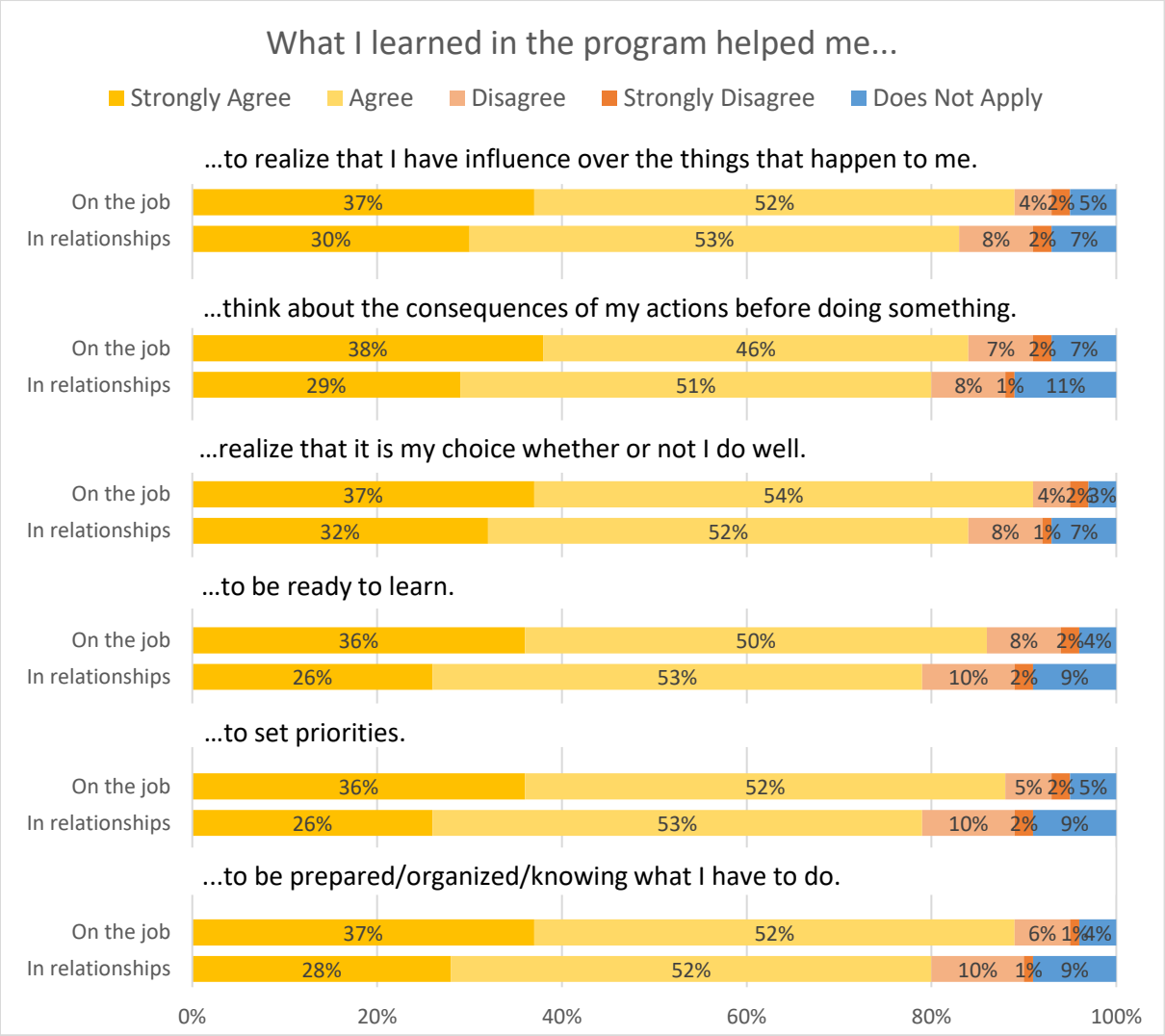
During the interview, respondents were asked to cite their level of agreement with six basic principles of purpose and direction:

1. Realizing my own influence over my life/the things that happen to me
2. Thinking about the consequences of my actions before doing something
3. Realizing that it is my choice whether I do well
4. Being ready to learn
5. Setting priorities
6. Being prepared, organized, and knowing what I have to do

The majority of respondents agreed or strongly agreed that each of these six principles helped them find purpose and direction—in both their professional and personal lives (see Figure 7). However, respondents cited a stronger level of influence on their work life (as opposed to their personal life) with respect to all six of the statements. Specifically, respondents stated that "realizing that it is my choice whether I do well" had the strongest influence on their personal life, with 32% of respondents agreeing strongly with that statement. Almost 40% of

respondents also stated that ACE's purpose and direction curricula helped them "think about the consequences of their actions before acting" on the job.

Figure 7. Purpose and Direction Lessons Influencing Work and Personal Life



Skill 2: Self-Awareness and Self-Discipline

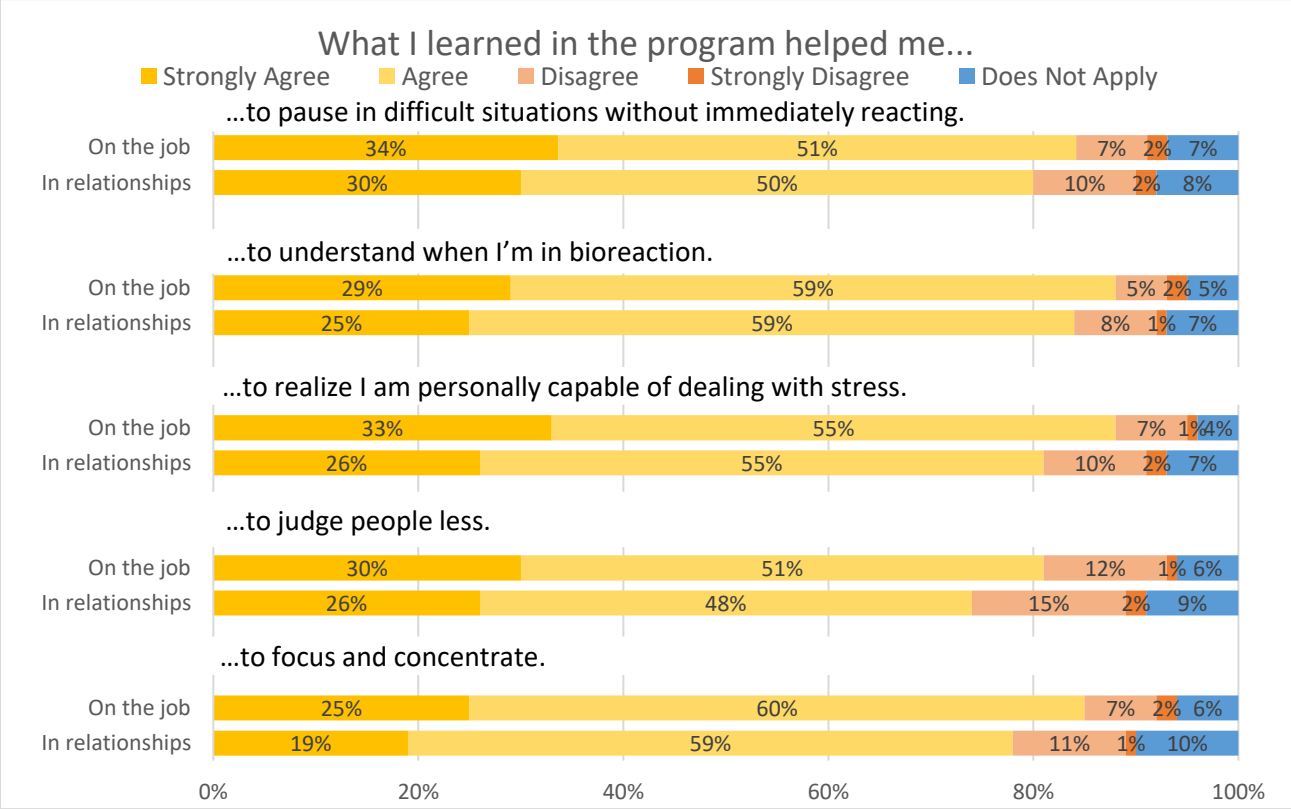
Self-awareness and self-discipline, which foster emotional self-regulation and encourage students to trust others, were recognized as an important force in helping participants realize when they needed to pause and regain perspective in their work and personal interactions. In this domain of the curriculum, students learned the essential skill of understanding their responses to stress. Typically, ACE students face years of emotional strain and pressure prior to entering the ACE program. The personal success skills of self-awareness and self-discipline help participants cope with mental and physical stressors more effectively.

During the interview, respondents were asked to cite their level of agreement with five basic principles of self-awareness and self-discipline:

1. Understanding when I am in bioreaction (fight, flight, freeze, or appease)
2. Pausing in difficult situations without immediately reacting
3. Realizing my personal capacity to deal with stress
4. Judging people less
5. Focusing and concentrating

The majority of respondents agreed or strongly agreed that each of these five principles helped them be more self-aware and self-disciplined (see Figure 8). Once again, respondents noted that the skills they developed through ACE had a strong influence on both their work and personal lives, with between one-fourth to one-third strongly agreeing with each statement as it related to "on the job," and nearly one-fifth to one-third strongly agreeing with each as it related to their relationships. The aspect of self-awareness and self-discipline that was cited as having the strongest influence on both work (34%) and personal life (30%) was "to pause in difficult situations without immediately reacting," with nearly one-third of respondents strongly agreeing.

Figure 8. Influence of Self-Awareness and Self-Discipline Lessons on Work and Personal Life



Skill 3: Communication with Others

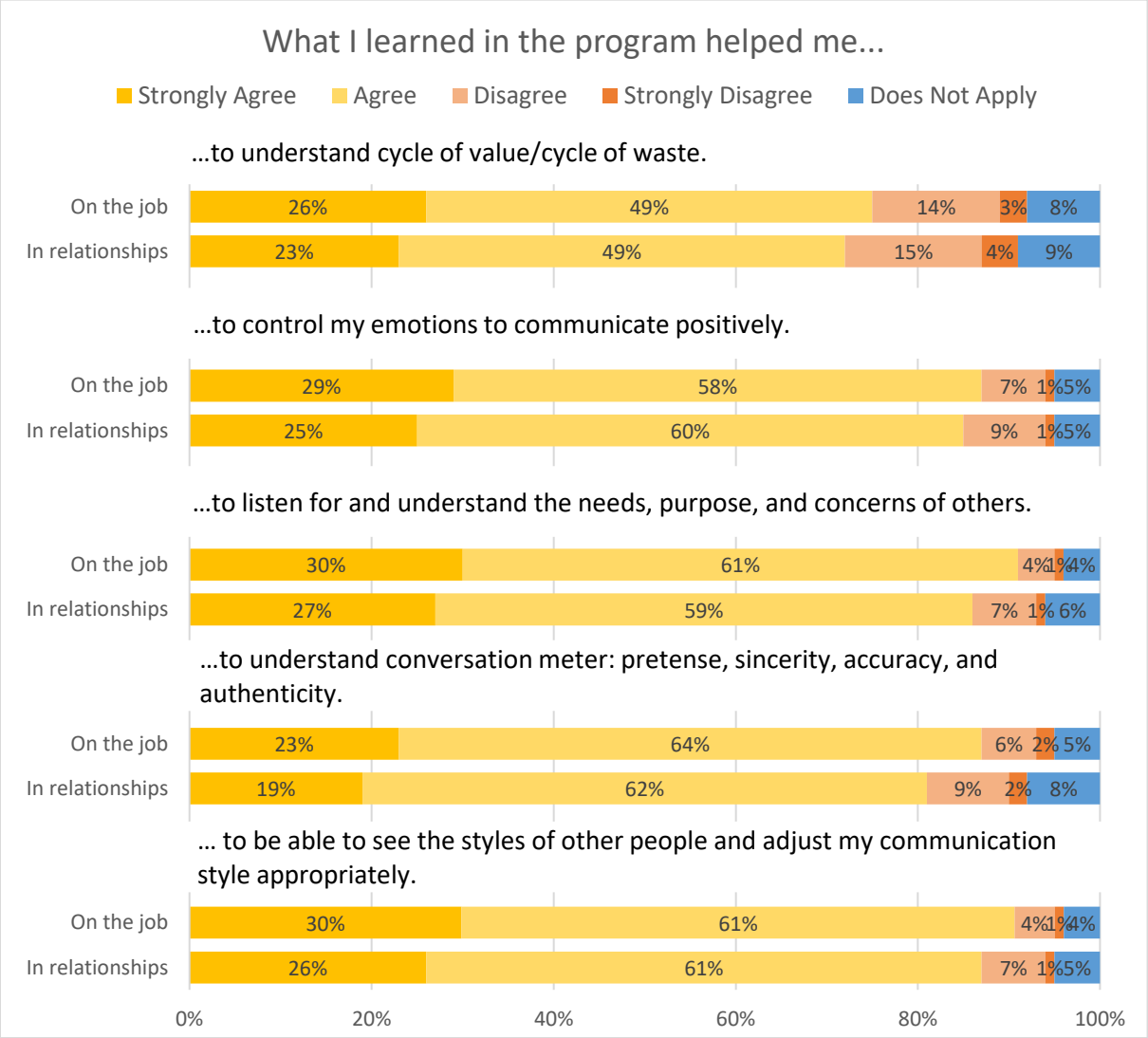
Collaborative leadership skills, including communication skills, including listening to others, managing stressful conversations, and developing thoughtful, calm responses, play a chief role in facilitating participant growth on the job and in personal relationships. Based on participants' replies to open-ended questions, the RP Group gleaned that this skill broke down the communication barrier that cripples some relationships—whether work or personal. One participant described, "It is apparent people can't get out of the cycle of waste. It's been tough to see it firsthand. [Better communication skills have] helped me reconnect with my family following my parents' divorce."

The RP Group selected the following five principles to investigate how the program helped students communicate:

1. Understanding how to remain calm, stay positive, and manage emotions in the face of conflict and disagreement, and to consider ways to compromise to come to a desired solution or agreement (also termed in the ACE program as the "cycle of value/cycle of waste")
2. Becoming aware of emotions in self and others
3. Listening for and understanding the needs, purpose, and concerns of others
4. Understanding conversation meter (e.g., pretense, sincerity, accuracy, and authenticity)
5. Ability to see the style of other people and adjusting my communication style appropriately

The majority of respondents agreed or strongly agreed that the program helped them communicate with others in each of the ways listed above (see Figure 9). Additionally, respondents noted an evenly-balanced level of influence on work and personal life.

Figure 9. Influence of Communication with Others Lessons on Work and Personal Life



Skill 4: Understanding Working Styles

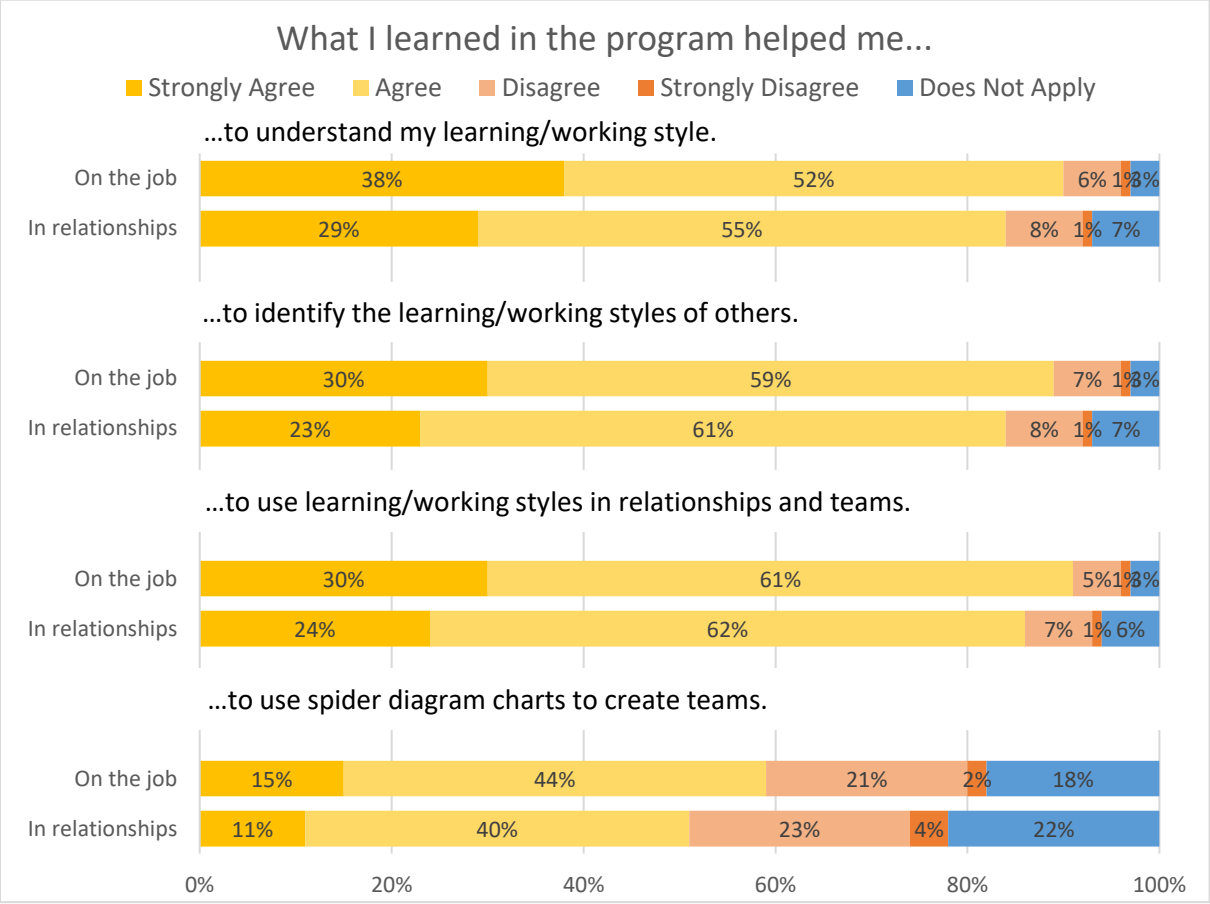
Understanding how individual styles influence team participation, which comprises ACE's working styles skill, was underscored by participants as critical to job performance and personal relationships. This skill facilitated respondents' comfort with and respect for diversity, increased their capacity to take another's perspective, and informed their interactions with work colleagues, family, and friends.

The RP Group selected the following three principles to examine how the program helped students understand learning and working styles:

1. Understanding learning and working styles
2. Identifying others' learning and working styles
3. Using learning and working styles in relationships and teams

In particular, respondents agreed most strongly (29%) that "understanding my learning/working styles" impacted both their work (38%) and personal lives (29%) (See Figure 10).

Figure 10. Influence of Working Style Lessons on Work and Personal Life



Skill 5: Social Justice Research

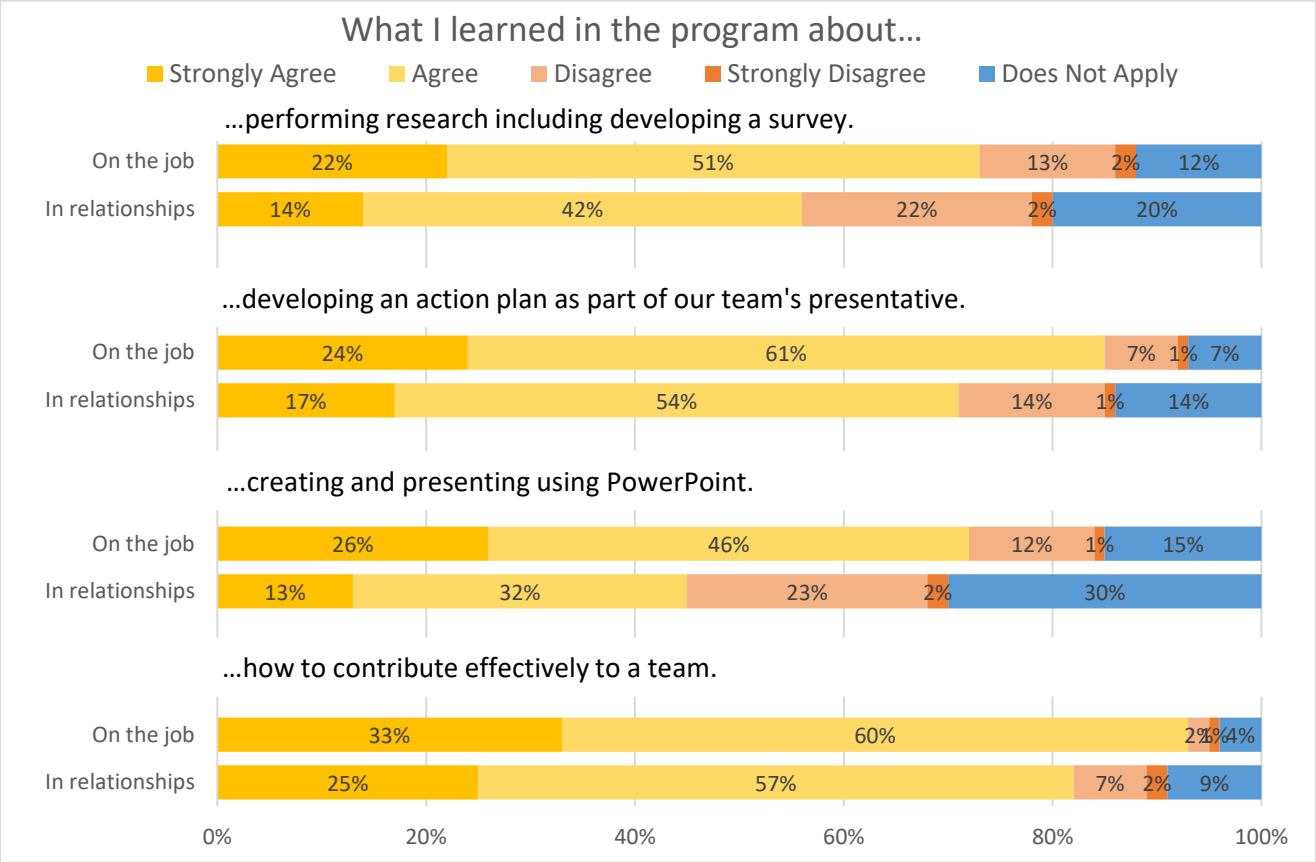
The Social Justice Research Course was designed to advance research, presentation, and teamwork skills by assigning students an activity that requires they conduct primary research on a topic related to social justice in their community.

The RP Group selected the following four principles to examine how the program helped students understand learning and working styles:

1. Performing research, including development of a survey questionnaire
2. Developing an action plan as part of a team presentation
3. Creating and presenting using PowerPoint
4. Contributing effectively to a team

The research and presentation skills honed and team work required as part of the social justice research course had a positive influence on respondents' work lives particularly "how to contribute effectively to a team" to which the large majority (93%) agreed or strongly agreed (see Figure 11).

Figure 11. Influence of Social Justice Research Course Lessons on Work and Personal Life



Conclusions

Reflections on ACE's Impact on Academic and Wage Outcomes

Based on the analyses conducted for this study, there does appear to be positive academic and wage outcomes for students participating in ACE, with each ACE cohort design having varying impacts on outcomes.

Enhancement of CTE Programs

The positive impacts of ACE were found for students enrolled in a CTE program – nursing, where the ACE Foundation course was embedded in its curriculum. When compared to previous nursing student cohorts without the ACE Foundation course, a higher percentage of ACE nursing students completed an award within three and six years. Moreover, compared to a matched control group enrolled in the same timeframe, ACE nursing students earned significantly higher wages over time compared to their matched control group, than Pre-ACE nursing students and their matched control group.

ACE as a Model for Closing Achievement and Wage Gaps

Results from this study examined the impact of ACE participation for students who attempted the courses in various ACE cohort designs and for students who completed all the courses in the ACE cohort designs and found that the greatest positive academic outcomes were found for students who completed all the courses; especially in micro-level Group 7 (the group with the most fidelity to the ACE model). Students who completed the micro-level Group 7 were, in most cases, at least two times more likely than the control group to earn an award, complete a transfer-level English or math course, and earn 30 units within three years of enrolling in ACE.

For wages, it was found that most students who completed the ACE cohort design that included accelerated English had higher wage gain increases over time compared to control group and the other ACE cohort designs (with the exception of the non-CTE Foundation course –which appeared to include outliers based on the variance found in the wages reported).

Overall, although the absolute academic achievement and wages for ACE participants were not greater than those of the matched control group, the fact that the academic achievement was equal over time, was itself an achievement – especially given the known concentration of risk factors in the ACE group. Moreover, while absolute wages were not higher, largely due to the ACE students starting with lower wages, wage gains were twice as high for ACE students than for the matched peer set. ACE participation also appears to have the potential to close equity wage gaps. Wage comparisons for males of color and underrepresented minority (URM) student populations participating in ACE and their matched peers revealed lower wages overall for the ACE participants; but by the sixth year, wage gaps closed for the URM students who participated in ACE, and wages among males of color who participated in ACE exceeded those of their matched peers.

Reflections on ACE's Impact on Personal Success

The ACE program delivered on its mission—to propel student success in school, work, and life—in two central ways. First, the program supports students' academic and social integration in higher education. Second, the ACE model delivers psychosocial supports for underserved and underrepresented college students, many of whom have faced social, familial, and economic hardships that have negatively affected their educational and career trajectories. Barillo-Sotillo, Miller, Nagasaka, and Arguelles (2009) argue these two achievements—strengthening academic and social integration, and providing psychosocial supports–are critical to low-income and minority students succeeding in community college. The following sections provide deeper insights related to how these academic, social, and psychosocial advances in the ACE program impact participants' postsecondary success, ability to work in teams, and the development of noncognitive skills.

Postsecondary Success for Underrepresented Students

As cited in Barrio-Sotillo, Miller, Nagasaka, and Arguelles "academic integration involves the development of a strong affiliation with the college academic environment both inside and outside of the classroom through interactions with faculty, staff, and peers in an academic nature" (2009, p. 266). For a high- or at-risk population, which describes all of the survey respondents for whom risk data were available, that has likely encountered crime, psychological stress, gang influence, drug and alcohol exposure, homelessness, and other obstacles, this accomplishment cannot be overstated. Many of these students may have been hesitant to see themselves as college bound, but the ACE model provided a supportive classroom with which to view their potential. The development of this view of oneself, has financial and career advantages. Although the academic and wage outcomes for ACE students were lower overall, it is remarkable that over the long-term, their academic achievements equaled, or in some cases even exceeded those of other students who began the academic "race" much closer to the finish line and saw more growth in their earnings over a six-year period than did their peers from the control group.

The Power of Teamwork

Social integration in the form of team work was key to the student experience in ACE. Barrio-Sotillo, Miller, Nagasaka, and Arguelles (2009) argue that social integration—largely faculty and peer driven—reinforces persistence and retention among underserved populations in the community college. The ACE curriculum was so powerful that up to 11 years later, some students could recall core memories related to working effectively in a team. Participants relayed stories about working styles, developing a sense of trust and openness with classmates, and receiving the support of their peers. These memories helped researchers form an understanding of the ways in which ACE respondents valued the social dynamics of the program and applied the curricula to their everyday lives (e.g., being collegial, addressing new challenges, understanding others).

The Value of Strong Noncognitive Skills

The ACE program offered psychosocial supports that advanced students' noncognitive or affective skills. Former students' survey responses highlighted how the noncognitive skills—pausing in difficult situations, being confident in their ability and power to shape their lives, controlling their emotions—helped them in all aspects of their work and personal lives. Cognitive skills such as understanding working styles, setting priorities, and adjusting their communication style as dictated by the conversation or situation were also important, but respondents most often offered examples of how the affective elements of the personal success skills had positively influenced them. In the ACE classroom, the advancement of these critical skills materialized through a curricular framework and pedagogical approaches that embraced adult learning principles, faculty-led real-world scenarios, and the creation of a safe space for students to share deeply personal stories.

Limitations of the Findings

Qualitative Study

Limitations beyond the control of the RP Group constrained portions of the qualitative study. First, together a limited budget and time constraints required the selection of a telephone survey that was to the point, including many structured, closed-ended questions. The advantage was that this instrument allowed the RP Group to swiftly gather responses from a large sample population to maximize perspectives, address the primary research questions, and stay on budget. The disadvantage was that the telephone survey did not exceed 15 minutes and there were no opportunities to ask follow-up questions. Second, the RP Group was unsuccessful in recruiting ACE participants for focus group interviews to augment the telephone survey. In an attempt to gather more nuanced insights and details on the program's perceived influence on a randomly-selected sample, the RP Group aimed to conduct multiple hour-long focus groups with 120 telephone survey respondents. However, recruitment invitations from both the RP Group and ACE Founder Diego Navarro yielded only two completed one-on-one interviews. Since these interviews did not reflect a representative sample of ACE participants, the results of these conversations have not been included in the research findings presented here. Third, the study lacked access to employer perspectives. Originally, the design of this mixed-methods study included surveying a subset of current employers of former ACE participants. However, fewer than 10% of survey respondents agreed to share their employers' contact information, and ultimately the majority of the employers who were contacted declined to be interviewed or did not respond to the researchers' invitations.

Quantitative Study

While the findings of this research reveal important associations between participation in ACE and academic, employment, and personal success, it is critical to view them with an understanding of the limitations inherent to an analysis of this kind. First, the ACE model targets high-risk student populations, and although the study was able to identify a statistically-

matched comparison group; the matching was limited to information that was collected and recorded at each college such as basic demographics (e.g., ethnicity, gender) and enrollment history; the data for risk characteristics was missing for all non-ACE students, making it impossible to determine if the matched peers also shared the same high-risk factors. In addition, even though the models from the propensity score analyses performed very well, with all overall models showing non-significant results after matching, the analyses can only account for the observed differences and does not account for other confounding factors. That is, this adjustment does not entirely eliminate the problem of selection bias, but increases our confidence that the results are not entirely due to preexisting differences between the treatment (ACE) and control groups with regards to the selected variables.

Second, EDD only provides matched wage data aggregated with a minimum of five records, therefore, the RP Group could not conduct any unitary record analyses with the wage data. Third, wage data can be only be provided for students with valid social security numbers. Fourth, EDD wage data only provides wages for employers who pay into the unemployment insurance funds and therefore, do not contain wages for workers such as those who are migrant/seasonal workers, federal employees (including military), or self-employed. Given this limitation, not all students identified in this study will have wage information, and the inability to access unitary data meant the RP Group could not determine whether the wage information is missing for the reasons identified or if a student was unemployed.

Future Research

The current study found that the addition of an ACE Foundation course in an allied health science program such as nursing, appeared to have the most impact on completion and wage gains, perhaps indicating a synergistic effect between a sought-for credential with underlying training that bolsters performance while in school and on the job. However, it was noted that state unemployment rates varied greatly across the years this study covered and the unemployment rates were highest between 2009 and 2011, affecting the employment opportunities for students trying to enter the labor market during that time. As a result, it is recommended additional research be conducted on multiple CTE pathways with embedded ACE components to further explore and validate the potential impact of ACE on wage outcomes for CTE students.

Research and Planning Group for California Community Colleges

The RP Group strengthens the ability of California community colleges to discover and undertake high-quality research, planning, and assessments that improve evidence-based decision-making, institutional effectiveness, and success for all students.

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Appendix A: ACE Cohort Variations

Table A1. ACE Course Configurations for Meta- and Micro-Level Groupings: Percentage of Attempters and Completers

ACE Grouping ID	ACE Cohort Design and Included Courses	Total/Percent of Attempters[a]	Total/Percent of Completers[b]
	CTE TRACK		
	Meta-Group 1: Career/Technical Education	***236 (7.9%)***	***236 (7.9%)***
1 CTE	• Foundation (nursing students)	236 (7.9%)	236 (7.9%)
	NON-CTE TRACK		
	Meta-Group 2: Accelerated English/ACE Model	***1,549 (51.9%)***	***819 (27.6%)***
4	• Foundation • Team self-management • Social justice • Accelerated English	518 (17.4%)	313 (11.4%)
5	• Foundation • Team self-management • Social justice • Accelerated English • Movement	501 (16.8%)	246 (8.9%)
6	• Foundation • Team self-management • Social justice • Accelerated English • Career Development	234 (7.8%)	98 (3.6%)
7	• Foundation • Team self-management • Social justice • Accelerated English • Movement • Career Development	296 (9.9%)	162 (5.9%)

ACE Grouping ID	ACE Cohort Design and Included Courses	Total/Percent of Attempters	Total/Percent of Completers
Meta-Group 3: Non-Accelerated English/Alternative to the ACE Model		***443 (14.9%)***	***541 (18.3%)***
10	• Foundation • Team self-management • Optional Social Justice • Optional Movement • Optional Career Development (at Cabrillo College) • Un-Accelerated English	376 (12.6%)	267 (8.9%)
11	• Foundation • Optional Team self-management • Optional Social Justice • Optional Movement • Optional Career Development • Un-Accelerated English (at Cabrillo College)	67 (2.2%)	274 (9.2%)
Meta-Group 4: Limited Resources		***596 (20.0%)***	***720 (24.3%)***
2	• Foundation • Team self-management	147 (4.9%)	138 (4.7%)
3	• Foundation • Team self-management • Social Justice	114 (3.8%)	171 (5.7%)
8	• Foundation • Team self-management • Optional Social Justice • Accelerated English • Optional Movement • Optional Career Development	142 (4.8%)	94 (3.2%)
9	• Foundation • Optional Team self-management • Optional Social Justice • Accelerated English • Optional Movement • Optional Career Development	171 (5.7%)	210 (7.1%)
12	• Foundation, Team self-management • Optional Social Justice • Accelerated English • Optional Movement • Optional Career Development (at Hartnell)	14 (0.5%)	66 (2.2%)

ACE Grouping ID	ACE Cohort Design and Included Courses	Total/Percent of Attempters	Total/Percent of Completers
13	• Foundation • Optional Team self-management • Optional Social Justice • Accelerated English • Optional Movement • Optional Career Development (at Hartnell)	8 (0.3%)	41 (1.4%)
Meta-Group 5: Foundation Course Only		***158 (5.3%)***	***647 (21.8%)***
1 – Non-CTE	• Foundation	158 (5.3%)	647 (21.8%)

Notes. [a] Students who attempted all the courses in the model variation. [b] Students who completed all the courses in the model variation. Attempters and completers are not mutually exclusive groups and so depending on students' actual performances in the courses, the number of completers in any given group may greater than the number of attempters. For example, a student may be flagged as an attempter in Meta-Group 2 if the student attempted a Foundation, team self-management, social justice research, and accelerated English course. However, if the student passes all the courses except the accelerated English course, the student will be flagged as completer in Meta-Group 3.

Appendix B: Propensity Score Analyses

Table B1. List of Variables Used for Propensity Score Matching Analyses

Variable	Description	Levels
Age	Student's age in ACE term	Continuous
CA Resident	Student is a California resident	Yes, No
Census: Below High School Achievement (%)	Percent of residents with highest educational level below high school. Based on student ZIP code and five-year averages from 2015 American Community Survey (ACS)	Continuous
Census: Poverty (%)	Percent of residents living in poverty. Based on student ZIP code and five-year averages from 2015 ACS survey	Continuous
Census: Unemployment (%)	Percent of residents who are unemployed. Based on student ZIP code and five-year averages from 2015 ACS survey	Continuous
Census: White/Caucasian (%)	Percent of White or Caucasian residents. Based on student ZIP code and five-year averages from 2015 ACS survey	Continuous
Educational Goal	Student's self-reported educational goal	Certificate/AA, Transfer/BA, undecided, or missing
Educational Level	Student level of educational achievement in ACE term	Below high school, GED, high school, higher education, or missing
English Course Level in Term	A student's English course level in ACE term	Two+ levels below transfer, one level below transfer, or transfer level
Math Course Level in Term	A student's math course level in ACE term	Two+ levels below transfer, one level below transfer, or transfer level
Ethnicity	A student's self-reported ethnicity	Asian, African American/Black, Hispanic, White, or Other
Exempt	A student is exempt from matriculation (e.g., orientation, education plan, and assessment testing)	Yes, No

Variable	Description	Levels
Financial Aid Amount	Student financial aid amount received	Continuous
Financial Aid Received	Student received financial aid for the academic year	Yes, No
Foster Youth	Student self-reported as former or current foster youth	Yes, No
Gender	A student's self-reported gender	Male, Female
Prior English Achievement	A student's completed level of English prior to ACE term	Two+ levels below transfer, one level below transfer, or transfer level
Prior Math Achievement	A student's completed math level prior to ACE term	Two+ levels below transfer, one level below transfer, or transfer level
Prior GPA	Cumulative GPA prior to term GPA=0 were screened out	Continuous
Prior Main Terms Attended	Number of main terms (fall or spring) attended prior to term	Continuous
Prior Terms Attended	Number of terms attended prior to term	Continuous
Prior Units Earned	Number of units earned prior to term	Continuous

Figure B1. Dot Graph Before and After Matching – Berkeley City College

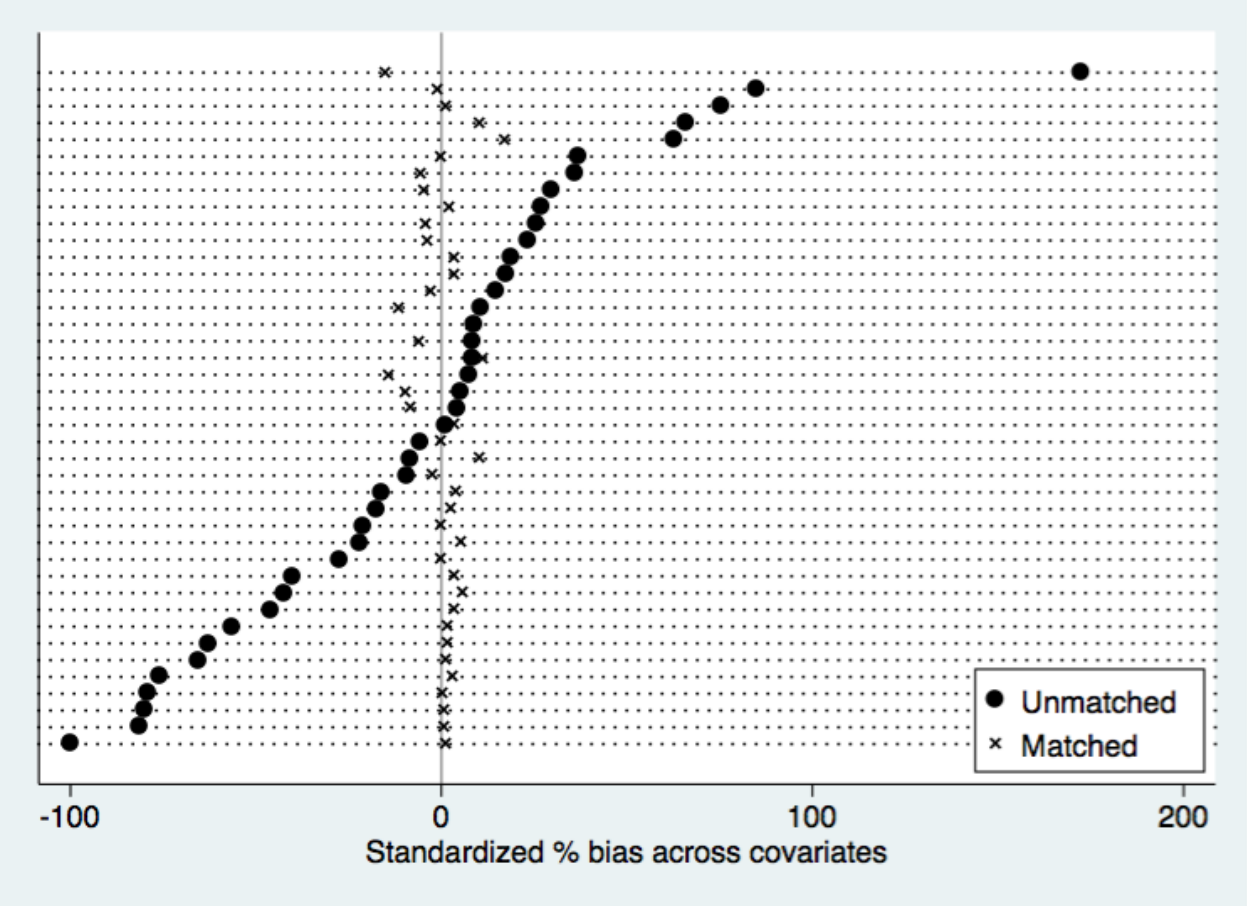


Figure B2. Dot Graph Before and After Matching – Cabrillo College

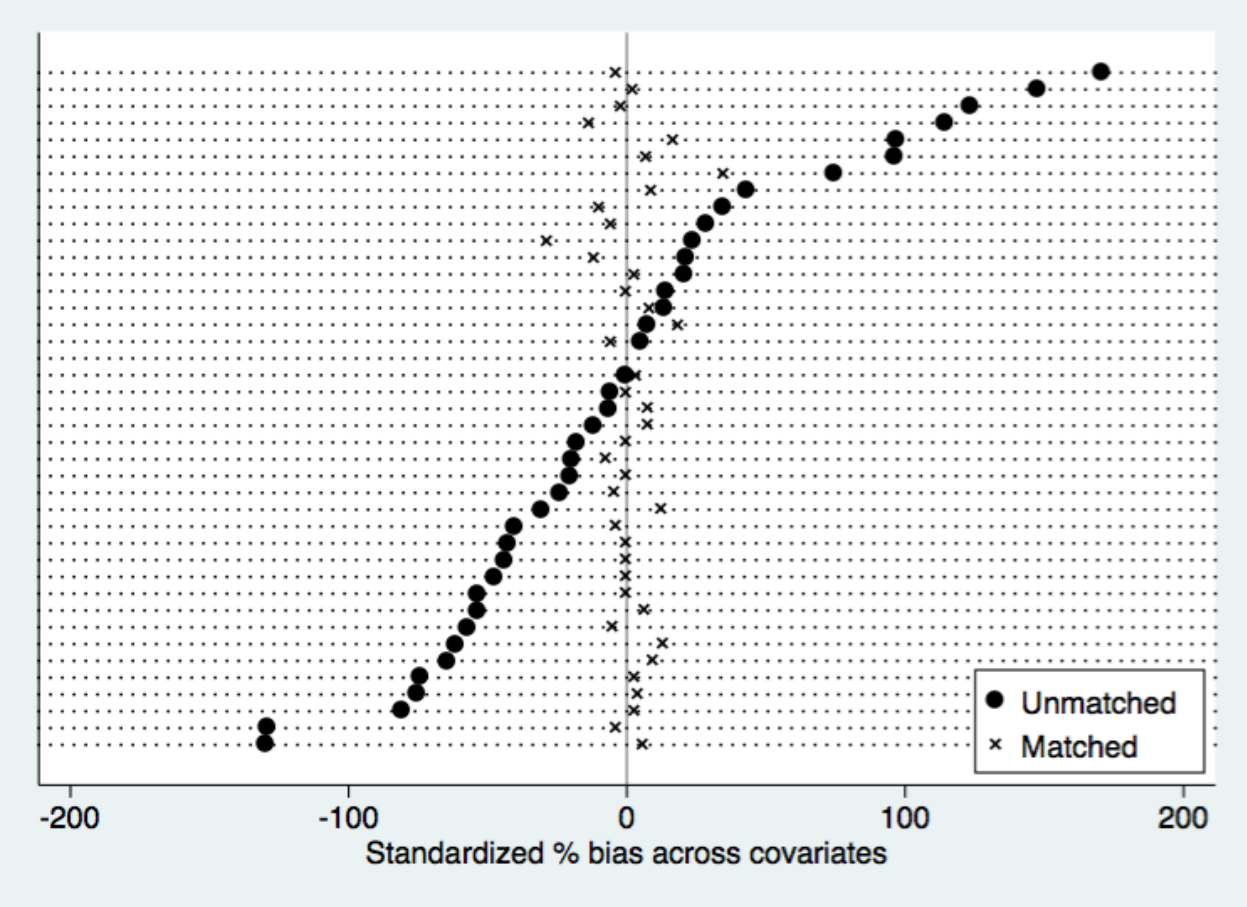


Figure B3. Dot Graph Before and After Matching – Hartnell College

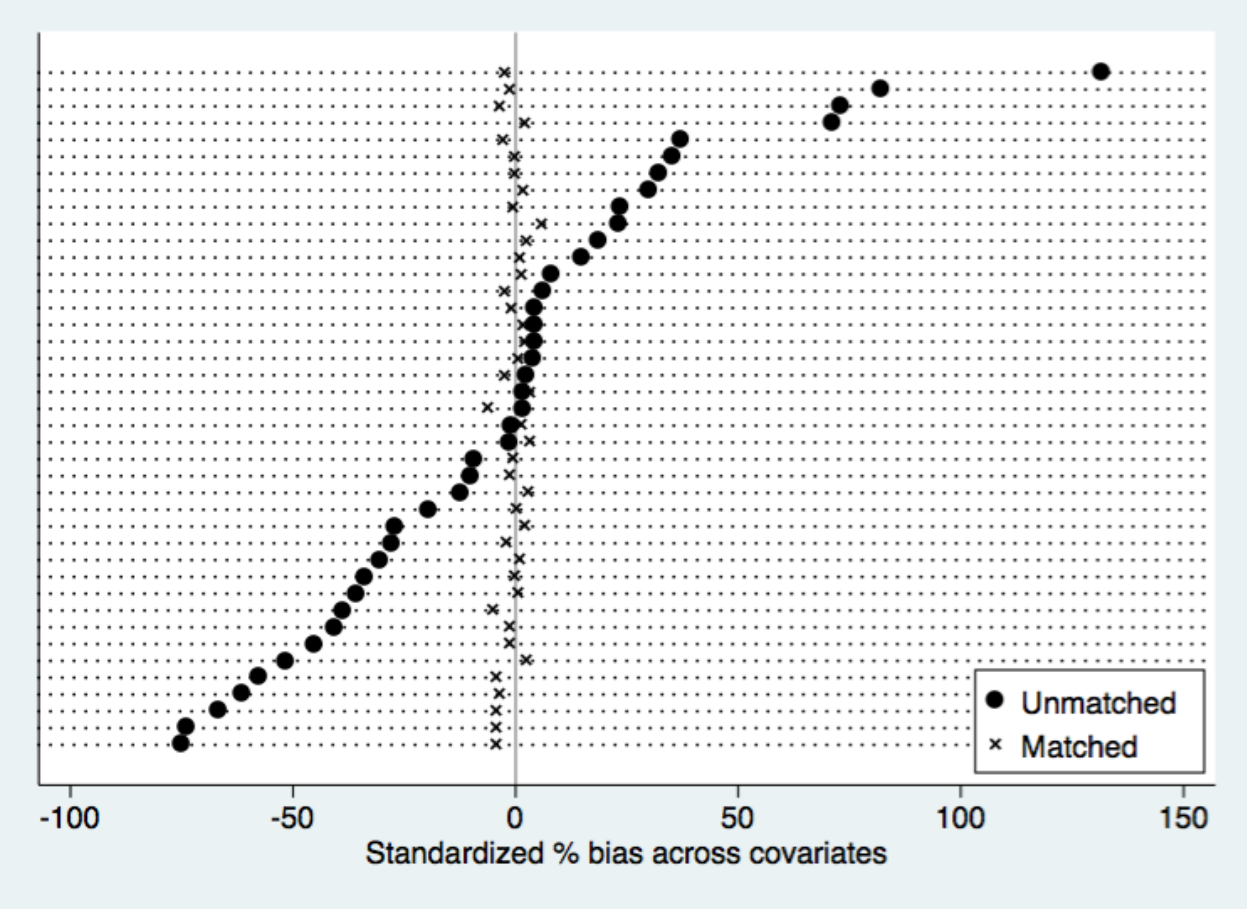
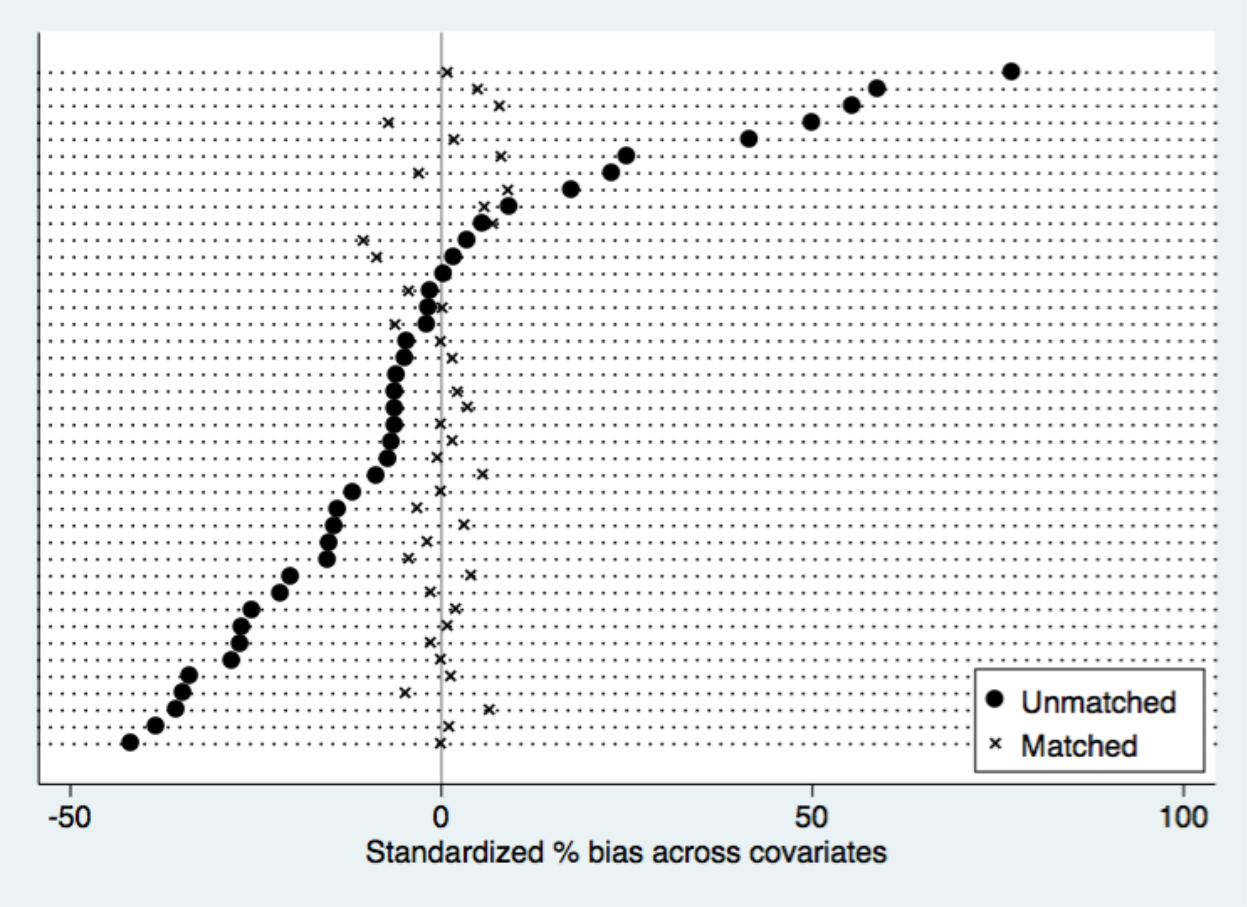
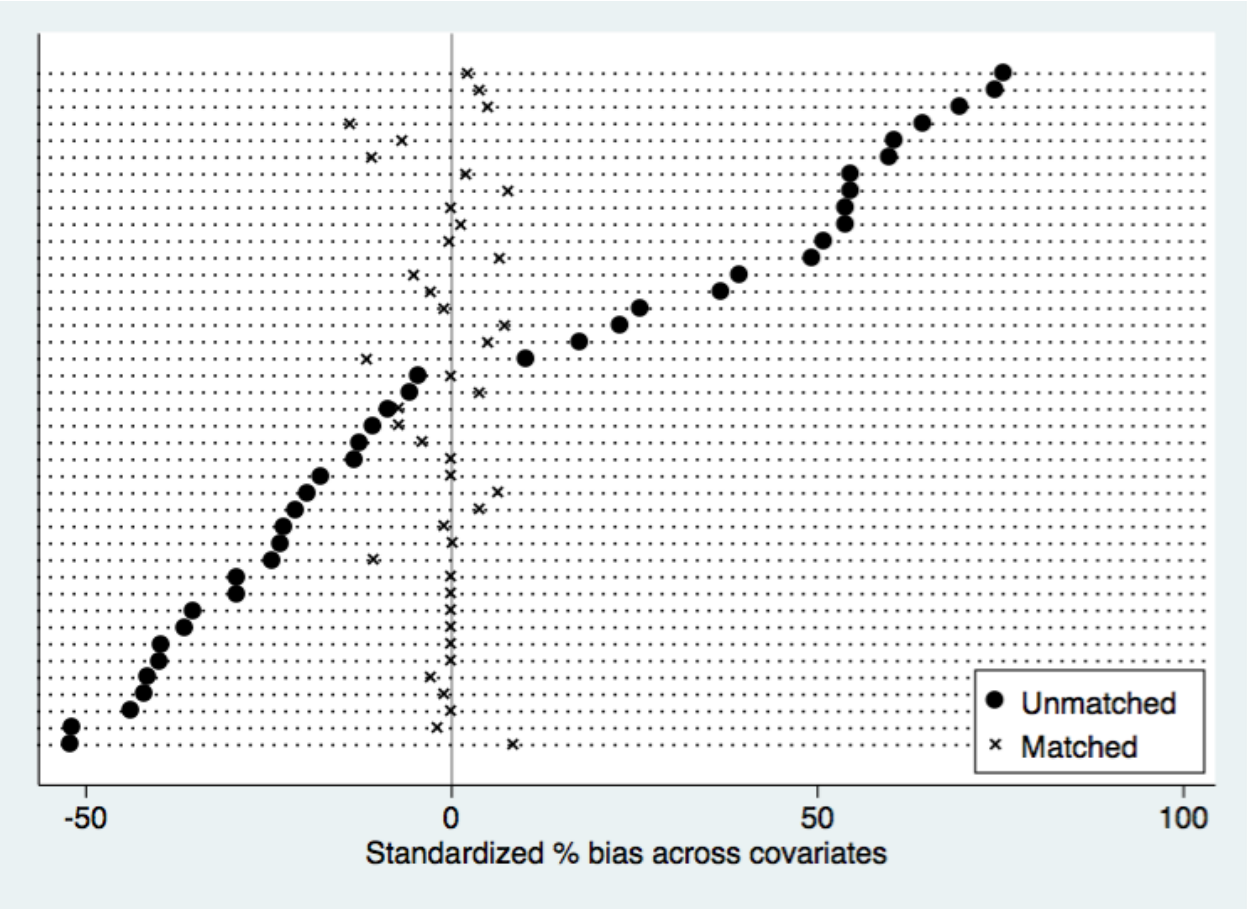


Figure B4. Dot Graph Before and After Matching – Pre-ACE Nursing (Hartnell)



Notes. When forming a comparison group for the ACE nursing students, we first sought to include nursing students who had not been required to participate in ACE--these would be students who began their enrollment prior to 2009. However, this comparison was problematic in at least two respects. First, labor market outcomes could be very different between students who started before 2009 and those starting after 2009, owing to changes in the economy as the market moved from recession to recovery. Moreover, matching between pre-ACE and ACE nursing students did not create two comparable groups. As a result, we decided to match pre-ACE nursing students with non-nursing students enrolled during the same time, and ACE nursing students with non-nursing students enrolled at the same time, and then examine how each nursing cohort compared with its contemporaneous non-nursing counterparts.

Figure B5. Dot Graph Before and After Matching – ACE Nursing (Hartnell)



Appendix C: Academic Outcomes

Table C1. Comparison of Academic Outcome Attainment

Outcome	ACE Participants		Control Group		Difference
	Number of Students	Percentage of Students	Number of Students	Percentage of Students	
Completion of a Degree or Certificate					
Within 3 years	68	3.0%	106	4.8%	-1.78*
Within 6 years	95	9.0%	138	12.1%	-3.12
Transfer to a Four-Year Institution					
Within 3 years	28	1.3%	89	4.2%	-2.85***
Within 6 years	57	6.4%	106	9.5%	-3.14*
Successful Completion of Transfer-Level English					
Within 3 years	470	21.3%	549	26.0%	-4.64***
Within 6 years	200	22.7%	313	28.4%	-5.7*
Successful Completion of Transfer-Level Math					
Within 3 years	151	6.7%	168	7.7%	-0.94
Within 6 years	94	10.4%	135	11.7%	-1.32
Transfer Prepared					
Within 3 years	57	2.5%	99	4.5%	-1.91***
Within 6 years	64	7.0%	106	9.1%	-2.05
Completion of 30 units					
Within 3 years	330	14.8%	421	19.5%	-4.68***
Within 6 years	195	21.7%	288	25.4%	-3.64

*Notes. * = p≤.05, **p≤.01, ***p ≤.001. The ACE students included in this analysis are only those categorized as "non-CTE"—in other words, participants who went on to pursue an academic rather than career/technical education pathway, such as nursing. Only students enrolled in academic years where at least three- and six-year rates could be calculated were included in the analysis. The cohort for three-year rates were students enrolled between fall 2003 and spring 2013 who achieved an outcome within three years of the date on which they joined an ACE program; and the cohort for six-year rates were students enrolled between fall 2003 and spring 2010 who achieved an outcome within six years of the date on which they joined an ACE program.*

Table C2. Percentage Comparisons Attained Academic Outcomes by Under-represented Minority (URM) Non-CTE ACE Participants and URM Controls

Outcome	Non-CTE ACE		Control Group		
	Total in Sample	ACE Students who attained outcome	Total in Sample	Comparison Students who attained outcome	**Difference**
	N	N (%)	N	N (%)	%
Completion of a degree or certificate					
Within 3 years	1,576	36 (2.28%)	1,646	72 (4.37%)	2.09%***
Within 6 years	616	59 (9.58%)	836	91 (10.89%)	1.31%
Transfer to a four-year institution					
Within 3 years	1,560	19 (1.22%)	1,597	69 (4.32%)	3.1%***
Within 6 years	614	41 (6.68%)	814	71 (8.72%)	2.04%
Successful completion of transfer-level English					
Within 3 years	1,555	327 (21.03%)	1,580	425 (26.90%)	5.87%**
Within 6 years	605	133 (21.98%)	803	235 (29.27%)	7.29%***
Successful completion of transfer-level math					
Within 3 years	1,575	114 (7.24%)	1,623	122 (7.52%)	0.28%
Within 6 years	618	66 (10.68%)	834	98 (11.75%)	1.07%
Transfer Prepared					
Within 3 years	1,577	49 (3.11%)	1,652	76 (4.60%)	1.49%*
Within 6 years	619	49 (7.92%)	842	75 (8.91%)	0.99%
Completion of 30 units					
Within 3 years	1,570	237 (15.1%)	1,610	309 (19.19%)	4.09%*
Within 6 years	613	129 (21.04%)	822	214 (26.03%)	4.99%*

*Notes: * = p≤.05, **p≤.01, ***p ≤.001. Only students enrolled in academic years where at least three- and six-year rates could be calculated were included in the analysis. The cohort for three-year rates were students enrolled between fall 2003 and spring 2013 who achieved an outcome within three years of the date on which they joined an ACE program; and the cohort for six-year rates were students enrolled between fall 2003 and spring 2010 who achieved an outcome within six years of the date on which they joined an ACE program.*

Table C3. Logistics Regression Results for ACE Meta-Level Groupings Using Control Group as Reference Group: Three- and Six-Year Rates (Enrolled)

	3 years				6 years			
	OR	**SE**	**z**	**CI**	**OR**	**SE**	**z**	**CI**
Awards								
Accelerated English	0.32***	-0.08	-4.56	[0.19,0.52]	0.85	-0.19	-0.7	[0.55,1.33]
Un-Accelerated English	0.84	-0.22	-0.69	[0.50,1.39]	0.85	-0.16	-0.85	[0.59,1.23]
Limited Resources	0.54*	-0.16	-2.07	[0.30,0.97]	0.68	-0.17	-1.55	[0.41,1.11]
Foundation	1.22	-0.46	0.52	[0.58,2.55]	1.16	-0.73	0.23	[0.34,3.95]
English								
Accelerated English	0.85*	-0.07	-1.96	[0.72,1.00]	0.94	-0.15	-0.41	[0.69,1.28]
Un-Accelerated English	0.49***	-0.07	-4.94	[0.37,0.65]	0.57***	-0.08	-3.88	[0.43,0.76]
Limited Resources	0.97	-0.11	-0.28	[0.77,1.22]	0.89	-0.15	-0.72	[0.64,1.23]
Foundation	0.60*	-0.14	-2.14	[0.37,0.96]	0.32	-0.24	-1.52	[0.07,1.39]
Math								
Accelerated English	0.65**	-0.1	-2.81	[0.48,0.88]	1.1	-0.23	0.46	[0.73,1.66]
Un-Accelerated English	0.57*	-0.14	-2.3	[0.36,0.92]	0.62*	-0.13	-2.26	[0.42,0.94]
Limited Resources	1.54**	-0.25	2.64	[1.12,2.13]	1.01	-0.22	0.05	[0.66,1.56]
Foundation	1.56	-0.45	1.55	[0.89,2.73]	0.83	-0.62	-0.25	[0.19,3.62]

	3 years				6 years			
	OR	**SE**	**z**	**CI**	**OR**	**SE**	**z**	**CI**
Transfer								
Accelerated English	0.22***	-0.07	-4.68	[0.12,0.42]	0.81	-0.21	-0.82	[0.49,1.35]
Un-Accelerated English	0.16**	-0.1	-3.08	[0.05,0.52]	0.51**	-0.13	-2.68	[0.31,0.84]
Limited Resources	0.50*	-0.17	-2.03	[0.26,0.98]	0.58	-0.18	-1.8	[0.32,1.05]
Foundation	0.55	-0.33	-1.01	[0.17,1.76]	2.56	-1.47	1.65	[0.84,7.87]
Transfer Prepared								
Accelerated English	0.27***	-0.08	-4.65	[0.16,0.47]	1.01	-0.24	0.02	[0.63,1.61]
Un-Accelerated English	0.20**	-0.1	-3.18	[0.07,0.54]	0.54*	-0.13	-2.47	[0.34,0.88]
Limited Resources	1.22	-0.28	0.86	[0.78,1.89]	0.77	-0.21	-0.98	[0.45,1.31]
Foundation	2.09*	-0.67	2.31	[1.12,3.91]	1.65	-1.04	0.79	[0.48,5.68]
30 Units Completion								
Accelerated English	0.66***	-0.07	-4.12	[0.54,0.80]	0.89	-0.15	-0.67	[0.65,1.24]
Un-Accelerated English	0.60***	-0.09	-3.31	[0.44,0.81]	0.69*	-0.1	-2.55	[0.52,0.92]
Limited Resources	1.03	-0.13	0.24	[0.80,1.32]	1.03	-0.17	0.16	[0.74,1.42]
Foundation	0.87	-0.2	-0.61	[0.55,1.37]	0.3	-0.22	-1.61	[0.07,1.30]

Note. *p≤.05, **p≤.01, ***p ≤.001. OR = Odds Ratio. SE = Standard Error. Z = Z-score. CI = Confidence Interval.

Table C4. Logistics Regression Results for ACE Meta-Level Groupings Using Control Group as Reference Group: Three- and Six-Year Rates (Completed)

	3 years				6 years			
	OR	**SE**	**z**	**CI**	**OR**	**SE**	**z**	**CI**
Awards								
Accelerated English	0.58*	-0.15	-2.12	[0.35,0.96]	1.26	-0.32	0.91	[0.77,2.07]
Un-Accelerated English	0.74	-0.19	-1.17	[0.44,1.23]	1.02	-0.19	0.13	[0.71,1.48]
Limited Resources	0.49*	-0.14	-2.45	[0.28,0.87]	0.9	-0.21	-0.45	[0.57,1.43]
Foundation	0.29***	-0.11	-3.31	[0.14,0.61]	0.15***	-0.08	-3.72	[0.05,0.41]
English								
Accelerated English	1.69***	-0.16	5.44	[1.40,2.05]	1.58*	-0.29	2.46	[1.10,2.27]
Un-Accelerated English	0.48***	-0.07	-5.28	[0.37,0.63]	0.70*	-0.1	-2.41	[0.52,0.94]
Limited Resources	0.98	-0.11	-0.2	[0.79,1.21]	1.12	-0.18	0.72	[0.82,1.55]
Foundation	0.17***	-0.03	-9.05	[0.11,0.25]	0.09***	-0.04	-6.03	[0.04,0.20]
Math								
Accelerated English	1.15	-0.19	0.88	[0.84,1.59]	1.58	-0.38	1.93	[0.99,2.53]
Un-Accelerated English	0.51**	-0.12	-2.82	[0.31,0.81]	0.75	-0.16	-1.41	[0.49,1.12]
Limited Resources	1.34	-0.22	1.82	[0.98,1.84]	1.33	-0.28	1.37	[0.88,2.01]
Foundation	0.44***	-0.11	-3.3	[0.27,0.72]	0.15***	-0.08	-3.65	[0.06,0.42]

	3 years				6 years			
	OR	**SE**	**z**	**CI**	**OR**	**SE**	**z**	**CI**
Transfer								
Accelerated English	0.35**	-0.12	-3	[0.17,0.69]	1.15	-0.34	0.49	[0.65,2.05]
Un-Accelerated English	0.19**	-0.1	-3.2	[0.07,0.53]	0.60*	-0.15	-1.99	[0.37,0.99]
Limited Resources	0.42*	-0.14	-2.56	[0.22,0.82]	0.77	-0.21	-0.94	[0.44,1.33]
Foundation	0.18***	-0.09	-3.35	[0.07,0.49]	0.25**	-0.12	-2.95	[0.10,0.63]
Transfer Prepared								
Accelerated English	0.45**	-0.13	-2.66	[0.25,0.81]	1.61	-0.42	1.81	[0.96,2.68]
Un-Accelerated English	0.17***	-0.09	-3.41	[0.06,0.47]	0.65	-0.16	-1.77	[0.40,1.05]
Limited Resources	1.03	-0.23	0.11	[0.66,1.60]	0.94	-0.24	-0.24	[0.56,1.56]
Foundation	0.57	-0.17	-1.94	[0.32,1.01]	0.20**	-0.1	-3.11	[0.07,0.55]
30 Units Completion								
Accelerated English	1.23	-0.14	1.87	[0.99,1.52]	1.38	-0.27	1.69	[0.95,2.02]
Un-Accelerated English	0.55***	-0.08	-3.99	[0.40,0.73]	0.85	-0.12	-1.13	[0.63,1.13]
Limited Resources	0.95	-0.12	-0.45	[0.75,1.20]	1.24	-0.2	1.34	[0.90,1.71]
Foundation	0.26***	-0.05	-6.98	[0.18,0.38]	0.14***	-0.05	-5.63	[0.07,0.28]

Note. *p≤.05, **p≤.01, ***p ≤.001. OR = Odds Ratio. SE = Standard Error. Z = Z-score. CI = Confidence Interval.

Table C5. Logistics Regression Results for ACE Micro-Level Groupings Using Control Group as Reference Group: Three- and Six-Year Rates (Attempted)

	3 years				6 years			
	OR	**SE**	**z**	**CI**	**OR**	**SE**	**z**	**CI**
Awards								
1	1.22	-0.46	0.52	[0.58,2.55]	1.16	-0.73	0.23	[0.34,3.95]
2	0.43	-0.25	-1.44	[0.13,1.36]	0.5	-0.19	-1.82	[0.24,1.06]
3	0.18	-0.18	-1.71	[0.02,1.29]	0.73	-0.77	-0.3	[0.09,5.76]
4	0.37**	-0.14	-2.71	[0.18,0.76]	0.51	-0.31	-1.11	[0.16,1.67]
5	0.11**	-0.08	-3.14	[0.03,0.43]	0.63	-0.26	-1.13	[0.29,1.40]
6	0.22	-0.22	-1.5	[0.03,1.59]	0.59	-0.43	-0.72	[0.14,2.50]
7	0.55	-0.2	-1.61	[0.26,1.14]	1.38	-0.42	1.07	[0.76,2.52]
8	0.77	-0.36	-0.55	[0.31,1.93]	0.86	-0.31	-0.43	[0.42,1.74]
9	0.69	-0.41	-0.63	[0.21,2.21]	0.67	-0.7	-0.39	[0.09,5.19]
10	0.99	-0.26	-0.03	[0.59,1.65]	0.96	-0.18	-0.23	[0.66,1.40]
11	1	(.)	.	[1.00,1.00]	0.35	-0.21	-1.74	[0.11,1.14]
12	1.62	-1.7	0.46	[0.21,12.61]	3.66	-4.49	1.06	[0.33,40.61]
English								
1	0.60*	-0.14	-2.14	[0.37,0.96]	0.32	-0.24	-1.52	[0.07,1.39]
2	0.49**	-0.12	-2.86	[0.30,0.80]	0.43**	-0.12	-3.14	[0.25,0.73]
3	0.47**	-0.13	-2.71	[0.27,0.81]	0.57	-0.44	-0.73	[0.12,2.63]

	3 years				6 years			
	OR	**SE**	**z**	**CI**	**OR**	**SE**	**z**	**CI**
4	0.98	-0.12	-0.19	[0.77,1.24]	0.65	-0.25	-1.12	[0.31,1.38]
5	0.54***	-0.08	-4.09	[0.40,0.72]	0.53*	-0.15	-2.18	[0.30,0.94]
6	0.7	-0.19	-1.29	[0.41,1.20]	1.75	-0.69	1.41	[0.80,3.81]
7	1.15	-0.16	1.01	[0.88,1.51]	1.41	-0.33	1.46	[0.89,2.23]
8	1.60*	-0.3	2.47	[1.10,2.32]	1.91**	-0.44	2.8	[1.21,3.00]
9	1.91**	-0.43	2.89	[1.23,2.95]	1.27	-0.78	0.39	[0.38,4.25]
10	0.52***	-0.08	-4.2	[0.39,0.71]	0.61**	-0.09	-3.18	[0.45,0.83]
11	0.29**	-0.12	-2.88	[0.12,0.67]	0.36**	-0.14	-2.69	[0.17,0.76]
12	0.87	-0.57	-0.22	[0.24,3.16]	1	(.)	.	[1.00,1.00]
Math								
1	1.56	-0.45	1.55	[0.89,2.73]	0.83	-0.62	-0.25	[0.19,3.62]
2	0.63	-0.25	-1.17	[0.29,1.37]	0.58	-0.21	-1.5	[0.29,1.18]
3	0.22*	-0.16	-2.1	[0.05,0.90]	0.75	-0.79	-0.28	[0.09,5.88]
4	0.46**	-0.12	-2.92	[0.27,0.77]	0.91	-0.44	-0.19	[0.35,2.35]
5	0.40**	-0.12	-3.01	[0.22,0.73]	0.85	-0.31	-0.44	[0.42,1.74]
6	1.01	-0.4	0.02	[0.46,2.22]	1.7	-0.86	1.05	[0.63,4.56]
7	1.17	-0.26	0.7	[0.76,1.80]	1.3	-0.41	0.82	[0.70,2.40]
8	2.05**	-0.53	2.74	[1.23,3.41]	1.87*	-0.53	2.18	[1.07,3.27]

	3 years				6 years			
	OR	**SE**	**z**	**CI**	**OR**	**SE**	**z**	**CI**
9	4.74***	-1.18	6.24	[2.91,7.74]	0.68	-0.71	-0.37	[0.09,5.30]
10	0.57*	-0.15	-2.14	[0.34,0.95]	0.57*	-0.13	-2.41	[0.36,0.90]
11	0.57	-0.34	-0.95	[0.18,1.83]	0.9	-0.37	-0.25	[0.40,2.02]
12	2.17	-1.68	1	[0.48,9.89]	1	(.)	.	[1.00,1.00]
Transfer								
1	0.55	-0.33	-1.01	[0.17,1.76]	2.56	-1.47	1.65	[0.84,7.87]
2	0.52	-0.31	-1.1	[0.16,1.67]	0.24*	-0.15	-2.37	[0.08,0.78]
3	0.45	-0.32	-1.11	[0.11,1.84]	1.2	-1.28	0.17	[0.15,9.70]
4	0.22**	-0.11	-2.92	[0.08,0.61]	0.94	-0.5	-0.12	[0.33,2.67]
5	0.13**	-0.09	-2.87	[0.03,0.52]	0.58	-0.27	-1.16	[0.23,1.46]
6	1	(.)	.	[1.00,1.00]	1	(.)	.	[1.00,1.00]
7	0.41	-0.19	-1.92	[0.17,1.02]	1.28	-0.45	0.71	[0.64,2.56]
8	0.55	-0.33	-0.99	[0.17,1.78]	1.15	-0.42	0.39	[0.56,2.37]
9	0.55	-0.4	-0.83	[0.13,2.26]	1	(.)	.	[1.00,1.00]
10	0.19**	-0.11	-2.8	[0.06,0.61]	0.52*	-0.14	-2.45	[0.31,0.88]
11	1	(.)	.	[1.00,1.00]	0.47	-0.28	-1.25	[0.15,1.53]
12	1	(.)	.	[1.00,1.00]	1	(.)	.	[1.00,1.00]
Transfer Prepared								

	3 years				6 years			
	OR	**SE**	**z**	**CI**	**OR**	**SE**	**z**	**CI**
1	2.09*	-0.67	2.31	[1.12,3.91]	1.65	-1.04	0.79	[0.48,5.68]
2	0.47	-0.28	-1.29	[0.15,1.49]	0.42	-0.19	-1.88	[0.17,1.04]
3	0.2	-0.2	-1.62	[0.03,1.41]	1	(.)	.	[1.00,1.00]
4	0.20**	-0.1	-3.16	[0.07,0.54]	0.45	-0.33	-1.1	[0.11,1.88]
5	0.17**	-0.1	-2.97	[0.05,0.55]	0.85	-0.35	-0.39	[0.38,1.90]
6	0.24	-0.24	-1.42	[0.03,1.73]	1.23	-0.77	0.34	[0.37,4.17]
7	0.52	-0.21	-1.64	[0.24,1.14]	1.41	-0.48	1.02	[0.73,2.74]
8	1.38	-0.52	0.86	[0.66,2.91]	1.6	-0.52	1.44	[0.84,3.04]
9	3.74***	-1.19	4.15	[2.00,6.96]	1	(.)	.	[1.00,1.00]
10	0.23**	-0.12	-2.85	[0.08,0.63]	0.56*	-0.15	-2.22	[0.33,0.93]
11	1	(.)	.	[1.00,1.00]	0.48	-0.29	-1.23	[0.15,1.55]
12	1.77	-1.85	0.55	[0.23,13.76]	1	(.)	.	[1.00,1.00]
30 Units								
1	0.87	-0.2	-0.61	[0.55,1.37]	0.3	-0.22	-1.61	[0.07,1.30]
2	0.75	-0.18	-1.18	[0.47,1.21]	0.8	-0.18	-0.97	[0.51,1.26]
3	0.20***	-0.09	-3.46	[0.08,0.50]	1.13	-0.77	0.18	[0.30,4.29]
4	0.43***	-0.08	-4.79	[0.31,0.61]	0.54	-0.23	-1.48	[0.24,1.22]
5	0.49***	-0.09	-4	[0.34,0.69]	0.52*	-0.16	-2.11	[0.29,0.96]

	3 years				6 years			
	OR	**SE**	**z**	**CI**	**OR**	**SE**	**z**	**CI**
6	1.06	-0.29	0.23	[0.63,1.80]	2.07	-0.82	1.83	[0.95,4.52]
7	1.17	-0.18	1.04	[0.87,1.58]	1.26	-0.31	0.96	[0.78,2.04]
8	1.43	-0.3	1.73	[0.95,2.16]	1.45	-0.35	1.56	[0.91,2.33]
9	2.68***	-0.6	4.37	[1.72,4.17]	1	-0.67	0.01	[0.27,3.74]
10	0.66*	-0.11	-2.57	[0.48,0.91]	0.75	-0.11	-1.91	[0.55,1.01]
11	0.27*	-0.14	-2.49	[0.10,0.76]	0.42*	-0.16	-2.24	[0.20,0.90]
12	0.35	-0.37	-0.99	[0.05,2.74]	1	(.)	.	[1.00,1.00]

Note. *p≤.05, **p≤.01, ***p ≤.001. OR = Odds Ratio. SE = Standard Error. Z = Z-score. CI = Confidence Interval.

Table C6. Logistics Regression Results for ACE Micro-Level Groupings Using Control Group as Reference Group: Three and Six Year Rates (Completed)

	3 year				6 year			
	OR	**SE**	**z**	**CI**	**OR**	**SE**	**z**	**CI**
Awards								
1	0.29***	-0.11	-3.31	[0.14,0.61]	0.15***	-0.08	-3.72	[0.05,0.41]
2	0.62	-0.32	-0.93	[0.22,1.71]	0.88	-0.31	-0.36	[0.45,1.74]
3	0.28	-0.2	-1.78	[0.07,1.14]	0.61	-0.45	-0.67	[0.14,2.61]
4	0.56	-0.22	-1.47	[0.26,1.21]	0.32	-0.33	-1.12	[0.04,2.37]
5	0.23*	-0.16	-2.06	[0.06,0.93]	1.02	-0.45	0.05	[0.43,2.44]
6	0.46	-0.47	-0.76	[0.06,3.40]	1.05	-0.8	0.06	[0.24,4.65]
7	1.04	-0.39	0.1	[0.50,2.17]	2.09*	-0.71	2.17	[1.07,4.07]
8	1.15	-0.54	0.29	[0.46,2.88]	1.57	-0.59	1.19	[0.75,3.29]
9	0.52	-0.31	-1.11	[0.16,1.66]	0.98	-0.74	-0.03	[0.22,4.31]
10	1.47	-0.39	1.47	[0.88,2.47]	1.60*	-0.32	2.32	[1.08,2.38]
11	1	(.)	.	[1.00,1.00]	0.27**	-0.13	-2.81	[0.11,0.67]
12	1	(.)	.	[1.00,1.00]	0.24	-0.24	-1.42	[0.03,1.74]
English								
1	0.17***	-0.03	-9.05	[0.11,0.25]	0.09***	-0.04	-6.03	[0.04,0.20]
2	0.73	-0.17	-1.38	[0.46,1.14]	0.74	-0.19	-1.16	[0.44,1.23]
3	0.45**	-0.11	-3.15	[0.28,0.74]	0.33	-0.2	-1.79	[0.10,1.11]

	3 year				6 year			
	OR	**SE**	**z**	**CI**	**OR**	**SE**	**z**	**CI**
4	1.65***	-0.23	3.57	[1.25,2.17]	0.71	-0.36	-0.68	[0.26,1.92]
5	1.21	-0.21	1.08	[0.86,1.70]	0.82	-0.28	-0.57	[0.42,1.60]
6	1.96*	-0.62	2.12	[1.05,3.66]	5.59**	-3.04	3.17	[1.93,16.23]
7	2.38***	-0.4	5.17	[1.71,3.31]	2.45**	-0.69	3.17	[1.41,4.26]
8	3.09***	-0.67	5.17	[2.01,4.73]	4.15***	-1.24	4.76	[2.31,7.45]
9	1.88**	-0.37	3.19	[1.28,2.77]	2.23	-1.16	1.53	[0.80,6.19]
10	0.84	-0.13	-1.11	[0.61,1.14]	1.04	-0.18	0.22	[0.75,1.45]
11	0.17***	-0.05	-6.38	[0.10,0.29]	0.31***	-0.09	-4.16	[0.18,0.54]
12	0.18***	-0.08	-3.72	[0.07,0.44]	0.36	-0.2	-1.88	[0.13,1.04]
Math								
1	0.44***	-0.11	-3.3	[0.27,0.72]	0.15***	-0.08	-3.65	[0.06,0.42]
2	0.78	-0.29	-0.65	[0.38,1.63]	0.9	-0.31	-0.3	[0.46,1.78]
3	0.26*	-0.15	-2.3	[0.08,0.82]	0.97	-0.61	-0.04	[0.29,3.29]
4	0.65	-0.19	-1.44	[0.37,1.17]	0.68	-0.51	-0.52	[0.16,2.92]
5	0.81	-0.26	-0.65	[0.43,1.52]	1.46	-0.58	0.95	[0.67,3.18]
6	2.73*	-1.09	2.51	[1.25,5.98]	2.49	-1.46	1.56	[0.79,7.83]
7	2.04**	-0.49	2.97	[1.27,3.26]	1.91	-0.67	1.85	[0.96,3.80]
8	3.20***	-0.87	4.3	[1.88,5.43]	3.42***	-1.08	3.9	[1.84,6.34]

	3 year				6 year			
	OR	**SE**	**z**	**CI**	**OR**	**SE**	**z**	**CI**
9	3.32***	-0.8	5	[2.07,5.31]	1.72	-1.12	0.84	[0.49,6.13]
10	0.85	-0.22	-0.62	[0.51,1.43]	0.94	-0.22	-0.26	[0.59,1.50]
11	0.14***	-0.08	-3.33	[0.04,0.45]	0.45*	-0.17	-2.11	[0.22,0.95]
12	0.28	-0.2	-1.78	[0.07,1.14]	0.24	-0.25	-1.39	[0.03,1.78]
Transfer								
1	0.18***	-0.09	-3.35	[0.07,0.49]	0.25**	-0.12	-2.95	[0.10,0.63]
2	0.75	-0.39	-0.55	[0.27,2.08]	0.56	-0.26	-1.23	[0.22,1.41]
3	0.17	-0.17	-1.78	[0.02,1.20]	0.38	-0.39	-0.93	[0.05,2.87]
4	0.19*	-0.14	-2.29	[0.05,0.79]	0.92	-0.68	-0.12	[0.21,3.96]
5	0.28	-0.2	-1.79	[0.07,1.13]	1.09	-0.53	0.18	[0.42,2.82]
6	1	(.)	.	[1.00,1.00]	1	(.)	.	[1.00,1.00]
7	0.77	-0.36	-0.56	[0.31,1.93]	1.75	-0.7	1.4	[0.80,3.81]
8	0.26	-0.26	-1.33	[0.04,1.90]	1.79	-0.71	1.46	[0.82,3.91]
9	0.83	-0.43	-0.35	[0.30,2.31]	1.28	-0.97	0.33	[0.29,5.68]
10	0.19*	-0.13	-2.34	[0.05,0.76]	0.71	-0.21	-1.17	[0.40,1.26]
11	0.19*	-0.14	-2.32	[0.05,0.77]	0.44	-0.19	-1.89	[0.19,1.03]
12	1	(.)	.	[1.00,1.00]	1	(.)	.	[1.00,1.00]
Transfer Prepared								

	3 year				6 year			
	OR	**SE**	**z**	**CI**	**OR**	**SE**	**z**	**CI**
1	0.57	-0.17	-1.94	[0.32,1.01]	0.20**	-0.1	-3.11	[0.07,0.55]
2	0.5	-0.3	-1.16	[0.16,1.61]	0.68	-0.3	-0.88	[0.29,1.60]
3	0.15	-0.15	-1.88	[0.02,1.09]	1	(.)	.	[1.00,1.00]
4	0.26*	-0.15	-2.30	[0.08,0.82]	0.43	-0.44	-0.82	[0.06,3.21]
5	0.38	-0.22	-1.66	[0.12,1.20]	1.65	-0.69	1.18	[0.72,3.76]
6	0.51	-0.51	-0.67	[0.07,3.72]	2.28	-1.48	1.27	[0.64,8.13]
7	0.84	-0.36	-0.41	[0.36,1.94]	1.98	-0.75	1.80	[0.94,4.15]
8	2.36*	-0.86	2.35	[1.15,4.84]	3.04**	-1.05	3.22	[1.54,5.98]
9	2.48**	-0.8	2.82	[1.32,4.66]	0.62	-0.64	-0.47	[0.08,4.70]
10	0.34*	-0.17	-2.11	[0.12,0.92]	0.95	-0.25	-0.21	[0.56,1.60]
11	1	(.)	.	[1.00,1.00]	0.22**	-0.13	-2.58	[0.07,0.69]
12	0.24	-0.25	-1.39	[0.03,1.77]	1	(.)	.	[1.00,1.00]
30 Units								
1	0.26***	-0.05	-6.98	[0.18,0.38]	0.14***	-0.05	-5.63	[0.07,0.28]
2	0.91	-0.22	-0.38	[0.58,1.45]	1.11	-0.27	0.42	[0.69,1.79]
3	0.25***	-0.09	-3.72	[0.12,0.52]	0.72	-0.36	-0.66	[0.27,1.92]
4	0.76	-0.14	-1.49	[0.53,1.09]	0.79	-0.40	-0.46	[0.29,2.14]
5	1.04	-0.21	0.2	[0.71,1.54]	0.77	-0.28	-0.71	[0.38,1.57]

	3 year				6 year			
	OR	**SE**	**z**	**CI**	**OR**	**SE**	**z**	**CI**
6	1.84	-0.62	1.82	[0.95,3.57]	3.87**	-1.97	2.66	[1.43,10.50]
7	2.27***	-0.40	4.68	[1.61,3.21]	1.92*	-0.55	2.27	[1.09,3.37]
8	2.13**	-0.49	3.28	[1.36,3.34]	2.48**	-0.72	3.13	[1.40,4.37]
9	1.84**	-0.39	2.91	[1.22,2.77]	1.64	-0.84	0.97	[0.60,4.48]
10	1.01	-0.17	0.05	[0.73,1.40]	1.3	-0.22	1.57	[0.94,1.80]
11	0.12***	-0.05	-5.49	[0.06,0.26]	0.33***	-0.10	-3.77	[0.19,0.59]
12	0.37*	-0.15	-2.51	[0.17,0.80]	0.56	-0.27	-1.19	[0.21,1.46]

Note. *p≤.05, **p≤.01, ***p ≤.001. OR = Odds Ratio. SE = Standard Error. Z = Z-score. CI = Confidence Interval.

Appendix D: EDD Match Rates

Table D1 . EDD Match Rates by Year and Target Student Populations

Years since participation in ACE	Non-CTE ACE students	Non-CTE ACE control students	Pre-ACE nursing students	Pre-ACE nursing matched peers	ACE nursing students	ACE nursing students matched peers
-1	(1,228) 44.7%	(1,587) 57.8%	(369) 73.9%	(166) 70.3%	(307) 61.6%	(163) 69.0%
1	(1,549) 56.4%	(1,859) 67.7%	(372) 74.5%	(169) 71.8%	(287) 57.6%	(172) 73.0%
2	(1,739) 63.3%	(1,963) 71.5%	(373) 74.7%	(173) 73.2%	(247) 49.5%	(180) 76.4%
3	(2,014) 73.3%	(2,187) 79.6%	(375) 75.1%	(180) 76.4%	(499) 100.0%	(188) 79.7%
4	(1,705) 62.1%	(2,187) 66.0%	(387) 77.5%	(157) 66.6%	(337) 67.5%	(171) 72.4%
5	(1,871) 68.1%	(2,013) 73.3%	(399) 79.9%	(166) 70.5%	(440) 88.1%	(184) 77.8%
6	(1,890) 68.8%	(1,981) 72.1%	(413) 82.7%	(159) 67.4%	(419) 84.1%	(171) 72.6%